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KANT ON ANALOGY: THE PROBLEM OF PREDICATING THE NOUMENON IN THE PRECRITICAL WORKS

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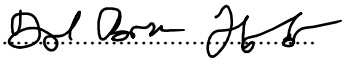
Data 20/11/2025 *Firma* …… 

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Abstract

In this work, I argue that Kant conceptualizes the distinction between constitutive and regulative knowledge during the precritical period. What appeared as a complete theory in the transcendental dialectic section of the *Kritik der reinen Vernunft* was, I claim, anticipated by the results of the precritical project, which faced two crucial problems connected to the constitutive/regulative distinction: the nature of the philosophical idea of analogy and the problem of predication. I aim to sustain my argument by analyzing these two philosophical problems.

Beginning with analogy in Section I, I reconstruct a brief history of the idea in Western philosophy in order to understand how Kant was influenced by his predecessors when he used this idea. This historical premise allows a coherent grasp of the roots of analogy, providing also a contextual framework useful to place Kant in his historical era.

Developing from the results of Section I, Section II will analyze Kant's direct and indirect uses of analogy in his precritical works from 1747 until 1763. In Section II, great effort will be devoted to understanding the nature of analogy in Kant's physical and cosmological works, thus explaining the kind of analogy he inherited from his predecessors.

In Section III, I will analyze Kant's works from 1763 until 1770. The pivotal focus of this Section will be to discuss Kant's positioning on the history of the idea of analogy once the problem of predication emerges in his precritical writings. This, as I will discuss, happens especially with the works written in the second half of the 1760s.

As a result, I will highlight the conceptual shift during the precritical period: from a constitutive idea of analogy in physics to a regulative conception of metaphysics through an analogical kind of predication. In *De mundi sensibilis*, the divine, masked under the name of noumenal perfection, will be useful and understandable through a symbolic and limited language, but never completely grasped. This is where the precritical project anticipates transcendental ideas and the transcendental dialectic.

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TITLE	YEAR	ABBREVIATION
Allgemeine Naturgeschichte und Theorie des Himmels oder Versuch von der Verfassung und dem mechanischen Ursprunge des ganzen Weltgebäudes, nach Newtonischen Grundsätzen abgehandelt.	1755	*Untersuchung*
Meditationum quarundam de igne succincta delineatio	1755	*De igne*
Principiorum primorum cognitionis metaphysicae nova dilucidatio	1755	*Nova dilucidatio*
Der einzig mögliche Beweisgrund zu einer Demonstration des Daseins Gottes	1763	*Beweisgrund*
Untersuchung über die Deutlichkeit der Grundsätze der natürlichen Theologie und der Moral	1763	*Untersuchung*
Versuch den Begriff der negativen Größen in die Weltweisheit einzuführen	1763	*Begriff der negativen Größen*
Träume eines Geistersehers, erläutert durch Träume der Metaphysik	1766	*Träume*

De mundi sensibilis atque intelligibilis forma et principiis	1770	*De mundi sensibilis*
Kritik der reinen Vernunft	1781/1787	*KrV*

Kant on Analogy: The Problem of Predicating the Noumenon in the Precritical Works

Introduction

In the *Critique of Pure Reason* (*KrV*), Kant describes the role of transcendental ideas as follows:

> Accordingly, I assert: the transcendental ideas are never of constitutive use, so that the concepts of certain objects would thereby be given, and in case one so understands them, they are merely sophistical (dialectical) concepts. On the contrary, however, they have an excellent and indispensably necessary regulative use, namely that of directing the understanding to a certain goal respecting which the lines of direction of all its rules converge at one point, which, although it is only an idea (*focus imaginarius*) – i.e., a point from which the concepts of the understanding do not really proceed, since it lies entirely outside the bounds of possible experience – nonetheless still serves to obtain for these concepts the greatest unity alongside the greatest extension. Now of course it is from this that there arises the deception, as if these lines of direction were shot out from an object lying outside the field of possible empirical cognition (just as objects are seen behind the surface of a mirror); yet this illusion (which can be prevented from deceiving) is nevertheless indispensably necessary if besides the objects before our eyes we want to see those that lie far in the background, i.e., when, in our case, the understanding wants to go beyond every given experience (beyond this part of the whole of possible experience), and hence wants to take the measure of its greatest possible and uttermost extension (A644/B672–A645/B673).

This passage provides a synthetic explanation of two types of knowledge in Kant: constitutive and regulative. Although this division is not new in the history of philosophy, Kant interprets it as a means of distinguishing the kind of knowledge that derives from metaphysics. Constitutive claims, according to Kant, are ideas or principles that describe the nature or existence of the research object, thereby extending human knowledge. Regulative claims, on the contrary, are heuristic statements, which never have ontological commitment and provide only instrumental suggestions on how the object of research could be. Transcendental ideas, namely dialectical creations of reason, aim at describing the metaphysical (God, world, soul), so, according to Kant, they will never have a constitutive use, which is intimately tied to experiential proof. The

result is that, as Vaihinger states (1935), metaphysics becomes a philosophy of the "as if", namely an attempt to describe the non-physical through plausible fiction of reason.

Kant's attempt to deal with the status of metaphysical claims is not new in the *KrV*, as it was anticipated in his precritical writings. This study argues that the constitutive/regulative division of knowledge originates in the precritical project and, therefore, is not an invention of the *KrV*. To support this view, I reconstruct the origin of the problem of predication in Kant, namely the question of whether predicating something of metaphysical subjects is possible in a regulative or constitutive way. This problem, as I discuss, originates during the second half of the precritical period and results in a final awareness (formulated between 1766 and 1770) of the regulative status of metaphysics.

The problem of predication, key to understanding the origin of the constitutive/regulative dialectic, is, I claim, intimately connected to Kant's use of analogies. This is so to an extent that it would be impossible to understand Kant's precritical philosophical development without a proper analysis of his use of analogies.

Hence, this work aims to reconstruct Kant's use of analogies to understand the status of the problem of predication in metaphysics in his precritical writings. Once these conditions are met, it will be possible to see the origin of the constitutive/regulative distinction as a final result of his doctrine of analogical predication in metaphysics in the precritical period.

In the course of my analysis of the precritical works, I will adopt a continuist view, namely a perspective that aims at interpreting Kant's philosophical *oeuvre* before 1781 as a coherent and constructive philosophical project. In Section II, I will discuss the extensive secondary literature that treats precritical production as a philosophical project. As a general introductory remark, it is worth mentioning here that precritical ideas are often seen as a preparation for the theories of the *KrV*, although substantive differences between the critical and precritical periods remain clearly visible.

An anticipation which is frequently mentioned, for example, is the status of space and time in *De mundi sensibilis* (1770), which fits perfectly the explanation of space and time in the transcendental aesthetics section of the *KrV*. Space and time, however, do not offer a complete interpretative key to the development of Kant's project throughout the whole precritical period, insofar as they are properly discussed only at the end. Analogy, on the contrary, is a fecund concept, which finds direct and indirect occurrences in almost all philosophical works of the precritical period. It is with this awareness that I dedicate this work to the reconstruction of Kant's doctrine of analogy prior to 1781. I am convinced that, thanks to this interpretative key, Kant's precritical project will emerge as a clear philosophical path at every step.

Some prerequisites are essential for the successful completion of my task. Firstly, analogy is an incredibly complex concept that varies in significance depending on historical context and linguistic use. In order to avoid the anachronistic risk of applying a contemporary scientific definition of analogy, one must take careful preparation before venturing into the present task. It is for this reason that the question "What is the definition of analogy in philosophy?" has accompanied my work in all of its parts. An answer to this question does not come from an a priori construction of the definition, as Kant would undoubtedly agree with, but from an a posteriori reconstruction of the history of the idea.

Hence, as a prerequisite for completing the task, this work first presents a brief history of the idea of analogy. This will be the content of Section I, where I reconstruct the origin of this term in four phases: Ancient Greek philosophy, medieval philosophy, modern philosophy and science, and Kant's contemporaries. Although this reconstruction cannot and will not be a complete history of the term, which would require a work on its own, it will suffice to introduce the essential elements to construct a coherent historical definition of analogy.

An analysis of early Greek occurrences of the term will introduce the concept of the proportional analogy among the Pythagoreans, which Aristotle later systematized. Between these two, the discussion of Plato's myth and analogies will serve as a preparation for Kant's understanding of the ideal in *De mundi sensibilis*. Aristotle, however, remains the central reference point for the history of the idea of analogy. With the distinction between classificatory (physical) analogies and the *analogia entis* (a problematic construct that emerged among medieval authors), he paved the way for a substantial division of analogy into two branches in the history of philosophy: one scientific-inductive, the other metaphysical.

Medieval authors focused more on the metaphysical side of analogy, building on Aristotle's teachings and trying to understand whether the discourse concerning the divine could be formulated through human language. The discussions concerning the *analogia entis* between Aquinas and Scotus have characterized this era until modern times, influencing prominent authors such as Francisco Suárez. This era developed in more detail the status of analogical arguments, introducing a distinction between an instrumental discourse about the divine and a constitutive one.

The modern age, finally, saw the return of the double identity of analogy, which originated with Aristotle. While British authors and scientists leaned towards the instrumental and heuristic side of the diatribe, many metaphysicians remained faithful to the doctrine of *analogia entis*, bringing the metaphysical side of analogies to Kant's Germany. Wolff, Baumgarten, and Meier, among other relevant teachers, friends, and rivals of the philosopher

from Königsberg, represented the final steps in the history of the concept until Kant; a history that carried within it the weight of a metaphysical discourse about invisible entities and, simultaneously, scientific-inductive claims.

After reconstructing the history of the idea of analogy up to Kant, Section II will begin the analysis of Kant's precritical texts. Two criteria must be noted in advance: firstly, not all of the precritical works contain direct or indirect uses of analogies. Thanks to the historical reconstruction of the term, it was possible to identify which texts presented one of the typical occurrences of analogy in the history of philosophy, without, of course, excluding the possibility of entirely new ways to understand the term. This identification also brought to light the flip side of the coin: the exclusion of some works that, although relevant in other contexts, do not offer a substantive discussion of the problem of predication or of Kant's use of analogies. A precise list of the selected works will be provided in the introduction to Section II.

Moving to the second criterion, a chronological division has been adopted to facilitate the exposition of Kant's philosophical development through the lens of the concept of analogy and the problem of predication thereby connected. As I will discuss, the nature of the works before and after 1763 differs significantly, somehow reintroducing Aristotle's original division between scientific and metaphysical analogies.

Hence, Section II will be dedicated to the first part of Kant's precritical production, ranging from 1755 to 1763. Consequently, Section III will discuss the second part of Kant's precritical production, namely his works from 1763 until 1770.

The result of this extensive analysis of the occurrences of the term "analogy" in the precritical Kant will be an understanding of Kant's progressive awareness of the limits of metaphysics. This awareness, especially after 1764, was intimately tied to the problem of predication, which found a solution in a regulative and analogical formulation of judgments about the soul or the divine in Kant's *Träume* (1766) and *De mundi sensibilis* (1770). Moreover, thanks to the initial reconstruction of the history of analogy, it will be possible to place Kant on one side of the long-standing quarrel between the proponents of analogy as a quasi-equivocal tool and those who supported a view of univocity between the kind of beings involved in the *analogia entis*.

Finally, Kant's precritical regulative stance, shifting the focus from the pernicious attempt to find characteristics of the divine to an equilibrate analysis of how the human understanding could formulate knowledge of it, offers a clear anticipation of a transcendental turn, one which not only brought the attention of the researcher to the subject and its a priori conditions, but also anticipated the recognition of the limits of the old metaphysics.

Surely, Kant's thoughts on space and time in *De mundi sensibilis* (1770) anticipated the transcendental aesthetics. However, as I claim, the whole precritical production, if seen as a coherent project (and especially when the problem of predication through analogy became crucial), anticipated the claims of the transcendental dialectic about the regulative use of ideas of reason. Hence, I will return to the initial quote in this introduction at the end of this work.

Section I – Analogy in Ancient Philosophy

1. Pre-Aristotelians and Plato

Scholars often argue that Plato and Aristotle represent the initial significant steps in the history of analogy as a philosophical concept (Burrell, 1973; Melandri, 1974; Courtine, 2005; Bartha, 2024).

Giovanni Reale (1988) frequently emphasizes the role of these two philosophers in defining what a philosophical concept is. While the pre-Socratics primarily focused on ethical dilemmas and physical theories (as noted by Reale, 1979), Plato introduced a metaphysical dimension, marking a significant shift in the course of Western philosophy (Reale, 1988, pp. 59–73). Aristotle's work then further developed Plato's ideas, creating a clearer separation from pre-Socratic thought (Reale, 1988, pp. 396–450).

Following this separation, the concept of analogy should be understood in different ways depending on further contextual information. While I will later focus on what it meant for Plato and Aristotle to give a philosophical meaning to analogy, it is worth briefly introducing how this concept was used before such a thought revolution, namely in those philosophers who identified philosophical problems with physical or mathematical ones. To be more specific, the Pythagoreans were the first to use analogical structures in their works.

Archytas of Tarentum (c. 428–347 BCE) provides one of the first references to analogy as a proportional relation. As Schölles (2023) notes, Archytas bases his philosophical thought on mathematical methods, employing the proportional structure to interpret reality. In his second fragment,[1] he introduces analogy in the classical form A/B=C/D, using it in his three-dimensional kinematic construction to resolve a classical geometrical problem (see Lloyd, 1970, pp. 33–35).

The same structure is also presented in the work of Eudoxus of Cnidus (c. 408–355 BCE). Although there is no proof that Eudoxus directly used the proportional analogy formula, scholars (Evans, 1998; White et al., 2021) agree that his theories contain the origin of Euclid's fifth definition in book 5 of his *Elements* (Euclid, 1956). White et al. (2021, pp. 25–29) point out that Eudoxus successfully resolved one of the most prominent mathematical challenges of

[1] Huffman (2005, p. 162). See also Lloyd (1970, pp. 24–35).

the time, namely the incongruence between commensurable and incommensurable magnitudes. To do so, he indirectly introduced the formula A/B=C/D, later put into words by Euclid:

> The first of four magnitudes is said to have the same ratio to the second, that the third has to the fourth, when any equimultiples whatever of the first and third being taken, and any equimultiples whatever of the second and the fourth, if the multiple of the first be less than that of the second, the multiple of the third is also less than that of the fourth, and if the multiple of the first be equal to that of the second, the multiple of the third is also equal to that of the fourth, and if the multiple of the first be greater than that of the second, the multiple of the third is also greater than that of the fourth.[2]

In contemporary terms, this quote corresponds to the expression A/B=C/D. Hence, the Pythagoreans were among the first to introduce analogy as a mathematical concept into their works. For this work, it is not necessary to explain in detail Eudoxus' argument. Eudoxus, and later Euclid, believed that commensurable magnitudes maintain reciprocal relationships that are analogous to those between incommensurable magnitudes. Therefore, the proportional analogy expresses a similarity between relations in two different systems of magnitudes.[3]

The concept of analogies underwent significant changes with Plato. As the father of metaphysics introduced his second navigation, the game also began to change, particularly in terms of analogy. Without eliminating the mathematical and proportional meaning of analogies, Plato needed to shift the focus to another level, namely, the level of qualities.

The introduction of a superior metaphysical world in his theory opened a new series of contextual problems from a linguistic and ontological perspective. While classical sciences could treat empirical objects through processes of quantification and translation into mathematical symbols, the same process was not possible for superior entities. One of the pivotal problems that permeates Plato's entire philosophical production, then, becomes how to talk about the Good.

His myths offer an answer to this problem, and, at the same time, provide a useful first attempt to consider analogies as strictly philosophical and ontological concepts (no mathematical symbols or equations are involved). Let us start to dig deeper into Plato's use of analogies to understand his role in the history of this idea.

When David Burrel discusses Plato's philosophical method, he highlights that:

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[2] Euclid (1956, Definition 5).
[3] For a detailed account of the proportional relationship in Eudoxus, I suggest White et al. (2021, pp. 25–29).

> Plato has found a way to offer an account of that "sort of object" which defies imagination and even definition. His method consists of renouncing hope of any direct knowledge and having recourse instead to an indirect technique: offer a number of examples, come to a certain appraisal of their relevance to the topic, and then, by reflecting on the relative importance of one over another, gain a certain "proportional" grasp of the object. (…) Metaphor and myth play an auxiliary role in this method by announcing that any straightforward account would be inadequate to the realities involved (1973, p. 59).

In other words, Plato's myths and metaphors are his attempt to construct indirect knowledge about undefinable objects. When Burrel writes these words, he is referring to the metaphysical object that Plato calls the idea of Good. According to Plato, the principal aim of each philosopher is to reach knowledge of the Good through the dialectical method, namely by obtaining progressive knowledge of more or less complex ideas.[4]

The *Republic* (Plato, 2006) offers valuable insights to help understand the relationship between the Good and analogies. While talking about the Good, Plato states that the philosopher is "unable to apprehend its nature adequately" but is, anyway, "willing to speak of what seems to be the offspring of the Good and most nearly made in its likeness (505e, 506d)." The philosopher cannot reach any direct knowledge of the metaphysical, but indirect knowledge is still available through myths and metaphors. Famously, metaphors and myths in the Republic concern the sun, the line, and the cave.[5]

Let us analyze the metaphor of the sun to provide an example. Plato develops this metaphor in Books VI–VII of the Republic (2006), where he discusses his gnoseology theory and introduces the myth of the cave (Book VII). Here, the sun is used as an image to explain the function of the Good: it illuminates the path of the philosopher, who is initially confused, but gradually acquires knowledge of ideas through the illumination of this guiding principle. In the cave myth, the sun helps the cave dweller to explore the external world: once he is forced to leave the cave, the light of the sun is initially unfamiliar. However, his eyes get gradually accustomed to the new light, until he is finally able to see the world outside the cave for what it truly is. Similarly, the world of ideas is initially unfamiliar to the philosopher, who constantly struggles to find the proper definitions (as Burrell suggests) for the objects of his representations. However, once the philosopher starts to comprehend these ideas, he gradually

[4] For a complete account of Plato's method, I suggest Burrell (1973, pp. 37–67); Reale (1988, pp. 187–208); Vegetti (2003, pp. 147–163).
[5] It is interesting to note that Burrell refers to the line, the cave, and the sun as "analogies (Burrell, 1973, p. 64)."

acknowledges the structure of the metaphysical world until, eventually, he will obtain knowledge of the supreme idea, namely the idea of the Good. Plato writes:

> This image, my dear Glaucon, must be fitted together as a whole with what we said before. The realm revealed through sight should be likened to the prison dwelling, and the light of the fire inside it to the sun's power. And if you think of the upward journey and the seeing of things above as the upward journey of the soul to the intelligible realm, you won't mistake my intention—since it is what you wanted to hear about. Only the god knows whether it is true. But this is how these phenomena seem to me: in the knowable realm, the last thing to be seen is the form of the Good, and it is seen only with toil and trouble. Once one has seen it, however, one must infer that it is the cause of all that is correct and beautiful in anything, that in the visible realm it produces both light and its source, and that in the intelligible realm it controls and provides truth and understanding; and that anyone who is to act sensibly in private or public must see it (R 517a).

As Plato writes (R 505e, 506d), this knowledge will always remain inadequate because of the intimate nature of human intellectual capabilities. This inefficient relationship between the metaphysical object and the human understanding of it generates an unbridgeable gap between the two. Nonetheless, the indirect light of the Good is enough for Plato to construct his theory of ideas, where one should strive to asymptotically get as close as possible to the idea of the Good, confident that in such a process he will obtain true knowledge.

The myth of the cave, together with the metaphor of the sun-Good, shows that Plato's method to get knowledge of metaphysical entities is analogical. This happens in two senses: firstly, describing the unknowable through known images facilitates understanding undefinable objects. This is the same function that analogies cover in contemporary sciences in the construction of models (Hesse, 1966). Secondly, myths allow predication of metaphysical entities. This is where analogies in Plato entangle with deep metaphysical and ontological problems: the status of metaphysical entities is a problem for Plato's dialectic since these ideal objects cannot be understood adequately by the limited human mind (R 505e, 506d). Hence, a new method is needed to provide at least a discourse on these entities: the myth. Through these indirect tales, Plato can construct some sort of knowledge about the Good, although it remains a human conception of it.

When discussing Plato's use of analogies, Hesse (1966) suggests that Plato's analogies presuppose the distinction between the sensible and the intelligible world since they provide a bridge from one world to the other (she writes "analogies between the degrees of being", 1966,

p. 136). Hesse also discusses the analogy of the Good and the sun, claiming that the relationship between these two is functional rather than substantial. This means that the Good has the same function for the intellect that the sun has for the human eye. In other words, there is no substantial affinity between the two elements of the analogy, but only a common relational function (Hesse, 1966, p. 137). Aristotle will recover this distinction between substantial and formal analogies in different contexts, as I will show.

To conclude with Plato, the Greek philosopher introduced a metaphysical problem that would influence the entire history of the idea of analogy. Plato introduced analogies as tools to bridge the gap between the sensible and the intelligible in the attempt to obtain knowledge of high-level intellectual ideas. The same problem will concern Aristotle closely, as I now turn to discuss.

2. Aristotle

Analogies in Aristotle appear in the most diverse contexts. His eclecticism earned him a reputation in the history of philosophy as the philosopher of systematization (Reale, 1988, pp. 379–387). Consequently, the idea of analogy had to find the correct spot in the system. However, at this point, a problematic topic emerges: what is the proper place of analogy in Aristotle's *oeuvre*?

Scholars typically identify numerous instances of analogies in Aristotle (see Muskens, 1943), noting significant differences in the methodology employed depending on the context. Some scholars stress the prominence of the proportional side of analogy in Aristotle, noticing that in most of the occurrences the term always refers to the proportional relations that I introduced with the Pythagoreans (Lloyd, 1970; Rapp, 1992; Edwards, 2016; White et al., 2021).

Other scholars point their attention more to the metaphysical implications of Aristotle's analogies, introducing the discussion concerning the origin of the medieval problem of the *analogia entis* and reflecting on the possible implications of Aristotle's analogies in future philosophers (Owens, 1951; Hesse, 1965; Burrell, 1973; Courtine, 2003; Catapano et al., 2020; Berti, 2022). This second approach sparked numerous discussions on the actual significance of analogies in Aristotle and in the history of philosophy in general.

I aim to briefly reconstruct the different meanings of analogies in Aristotle, who provided a functional classification of this term through many of his works. In doing this, I

follow Hesse's approach (1965, 1966), which crucially divides between physical and metaphysical analogies.

Let us start with physical analogies. Aristotle introduces this kind of analogy in the *Posterior Analytics*[6] while discussing methods to find a genus (97a). The process involves identifying common characteristics among several members of different species. He writes:

> We should look at what are similar and undifferentiated, and seek, first, what they all have that is the same; next, we should do this again for other things which are of the same genus as the first set and of the same species as one another but of a different species from those. And when we have grasped what all these have that is the same, and similarly for the others, then we must again inquire if what we have grasped have anything that is the same—until we come to a single account; for this will be the definition of the object (97b8–97b15).

The genus will be defined by the common characteristic that a set of species shares. However, there are some specific cases in which one common characteristic has several different names depending on the species at stake. Aristotle provides the example later: "Again, another way is excerpting in virtue of analogy; for you cannot get one identical thing which pounce and spine and bone should be called; but there will be things that follow them too, as though there were some single nature of this sort (98a20–98a23)." According to Aristotle, another way to define a genus is through analogy: certain animals share elements with a common nature that help classify them. A more detailed account comes from the *Historia Animalium*:

> There are some animals whose parts are neither identical in form nor differing in the way of excess or defect; but they are the same only in the way of analogy, as, for instance, bone is only analogous to fish-bone, nail to hoof, hand to claw, and scale to feather; for what the feather is in a bird, the scale is in a fish (486b18–486b21).

That these animals are the same by virtue of analogy means that they are grouped under the same genus by virtue of similarities between things of different names. A feather and a scale have different names, but they bring fish and birds together by virtue of their similar nature and role: they cover the entire body of animals and protect their internal organs. Similarly, a bone and a fish-bone might have different technical names, but they have the same properties and functions, so they can be subject to an analogous relationship. This analogy has a proportional

[6] For references to Aristotle's works, I use Barnes' English translation (see Aristotle, 1984).

structure: feathers (A) are in a bird (B) precisely like scales (C) are in a fish (D). Hence, A/B=C/D.

Let us briefly analyze another case of proportional analogy in Aristotle to dig deeper into the topic. This example comes from the *Poetic*:

> Metaphor consists in giving the thing a name that belongs to something else; the transference being either from genus to species, or from species to genus, or from species to species, or on grounds of analogy. (…) That from analogy is possible whenever there are four terms so related that the second is to the first, as the fourth to the third; for one may then put the fourth in place of the second, and the second in place of the fourth. Now and then, too, they qualify the metaphor by adding on to it that to which the world it supplants is relative. Thus a cup is in relation to Dionysus what a shield is to Ares (1457b1–1458a8).

Once again, analogies are proportional relations of the form A/B=C/D. However, in this case it is more evident that there is no clear relationship between A and C in themselves, and neither between B and D. The analogy subsists only in so far as the relation between A and B is analogous to the relation between C and D. In other words, it is the symbolic meaning of the cup and the shield to be analogous. A comparison with the previous example regarding animal bones shows that some analogies are built on a stronger basis: bird bones and fish bones are also physically similar since they share an osseous nature (hence, A and C share the same properties).[7]

Let us switch now to metaphysical analogies. While the physical ones are proportional, secondary literature often defines the metaphysical ones as analogies of attribution (Hesse, 1965; 1966; Courtine, 2003; Berti, 2022). In addition to this, Aristotle uses analogies to help find definitions for metaphysical concepts, as I will discuss. This process is intimately tied to his conception of induction, so I call this inductive analogy.

Let us start with inductive analogies. Aristotle employs these analogies to clarify the meanings of metaphysical concepts such as "potentiality" and "actuality." He writes:

> Our meaning can be seen in the particular cases by induction, and we must not seek a definition of everything but be content to grasp the analogy,—that as that which is building is to that which is capable of building, so is the waking to the sleeping, and that which is seeing to that which

[7] Hesse (1966, p. 134) differentiates physical analogies in Aristotle depending on whether they are based on common properties (such as the osseous nature) or on relational features. I maintain that such differentiation is problematic since most of the time the proportional analogy presents both aspects, as in the case of the feathers-scales example. Hesse recognizes the problem and further problematizes this "dual nature of analogy" in her work (1966, pp. 135–140).

> has its eyes shut but has sight, and that which is shaped out of the matter to the matter, and that which has been wrought to the unwrought. Let actuality be defined by one member of this antithesis, and the potential by the other. But all things are not said in the same sense to exist actually, but only by analogy—as A is in B or to B, C is in D or to D; for some are as movement to potentiality, and the others as substance to some sort of matter. (1048a25–1048b9)

According to this passage, Aristotle believes that it is possible to understand the concepts of potentiality and actuality by means of an analogy. The structure of the analogy remains proportional, but this time the concepts at stake are of a metaphysical kind. That which is capable of building (A) is to the building (B) as potentiality (C) is to actuality (D). This explanation has three relevant details to highlight: firstly, the proportion is of course of the relational kind. This means that there is nothing in common between a building and actuality, but the analogy is grounded in the commonality between the relations A/B and C/D.

Secondly, this analogy provides a clear understanding of potentiality and actuality, metaphysical concepts that would otherwise remain undefined. Aristotle's effort, here, is to find a proper language for unclear concepts, or, as Hesse puts it, "these metaphysical analogies seem to be primarily concerned with the *understanding* of metaphysical terms. Thus they are examples of the introduction of novel *language* by means of analogy (1966, p. 147)."

Thirdly, Aristotle refers to this analogical process as inductive. This work is not the proper place to start a discussion on the relationship between analogy and induction in terms of logical means of argumentation. However, it is relevant to highlight that, if Aristotle's analogies are inductive processes, then they are not only simple models to grasp an unclear concept correctly, but they also represent a valuable argumentative method to acquire some knowledge regarding metaphysical concepts. This belief will be fundamental in the discussion of Kant's precritical analogies.

It is also worth mentioning that, although this inductive analogy remains proportional, it is still different from the physical analogies. While these aim at providing a functional classification of the objects at stake, such as in the case of animals grouped under the same genus, the inductive analogy reveals its metaphysical nature by referring to an undefinable concept. Potentiality and actuality need to be defined by formulating a proper language for these concepts, and the proportional analogy offers a solution to this problem. Such a problem is similar to the one concerning the analogy of attribution, and I call it the problem of predication of metaphysical concepts.

Let us now turn to the analogy of attribution, which finds its proper context in the discussion of the role of the concept of "being" in Aristotle. There is a lot of disagreement in secondary literature on the status of this analogy and the concept of "being" in Aristotle, which mainly lies in the way this concept is related to categories. Some commentators (Hesse, 1966) suggest that "being" can be predicated of each category in an analogical way. In contrast, others do not use the term analogy, preferring the more precise definition of relative homonymy (Berti, 2022), which is grounded on the theory of focal meaning (Owens, 1951).

Let us briefly comment on Aristotle's words to understand the problem at stake:

> There are many senses in which a thing may be said to 'be', but they are related to one central point, one definite kind of thing, and are not homonymous. Everything which is healthy is related to health, one thing in the sense that it preserves health, another in the sense that it produces it, another in the sense that it is a symptom of health, another because it is capable of it. (…) So, too, there are many senses in which a thing is said to be, but all refer to one starting-point; some things are said to be because they are substances, others because they are affections of substance, others because they are a process towards substance, or destructions or privations or qualities of substance, or productive or generative of substance, or of things which are relative to substance, or negations of some of these things or of substance itself (*Metaphysics,* 1003a33–1003b18).

The interpretation of this passage goes hand in hand with the *Categories*, where Aristotle talks about the distinction between homonymous and synonymous terms:

> When things have only a name in common and the definition of being which corresponds to the name is different, they are called *homonymous*. Thus, for example, both a man and a picture are animals. These have only a name in common and the definition of being which corresponds to the name is different; for if one is to say what being an animal is for each of them, one will give two distinct definitions.
>
> When things have the name in common and the definition of being which corresponds to the name is the same they are called *synonymous*. Thus, for example, both a man and an ox are animals. Each of these is called by a common name, an animal, and the definition of being is also the same: for if one is to give the definition of each–what being an animal is for each of them–one will give the same definition (*Categories*, 1a1–1a15).

These two passages shed light on the classical distinction between equivocal and univocal terms, which, as I will discuss, will be the core of medieval discussions. It is necessary to introduce them here for the sake of clarity.[8] Homonymous words are terms that have the same name, but different definitions: a man and a picture are animals in different ways. In later commentators, homonymous terms will be called equivocal. Synonymous words, on the contrary, are terms that have different names, but they share the definition: both a man and an ox are animals. These are univocal terms.

Going back to the passage from *Metaphysics*, "being" is a term that seems to be neither homonymous nor synonymous since there are many senses in which a thing is said to be. The "healthy" animal and diet, for example, both refer to a concept of "health" that retains the same definition in each context. However, that "an animal is healthy" is predicated in a more direct sense if compared to a healthy diet, which is healthy only insofar as it is the cause of health in the animal. The coexistence of a synonymous relationship to "health" and a homonymous use of the term "health" generates confusion in the status of such a term, which is neither strictly univocal nor entirely equivocal. In this context, Aristotle suggests that the term "being" finds a proper middle way between homonymy and synonymity thanks to analogy. Although Aristotle does not use the term "analogy" explicitly in this passage, a long tradition of philosophers, as I will show, agree to take this as the source of Aristotle's metaphysical analogy of being (*pros hen*): the term being is predicated first and foremost of the category of substance, which provides a substratum to predicate the same term also of other categories in a secondary way. Hence, "being" is predicated analogically of all categories.

Hesse (1966, p. 144) suggests that this theory is, as a matter of fact, an analogous predication of the term "being" in different contexts. Such is the case, for example, when Aristotle talks about the relationship between different categories: they are related to each other by a common dependence on the trans-categorical (or transcendental) concept "being", without which there would be no predication at all for these supreme genera.

Analyzing the topic, Berti (2022) suggests that such dependence acquires a vertical structure. The category of substance provides the fundamental basis for the predication of "being" in other categories, so it acquires an ontological and logical priority (pp. 9–10). However, Berti suggests that this kind of predication in Aristotle is not analogical. This is because an analogy would involve an identity of relationship between couples (a proportional structure). In the case of categories, each one relates to the term "being" differently. This means

[8] Boethius is commonly considered the author of the translation of these terms into "equivocity" and "univocity". See Section I – 3.1.

that the term “being” is not predicated analogously (no relation involved), but only in a partial homonymy, namely a relative homonymy (p. 8).

Interestingly, Berti suggests that the confusion between analogy and homonymy lies at the heart of the medieval error in interpreting Aristotle’s analogies. Starting from the Neoplatonists, the relative homonymy began to be identified with a peculiar kind of analogy, namely one that leverages the vertical structure in Aristotle to allow the predication of attributes to God (Berti, 2022, p. 6). This would be the analogy of attribution (or predication), which is based on the vertical structure of relations between the couples substance-being and inferior categories-being. I will further problematize the passage from Aristotle to medieval authors and the analogy of attribution in the next paragraphs.

For the time being, it suffices to classify Aristotle’s analogies into two different kinds. The first one is a physical and proportional analogy, where the aim is the classification of subjects inside genera. The subject of analogies is always empirical, and the proofs supporting the analogical relationships are based on empirical evidence.

The second kind of analogy is metaphysical because it regards non-physical concepts. “Potentiality” and “actuality” are two examples that I referred to as inductive analogies. This is because Aristotle’s way to define these two metaphysical concepts is through the construction of a proportional relationship with analogous terms. Why these terms are analogous is a problem that Aristotle seems not to have considered in his work. Nonetheless, these inductive analogies allow an expansion of knowledge, so they might be considered constitutive in character.

The attributive analogy (or predicative analogy, classically known also as *pros hen* relationship) is the second example of metaphysical analogies that I discussed. Despite the debate in secondary literature concerning the status of this analogy, it must be noted that Aristotle created a vertical relationship between categories that depends on the way they relate to the concept “being”. The interpretation of such vertical structure in an analogical sense (there is identity in the relation between pairs), instead of a homonymous sense (there is no identity between pairs, but only relation to a homonymous reference term), will be the basis of the medieval discussions concerning the relationship between the being of God and the being of creatures.

Before switching to the relevant medieval authors, it is worth mentioning that the division between physical and metaphysical analogies is a valuable interpretative key for Kant’s precritical works. As I suggest, Kant’s interest will gradually shift from physical towards metaphysical analogies of attribution, thus leading the way for a revolution in the history of analogical predication.

3. Medieval Doctrines on Analogy

3.1 After Aristotle

Medieval theories of analogy developed from Aristotle's efforts to classify this concept. As I have discussed, the physical and metaphysical analogies in Aristotle correspond to logical and metaphysical problems. The proportional analogy in physics is a classificatory tool that helps define genera. From a metaphysical perspective, "being" is the term that lies at the center of Aristotle's problems. Despite its essential univocity, it can be predicated in many ways depending on the category it is connected to, thus opening some space for equivocity. A vertical ontological relationship of priority between categories is Aristotle's answer to this problem, which medieval authors, as I will discuss, will transform into the analogy of a prior to a posterior, thus proposing a resolution to the ambiguous status of Aristotle's *pros hen* relationship.

It is precisely this verticality that suggested to medieval authors the application of metaphysical analogies from Aristotle in theological discussions. Authors like Thomas Aquinas attempted to explain the relationship between the infinite divinity and finite creatures through this analogy of attribution, expanding their reflection on the question of whether human language could ever be appropriate to God or if it could be used only analogically.

Beginning with medieval authors, the logical, metaphysical, and theological classification of analogy is the primary focus of an author who provides a bridge theory between Aristotle and the early Medieval thinkers: Severinus Boethius. As Di Liso (2005, p. 194) suggests, thanks to Boethius, medieval authors gained access to Aristotle's theory of analogy in a structured way. He provided them with the conceptual framework that came from the Arabic commentators (Avicenna and Averroes), thus initiating a long tradition of commentaries on Aristotle's texts on analogies. As the principal translator of Aristotle in the Latin language, Boethius offered a systematic classification of the types of equivocal relationships developed within the Greek-language commentary tradition. It is precisely in this effort that he translated the homonymity and synonymity discussed by Aristotle with "equivocity" and "univocity" (see also Catapano et al., 2020, pp. 63–65).

Boethius[9] elaborates a more articulate division of terms than Aristotle, crucially differentiating between chance equivocals and deliberate equivocals (*In Categorias Aristotelis,* PL 64, 166D, 46–47), where analogy lies in the second kind. According to Boethius (and following Aristotle), analogy serves as a third way when equivocity and univocity are not correct attributes to describe specific terms (*In Categorias Aristotelis,* T 33, 164B 16–167A 13).

As Ashworth (1995, 2021) notes, deliberate equivocals in Boethius acquire three different meanings. Firstly, similitude: Similitude refers to cases in which a term is applied to different referents based on a perceived resemblance. For instance, the term animal may be used both for actual living beings and for their representations in pictures. In the Greek tradition, this phenomenon was explained by emphasizing a shared feature or likeness between the two referents. For example, the shape of the depicted figure corresponds to the shape of the real animal, thus justifying the application of the same term to both.

The second type of deliberate equivocals corresponds to the Greek conception of analogy. A standard example is the term *principium* (principle or beginning), which can refer to a point in relation to a line, the heart in relation to an animal, or the source in relation to a river. In these cases, there is no common nature uniting the referents: mathematical elements, rivers, and hearts not only belong to distinct natural kinds, but also fall under entirely different categories (such as quality or substance). What unites these instances is the proportional relationship they bear to the wholes of which they are the starting points.

This kind of analogy aligns with the proportional type discussed earlier, although Aristotle also admitted analogies where a common nature between the components is shared (bone and fish-bone example).

The third kind of deliberate equivocation is crucial to understanding analogy in later medieval philosophers. This is when a term is said of two things in a prior and a posterior sense (*per prius et posterius*), similarly to what happened in Aristotle's *pros hen* analogy. An example of this kind is the term "healthy". When a person is said to be healthy, this is predicated of a substance in a direct sense. However, when a diet is said to be healthy, this is predicated only in a secondary and indirect sense because a diet can be healthy only insofar as it is the cause of health in a person. In this sense, "healthy" is predicated analogically, but in a prior and a posterior way.

Di Liso (2005, pp. 194–195) points out that analogical predication was intended in this way by many early medieval authors. Not only did Boethius recover this attributive analogy

[9] I use McCabe's English translation, see Boethius (2003).

structure, but also other authors of the 13th century (Lambert of Auxerre, Albertus Magnus). All these thinkers applied the third kind of deliberate equivocation to classify the term "being" or "*ens*" correctly. According to them, *ens* could be predicated directly of the category of substance, and only secondarily (*ex consequenti*) of the accidents and other categories. Albertus Magnus, one of the prominent medieval thinkers of the 13th century, wrote:

> Analogous terms are those that apply proportionally, as the Arabs say: they are intermediate between univocal and equivocal terms, and are attributed to different things in being and substance by virtue of their reference to a single thing to which they are proportioned.[10]

Also in Albertus Magnus, the proportional analogy has a vertical structure, in which the analogates always refer to a principal focal term, which grounds the whole analogical relationship.

Moving from Aristotle's attributive analogy and critically discussing later developments, Thomas Aquinas and Duns Scotus sparked the debate on analogy in the Middle Ages. The theological and metaphysical implications of their theories of analogy make it worthwhile for us to dedicate some time to these authors.

3.2 Aquinas and Scotus

Crucial developments in medieval theories of analogy occurred thanks to the discussions between Aquinas and Scotus. While the former was the prominent advocate of an Aristotelian way to interpret analogy, to the extent that this relationship would later be labeled as the Aristotelian-Thomistic tradition, the latter initiated an intense criticism of Aquinas to recover the lost truth value of analogies. This discussion is relevant for my purposes since it raises concern around a crucial topic in the history of analogical predication: the validity of the *analogia entis*. To understand better what I mean, let us start with the reconstruction of Aquinas' theory of analogy.

Aquinas takes a fundamental role in the history of analogies insofar as his doctrine makes special use of the analogy of being in the theological context. In Aquinas' theory, the term "being" offers a unique means by which finite human beings might speak of the utterly transcendent God. Hence, his doctrine became a foundational device allowing discourse about God that preserves divine transcendence while affirming meaningful resemblance and

[10] My translation from Albertus Magnus, *Liber de praedicabilibus*, I, 5. See Albertus Magnus (1988).

participation in created reality. To understand why, two texts are fundamental: *Scriptum super Sententiis* and *De veritate*.[11]

In the *Scriptum super Sententiis* (I, d. 19, q. 5, art. 2, ad 1), Aquinas offers three different types of analogy:

> (…) it is to be said that something is said according to analogy in three ways: either according to notion only and not according to being: and this is when one notion is referred to several through prior and posteriority, which nevertheless has being only in one: for example, the notion of health is referred to the animal, the urine, and the diet in diverse measures, according to priority and posteriority; not nevertheless according to diverse being, because the being of health is only in the animal.
>
> Or else, according to being and not according to notion; and this occurs when many things are taken as equal in the notion of something common, but that common item does not have being of one intelligible character in all: as for example, all bodies are taken as equal in the notion of corporeity; hence, the logician, who considers only notions, says that this name "body" is predicated of all bodies univocally; however, the being of this nature is not of the same intelligible character in corruptible and incorruptible bodies; hence, for the metaphysician and the physicist, who consider things according to their being, neither this name, "body", nor any other is said univocally of corruptibles and incorruptibles (…).
>
> Or else, according to notion and according to being, and this is when they are not taken as equal either in the common notion or in being; the way, for example, "a being" is said of substance and accident; and in such it is necessary that the common nature have some being in each of those things of which it is said, but differing according to the intelligible character of greater or less perfection.
>
> And similarly I say that "truth" and "goodness" and all such are said analogically of God and creatures. Hence, it is necessary that according to their being all these be in God and in creatures according to the measure/intelligible character of greater and lesser perfection; from which it follows, since they cannot be according to one being in both places, that there are diverse truths.

The last one of these three modes of analogy is the one that problematizes the predication of God and creatures. Aquinas starts from Aristotle's conception of proportional analogy in metaphysics and, more specifically, in the case of the attributive analogy. While Aristotle proposed a vertical relationship between categories and their relationship with "being", Aquinas adds a layer of complexity to this picture: this relationship also acquires degrees of perfection.

[11] I use Mulligan's and Lohr's English translations of these texts. See Aquinas (1952–1954; 1980).

When things are analogically put together by virtue of some common nature, they offer different degrees of participation in this common nature. This is clearly a different case if compared to Aquinas' first one, where there is a priority relation, but no real nature shared.

In the third case, special terms such as "being", "truth", and "goodness" are said analogically of creatures and God. However, the way in which these terms are predicated of creatures differs according to their degree of perfection, or, to put it more bluntly, degree of "being", "truth", or "goodness". God is the supreme being, pure act (in Aristotle's terms),[12] and does not have limitations. Creatures, on the other side, are limited beings, but they still share the nature of "being" with their creator. Hence, God is prior and perfect, creatures are posterior and imperfect.

Aquinas finds in the relationship of God and creatures to transcendentals ("being", "truth", "goodness") a perfect example of the analogical third way between equivocal and univocal terms. As Long notes (2011, p. 42), "being" is not said univocally of God and creatures since the degrees in which these entities "are" are significantly different: God is the supreme being, and creatures are limited in their existence. Moreover, "being" is also not said in an equivocal manner of God and creatures. This is because there is a likeness in different degrees of existence. Although the degrees are different, they are still degrees of the same thing (existence). Hence, Aquinas finds a way to predicate of the divine through the special status of the transcendental terms.

This is even clearer in *De veritate*, where Aquinas asks the question "Is Knowledge Predicated of God and Men Purely Equivocally? (q. 2, art. 11)." The philosopher has a clear answer:

> It is impossible to say that something is predicated univocally of a creature and God because in all univocal predication the nature signified by the name is common to those of whom the univocal predication is made. (…)
>
> Nevertheless, it cannot be said that whatever is predicated of God and creatures is an equivocal predication; for, unless there were at least some real agreement between creatures and God, His essence would not be the likeness of creatures, and so He could not know them by knowing His essence. Similarly, we would not be able to attain any knowledge of God from creatures, nor from among the names devised for creatures could we apply one to Him more than another; for

[12] In secondary literature, some authors reconnect Aquinas' third kind of analogy to Aristotle's doctrine of potency and actuality. For example, Long (2011, pp. 39–51) claims that creatures differ in degree of actuality and are limited by the presence of potentiality. In contrast, God represents pure actuality and remains unlimited because in God there is no potentiality. However, God and creatures are still analogically related because they share the common likeness of actuality, although in different degrees.

> in equivocal predication it makes no difference what name is used, since the word does not signify any real agreement.
>
> Consequently, it must be said that knowledge is predicated neither entirely univocally nor yet purely equivocally of God's knowledge and ours. Instead, it is predicated analogously, or, in other words, according to a proportion (q. 2, art. 11, resp.).

Once again, analogy represents the middle way between complete univocity and total equivocity. However, in this text Aquinas adds a further specification of two kinds of proportional analogies, claiming that "an agreement according to proportion can happen in two ways (q. 2, art. 11, resp.)":

(1) Proportion (*proportio*): This occurs when a definite and measurable relationship exists between two things. For example, the number two relates to one as double; this is a clear and determinate proportion. In terms of predication, something is analogically predicated according to proportion when one thing stands in a clear relation to another, like when being is said both of substance and accident because accident depends on substance, or when "healthy" is predicated of both an animal and its urine. After all, urine is related to the animal's health as a cause or sign. Here, the analogy depends on an actual relationship between the two things.

(2) Proportionality (*proportionalitas*): This is a more indirect comparison, where the agreement is not between two things themselves but between two different relationships or proportions. For instance, six and four are related because six is two times three and four is two times two. Another example is the use of "sight" as predicated of both bodily sight and intellectual vision. Although bodily sight and intellectual vision are very different (one is physical, the other mental), their relationship is analogous because of the similarity between those two different kinds of vision.

Of the two, which closely resemble Aristotle's classification, Aquinas claims that only the second is appropriate for the creatures-God case:

> In those terms predicated according to the first type of analogy, there must be some definite relation between the things having something in common analogously. Consequently, nothing can be predicated analogously of God and creature according to this type of analogy; for no creature has such a relation to God that it could determine the divine perfection. But in the other type of analogy, no definite relation is involved between the things which have something in

> common analogously, so there is no reason why some name cannot be predicated analogously of God and creature in this manner (q. 2, art. 11, resp.).

Hence, Aquinas finds a way to speak about God truthfully, without reducing the divine to creaturely limitations. The philosopher was able to develop Aristotle's teachings and apply them to the theological context, where transcendentals become the analogical tool to predicate of creatures and God. Aquinas offers an analogical language to predicate of God which is based on the fact that they share special characterizations such as "being", "truth", or "goodness." This strategy eliminates pure univocity, but also total equivocity, leaving room for a limited account of equivocity, which is, of course, analogy.

As Di Liso notes (2005, p. 199), it is precisely the analogical predication of God in metaphysics and theology that, according to Duns Scotus, represents a risk since it does not make metaphysical knowledge real and recluses it to the realm of a strange equivocity. As Burrell puts it: "Scotus was dissatisfied, presumably, with Aquinas' treatment of the issue, doubtless wondering whether on a theory like that, anything might be able to be said of God (1965, p. 640)."

Let us analyze Scotus's doctrine of univocity and analogy to understand the criticism against Aquinas. While Aquinas considered the trans-categorical, or transcendental terms such as "being" as the perfect way to allow analogical predication of God, Scotus suggested that these same terms did not possess an analogous structure. Hence, he proposed his doctrine of the univocity of being.

Scotus develops this doctrine in his *Ordinatio*[13] as a response to the doctrine of equivocity and analogy in Henry of Ghent. Both Burrel (1965) and D'Ettore (2019) note that this criticism can safely be transferred to Aquinas, since Henry of Ghent and Aquinas agreed in a conception of Godly predication through proportional analogy.

Scotus' critique holds on several points, but three are of greater importance for the discussion against Aquinas and Henry of Ghent. The general point at stake is that divine predication cannot happen analogically, but it must be based on univocity.[14]

The first argument (*Ordinatio* I, d. 3, part 1, qq. 1–2, nn. 27–30) insists on the fact that the term "being" can be predicated univocally. Scotus maintains that no intellect can be certain and doubtful of the same concept at the same time. An example is the case of a student hearing a discussion on the nature of the first being. The student hears the professors inquiring about

[13] I use P. L. P. Simpson's English translation. See Scotus (2022).
[14] The reader will find here a summary of the three arguments. For the whole picture, at the beginning of each paragraph, I refer to the section of Scotus's text.

the different natures of the first being, which could be fire, water, wind, or something else. Nevertheless, there is a common agreement in the fact that the first principle is a being. This thought is certain in the student's mind and in the minds of the professors. Hence, the fact that the different natures of this principle are doubtful does not take away the univocity of the way in which the first principle is predicated. Contrary to Aquinas, who suggested that "being" is predicated in different ways of God and creatures, Scotus maintains that "being" is univocally predicated of the two, although its specific nature can remain doubtful.

As D'Ettore notes (2019, p. 24), Scotus's first critique aims at destroying Henry of Ghent's conception of analogy through proximity of concepts. According to Scotus, even though two concepts are closely related to each other, they will never be the same unless they are predicated univocally. Hence, proximity would never allow proper predication, but only equivocal predication, which, according to Scotus, remains inherently limited and fallacious.

This is even more evident in the second argument against equivocity and analogy. The second argument (*Ordinatio* I, d. 3, pars 1, qq. 1–2, n. 35) suggests that there is a circularity fallacy in the argument of Aquinas and Henry of Ghent. Scotus claims that, in order to construct the analogy between creatures and God, one must know in advance whether God has an attribute or not. Hence, rather than predicating an attribute analogically, one (in this case, Aquinas) presupposes that this attribute already applies to God in order to construct the analogical relationship. As D'Ettore puts it, "One could not think of two concepts as similar or to confuse two concepts as one concept if one did not already possess both concepts. (2019, p. 25)."

According to Scotus, this is further confirmed by the account of how humans obtain knowledge through sensible experience: human intellect produces concepts only through the revelations coming from sensory images. These images are univocal to the concepts produced. Therefore, knowledge of God could be generated only through univocal concepts, since these are the only concepts generated through sensory experience. This requirement is an impediment to any construction of knowledge about God that comes from analogous processes: analogies are equivocal, so they will never lead to the univocal kind of knowledge that is proper to what Scotus defines as the natural modes of knowing.

Moving to the third argument (*Ordinatio* I, d. 3, pars 1, qq. 1–2, nn. 38–40), Scotus addresses what is known as the fallacy of equivocation. The philosopher suggests that Aquinas was fallaciously admitting some univocity amid equivocal terms, thus confusing the nature of the two. Aquinas's attempt to find a middle way in analogy is fallacious because it admits degrees of the same perfection. However, according to Scotus, admitting degrees of the same perfection destroys univocity, making Aquinas' attempt to retain a limited univocity fallacious.

While Aquinas's attempt to validate predication between God and creatures is based on a middle way between total univocity and complete equivocity, Scotus dooms any attempt to destroy the nature of univocity and equivocity, thus claiming that any mediated univocity is useless to predicate of the divine. In short, unless the transcendental employed in an argument has the same degree of participation in both elements at stake (God and creatures), absurd consequences follow.

With these three critiques, Scotus maintains that, from a logical perspective, Aquinas' argument is problematic in many respects: analogy would destroy any possible univocity, the demonstration presupposes its conclusion (circularity), and a middle way between univocity and equivocity is not logically plausible. Hence, if analogy is logically inadequate, univocity is the only solution to grant predication of creaturely attributes to God.

Scotus' critique of Aquinas opens a crucial topic in the history of analogy. Scotus maintained that the validity of the analogical argument is hampered by its middle status between univocity and equivocity. According to Scotus, analogical predication would have been useless to say something true of the divine. By accepting the lack of univocity and embracing partial equivocity (analogy), Aquinas abandoned the attempt to predicate something logically of the divine.

Logical predication is undoubtedly more substantial than an analogical one, and, for this reason, a univocal and logical predication is constitutive insofar as it truly reaches knowledge concerning the divine. Aiming at this logical degree of demonstration, Scotus rejected the validity of a partial and analogical account, which allows predication of attributes to God only in a limited way since the nature shared is different in *ratios* (degrees). As I will later argue, this distinction between analogical and logical validity will be a crucial topic in Kant, who will rephrase the problem in terms of degrees of probability.

3.3 Thomas de Vio

Thomas de Vio (also Cardinal Cajetan) is an inescapable reference point in the history of analogy. Coming between the end of medieval times and the beginning of the modern era, Cajetan offers a paradigmatic summary of what analogy was before him and during his time.

Among the many works he produced during his life, *De nominum analogia* (*The Analogy of Names*)[15] has been one of the most influential, prompting Aquinas himself to say:

[15] I use Bushinski's English translation, see de Vio (1953).

"As regards difficulties in analogy which are of a rather metaphysical nature, Cajetan has discussed them so extensively and so thoroughly in his little treatise *The Analogy of Names* that he has not left us any opportunity to think out another one."[16]

It is not a coincidence that Aquinas wrote these words, since Cajetan's work is essentially a classification and systematization of analogy according to the Aristotelian-Thomistic approach. For my purposes, the relevance of this systematization attempt stems from its historical contextualization: Cajetan's reconstruction of analogy summarized the history of the concept prior to him and provided a valid reference point for later modern authors. As such, I aim to reconstruct the content of his work briefly.

Cajetan starts with clear intentions:

> Motivated both by the obscurity of the subject itself and by the deplorable scarcity of profound studies in our age, I intend to publish during this vacation a treatise on the analogy of names. An understanding of this doctrine is so necessary that without it no one can study metaphysics, and ignorance of it gives rise to many errors in other sciences (§1).

These few introductory words are sufficient to understand the crucial role played by analogy in medieval metaphysics. Cajetan arrives at the point of saying that, since metaphysics is not possible without a proper theory of analogy, all the other sciences are at risk if this doctrine is not clarified first.

Thus, Cajetan divides his work into eleven chapters. The first three chapters propose the same division of kinds of analogy that I introduced with Aquinas. The first one (§§ 4–7) discusses the analogy of inequality (*analogia inaequalitatis*). This analogy corresponds to the analogy according to being and not according to notion, namely the second of Aquinas' analogies. Cajetan even uses the same example of Aquinas: "body" is said univocally for the logician and equivocally for the metaphysician.

The second chapter (§§ 8–22) deals with the analogy of attribution (*analogia attributionis*). A classical example is the term "healthy", used by both Cajetan and Aquinas. This analogy is the one according to notion and not according to being, and comes directly from Aristotle's work: "health" is attributed analogically to subjects that are not directly related to it. For example, a diet is healthy only insofar as it is the cause of health in a person.

The third chapter (§§ 23–30) addresses the only kind of analogy adequate to discuss metaphysical and theological predication, namely the analogy of proportionality (*analogia*

[16] *Summa Contra Gentiles*, I, 34. See Aquinas (1990).

proportionalitatis). Again, Cajetan recovers Aquinas' ideas when he describes this analogy: it indicates the likeness of ratios, and offers a true glance into the intrinsic entity, goodness, and truth of things (*rerum intrinsecas entitates, bonitates, veritates*, § 29). This is the analogy of being and notion, and allows the philosopher to find a middle way between univocity and equivocity.

There is an extensive discussion in secondary literature concerning the status of these three initial chapters and the remaining parts of *De nominum analogia*. As Hochschild points out, commentators of Cajetan's work had been interpreting this work as a simple reproduction of Aquinas' doctrine of analogy, neglecting an important set of complications and developments coming from the other chapters of the work (2010, pp. 1–25). Hochschild stresses that most commentators, both immediately after Cajetan and nowadays, failed to recognize the central question of such work, blinded by the biased view of a simple reproduction and systematization of what was proposed by the Aristotelian-Thomistic tradition (2010, pp. 2–3).

For the purpose of this work, the attention dedicated to the three initial chapters is sufficient, as it provides a framework of reference for analyzing modern authors. It must not be neglected, however, that, as Hochschild suggests, Cajetan proposed his own interpretation of Aquinas' doctrine of analogy, arriving at an independent doctrine that took into account also numerous criticisms and discussions generated by the critics of Aquinas. As Hochschild notes (2010, p. 24), Cajetan's doctrine of analogy "must be understood in light of a tradition of late scholastic reflection on analogy, and that in those facets of his theory that have seemed most original (…) he was taking cues from predecessors, working in and responding to a tradition which developed through the 14th and 15th centuries." This also includes Scotus.

Our brief reconstruction of Cajetan's work suggests that modern authors were faced with a complete history of analogy as a metaphysical term through this author. Not only did he systematize the Aristotelian-Thomistic concept of analogy, but he also incorporated later scholastic discussions, such as the Scotist critique of equivocation. Therefore, it is safe to assume that the discussion concerning the validity of analogical propositions in metaphysics and theology, grounded on the dispute between Scotus and Aquinas on the nature of univocity, was a core topic of any author who would embark on the convoluted process of making sense of analogy.

Hence, before leaving the Middle Ages to move towards early modern authors, three key points need to be remembered: firstly, the Aristotelian-Thomistic doctrine of analogy remained the pivotal reference for any thinker who attempted to discuss the nature of the concept in logic, physics, metaphysics, or theology. Secondly, Scotus' criticism introduced the

issue of the validity and utility of the analogical discourse: what can an equivocal predication grant in terms of knowledge of God? What benefit can metaphysics or theology gain from a limited and imprecise discourse? To these limitations, Scotus tried to oppose a revised univocity. Thirdly, the discourse concerning the analogy of proper proportionality (Aquinas' third kind) always implied a vertical ontological relationship between entities that participate in the same nature but according to different degrees. In the shift to modern authors, this vertical ontological relationship will be crucially reinterpreted, supporting the key modern ideas of the great chain of being and the analogy of nature.

4. Modern Theories of Analogy

Modern theories of analogies take many forms. Authors like Francisco Suárez developed medieval insights while remaining within the context of metaphysical and theological discussions. In contrast, Francis Bacon, Galileo Galilei, and Descartes turned the discussion with a scientific twist, representing those who fully embraced the Scientific Revolution.

As in the previous sections, my aim here is not to provide a complete picture of how each author conceived of analogy. Instead, I aim to reconstruct the major influential theories on analogy, which not only developed from the historical and theoretical framework that I constructed in the previous sections, but also profoundly influenced Kant in his early years.

The relationship of these authors with Kant must be further problematized: moving closer chronologically to the age when Kant lived, it must be taken into account how such modern authors influenced the philosopher from Königsberg. For this reason, in this section, I will discuss only theories of analogy that indirectly influenced Kant. With "indirectly", I suggest that, although we have extensive proof that Kant read texts from, for example, Newton, they nonetheless influenced only indirectly the intellectual panorama around the young Kant. According to my division, Kant's contemporaries in Germany are the figures who directly influenced his early philosophical development, and I will discuss their contribution in the next section.

Hence, I divide this section into three parts: early modern theologians (4.1), scientific theories of analogy (4.2), and the English panorama (4.3). Let us begin with early modern theologians.

4.1 Early Modern Theologians: Francisco Suárez

After Cardinal Cajetan, many theologians in Europe further developed theories on analogy during the first century of the modern age. Cajetan represented a point of reference since he systematically exposed the Aristotelian-Thomistic doctrine of analogy and included some further developments from Scotus and himself. Reading this systematic account, authors like Francisco Suárez developed their own theories of analogy, often trying to problematize Aquinas' and Scotus' views on equivocity and univocity.

In this section, I take Francisco Suárez as the central reference point of modern developments on the history of analogy from the perspective of theology and metaphysics. As Ashworth (1995) notes, Suárez's ideas on analogy convey important developments (while also overcoming crucial problems) coming from those theologians who reacted to the works of Aquinas and Cajetan in the late 15th and early 16th centuries. Nicolaus Cusanus (1401-1464), Dominic of Flanders (1425-1479), Paulus Soncinas (1440-1499), and Domingo de Soto (1494-1560) all contributed to a debate that saw Suárez as the culmination of centuries of theological debate concerning the nature of univocity between creatures and God.[17]

Let us briefly reconstruct Suárez's doctrine of analogy. Suárez problematizes analogies mainly in his *Disputationes Metaphysicae* (1866), where he develops his theory of intrinsic attribution with reference to God and creatures. For the sake of brevity, in this section, I will refer mainly to Thompson's reconstruction of Suárez's doctrine of analogy (Thompson, 1995), without neglecting direct references to the text when necessary.

Thompson (1995) highlights three essential steps in Suárez's construction of his theory of intrinsic predication: the rejection of proportional analogies (against Aquinas and Cajetan), the rejection of extrinsic analogies of attribution, and the defense of intrinsic analogies. This division also presupposes a critique of Scotus's overly strict univocity and the distinction between extrinsic and intrinsic analogies.

Let us start with Suárez's rejection of proportional analogies. To be more precise, Suárez does not reject proportional analogy in general, but he considers it an inadequate way to speak about the relationship between God and the creatures. This is because, according to Suárez, proportional analogy is always metaphorical and, therefore, it involves extrinsic denomination (*Disputationes Metaphysicae* 28, 33, 5). The division between extrinsic and intrinsic

[17] Considering the purpose of this work, I will refrain from dedicating further attention to all the mentioned authors, focusing instead on Suárez only. For those who are interested in further problematizing this debate, I suggest the following: Ashworth (1995) provides a detailed account of the relevance of Johannes Capreolus, Dominic of Flanders, and Paulus Soncinas for the development of Cajetan's systematization. Ashworth also uses Cajetan and Domingo de Soto (1494-1560) to explain how Suárez constructed his theory starting from Aquinas' commentators, Cajetan, and Scotus's doctrine of univocity. See also Ashworth (1996) for a more detailed account of the doctrine of analogy in Domingo de Soto. For a general overview of the passage from medieval to modern theories of analogy, see also Santiello (1984). For a reconstruction of the development of Aquinas's thought in Cusanus, see Oliver (2017).

denomination was already well known in medieval theories of analogy. However, it acquires a prominent relevance in Suárez, so it is worth understanding it in this context.

Essentially, this distinction refers to how a property, attribute, or perfection is predicated of an analogate, namely, the subject to which an analogous term is applied. Hence, this property can be predicated in an extrinsic way when the property is really found in only one of the terms of the analogical relationship so that the analogate can be connected to this property only metaphorically and indirectly. With regards to Suárez, Thompson writes, "all analogies of proportionality contain an element of metaphor and are thus unsuited for use in a science like theodicy or theology (1995, 358)." This is because when talking about God and the creatures, the term "being" offers a common nature for the analogical relationship. The perfection "being" is truly found in both God and creatures, but it differs in the way it is predicated. If we compare this to the discussed example of "health", we can see that "health" is a predicate that is transferred somehow indirectly to a diet. This transfer process is typical of proportionality. On the contrary, "being" is a term that does not need any proportional transfer since it is literally said of both terms of the analogous relationship. Hence, God and creatures share this similarity that unites them at the level of the *ratio entis* (concept of "being", see Thompson, 1995, p. 355).

This similarity in the *ratio entis*, which could be interpreted as a belief in the univocity between God and creatures, must coexist with the equivocity of the *modi predicandi entis*. Intrinsic analogical predication is always accompanied by the awareness of the specific way in which God is and creatures are. More specifically, in *Disputationes Metaphysicae* (28, 33, 7), Suárez argues that both God and creatures are absolutely "being", but one is "being" *per se*, whereas the other only in terms of participation (see also Thompson, 1995, p. 358).

Hence, Suárez's rejection of proportional analogy is based on the simultaneous rejection of extrinsic denomination in the case of divine predication. As Thompson (1995) suggests, this double rejection is a critique of Aquinas, Cajetan, and Scotus. The univocity in terms of *ratio entis* (which comes from the rejection of proportional analogy) is incompatible with Aquinas' belief in partial equivocity and Cajetan's version of proportional analogy. Moreover, the differentiation of ways of predication (*modi predicandi entis*) comes from a rejection of Scotus's too strict univocity between God and creatures.

The rejection of proportionality and extrinsic predication leaves Suárez with one alternative: intrinsic predication through analogy. "Being" is an intrinsic property of both analogates at stake; a perfection that still introduces an element of equivocity in the picture by being predicated in different ways in God and the creatures (depending on their degree of participation in it). Suárez finds in this way an analogical middle way which is of a different

kind if compared to Aquinas' theory. Thompson realizes this difference when he states that "Within Suárez's philosophical system, the analogy of intrinsic attribution is sufficient and the only proper way to speak of God (1995, p. 361)" and "If on the other hand, we uphold the metaphysics of St. Thomas, the analogy of attribution can only give a partial explanation of the language used in speaking of God (1995, p. 362)."

As I have suggested, within Aquinas, the commonality between God and creatures is an analogy that leans towards equivocity, rejecting a literal kind of univocity between the two. On the contrary, Suárez argues that there is univocity in the way "being" is predicated of the two subjects. However, this univocity is mitigated by the different ways of predicating the perfection.

This might seem an irrelevant distinction, but it highlights again the problematic way in which predication of the divine was carried out in medieval philosophy and in early modern theologians: Suárez seems more inclined to imply a constitutive way of predication of the divine since creatures and God share the same *ratio entis*. On the contrary, Aquinas remained more skeptical towards such a possibility, arguing for a kind of predication that remained limited and non-essential.

Hence, this brief reconstruction of Suárez's doctrine of analogy shows that the problem of the validity of metaphysical and theological discourse remained crucial also in theological debates of the early modern era. Philosophers debated on the validity of the knowledge obtained through analogy, offering sometimes constitutive views (Suárez, Scotus) or limited linguistic accounts (Aquinas, Cajetan). As I will discuss, the debate on the validity of the knowledge obtained through analogical predication remains crucial in Kant's precritical efforts.

4.2 Analogy in Natural Philosophy

I turn now to a radically different domain compared to that of theological and metaphysical doctrines of analogy. Modern natural philosophers made extensive use of analogies starting from pivotal figures such as Galileo Galilei, Francis Bacon, and Descartes. In this section, I discuss the use of analogy in these three pivotal figures of the modern era. I selected these three authors for two reasons: firstly, they offer an adequate picture of the treatment of analogy in modern natural philosophy; secondly, because they shaped Kant's approach to the scientific discourse in his early years, as I will discuss.

Their treatment of analogy was essentially influenced by the novel scientific spirit of this era: analogies became tools to represent reality and make it more comprehensible

instrumentally, but rarely were they used to explain what reality is. While the faith of these authors in mathematical tools rose exponentially during the first years of the Scientific Revolution, their attention to metaphysical and theological issues remained secondary, leaving attributive analogy and constitutive claims to other disciplines.[18]

The attempt to translate natural phenomena into a mathematical discourse is one of the pivotal aims of Galileo Galilei. As Daston (1984, p. 303) notes, this implies three factors: Galileo's aim is descriptive rather than explanatory; he described regular phenomena in mathematical terms; definitions and properties of these phenomena remain always at the level of observable objects.

These three points already take Galileo quite far from Suárez: no God or metaphysical entity is involved in his science. Galileo treats only quantifiable objects that could be translated into mathematical language. Precisely, the translation of physical properties into a mathematical language is one of the fields that involves analogies in Galileo. However, before discussing the three kinds of analogies in this author, it is worth commenting on the first point, namely, the distinction between explanation and description.

As Rossi (1989) notes, modern natural philosophers shared a repulsion for the search for the cause of phenomena. As a new methodological strategy, against Aristotle's natural philosophy (see Rossi, 1989, pp. 127–130), they aimed at building science from scratch, starting from observable phenomena and taking empirical evidence as the only source for scientific inquiry. Thus, rejecting the search for occult causes and the role of imagination in this enterprise (as also Daston stresses, 1984, pp. 302–303), authors like Galileo focused on finding a correct description of phenomena.

Let us now turn to Galileo and analogies. Daston (1984) differentiates between three kinds of analogies in Galileo: expository, explanatory, and mathematical. Expository analogies are used primarily to clarify or illustrate newly introduced concepts to the reader. Their primary function is to render abstract or unfamiliar subjects comprehensible, often by comparing them to familiar or simple phenomena. These analogies do not aim to provide causal or mechanistic explanations but serve an essentially pedagogical purpose.

Explanatory analogies go beyond mere illustration by providing a hypothetical model or mechanism that might underlie observed phenomena. They seek to furnish the intellectual framework for understanding causal processes or relationships. These analogies, for Galileo,

[18] For a complete introduction to the novelty of modern natural philosophy, I recommend Rossi (1989).

are highly problematic since they mislead the scientist during their research, which should always be faithful to empirical evidence rather than imaginary constructions.

Mathematical analogies are the most rigorous, grounded in quantifiable relationships and formal structures. They rely on precise mathematical reasoning, often involving equations or geometrical proofs, and are intended not just to suggest parallels, but to establish lawful correspondences between domains. Such analogies lay the foundation for demonstrating or deriving scientific laws.[19]

Of these three analogies, Galileo preferred the first one and often used the third kind. Neither of these aims at creating hypothetical causes that should explain the origin of phenomena, as the second kind did. In line with the spirit of his time, Galileo used analogies as an expository and pedagogic tool, never inserting any metaphysical claim in his work.

The case is different in Francis Bacon, who introduced a heuristic utility in the explanatory analogies. Bacon shared with Galileo the first use of analogies as expository tools to facilitate the comprehension of complex theories and make them more accessible to a broader audience. In her analysis, Park (1984, pp. 299–301) stresses the importance, for Bacon, of the construction of analogical models to foster the public dissemination of scientific ideas. As she suggests, this program was also shared by Galileo and Descartes. It was also noted in Bacon, a philosopher who believed that science could be made more accessible through a process of rhetorical presentation. This program finds a great precursor in Plato, who, as I have discussed, used myths to convey complex philosophical concepts through simple and more familiar images (Section I – 1).

Besides this expository role, analogies also acquire an explanatory function in Bacon. He would trust analogies so much to state that "there is no proceeding in invention of knowledge but by similitude (Bacon, 1857, p. 218)." As Park notes, Bacon shared the fear that the faculty of imagination could lead the scientist astray; nonetheless, he still believed that this faculty, which could not be eliminated from men's cognitive processes, could be helpful in heuristic terms if properly utilized. This conviction was supported by Bacon's belief that "the universe itself was structured by real correspondences and similitudes stretching from object to object and realm to realm (Park, 1984, p. 294)." This underlying natural unity justified the role of analogical reasoning, which enabled scientists to group diverse phenomena to create new

[19] Daston (1984) offers a precise reconstruction of all three methods of analogical reasoning (pp. 304–309). In her conclusions, she also argues that Galileo, eventually, is forced to use some explanatory analogies in the attempt to resolve problems such as the complicated nature of the physical concept of continuum. According to her view, he sometimes used analogies and imagination (in a quite Aristotelian sense) to construct relations between the macroscopic and the microscopic, or between the finite and the infinite. These sporadic cases did not change his idea concerning explanation in science, which remained secondary to the correct description of phenomena.

research hypotheses. Clearly, imagination should be limited to being inspired by nature, rather than creating imaginary entities and chimeras.[20]

At this stage, it is worthwhile to reflect on the concept of heuristic analogy. Bacon's analogies, as Park suggests, are "purely heuristic, for they suggest lines of inquiry but do not provide explanations (1984, p. 298)." Just like in Galileo, Bacon refrains from giving analogies complete explanatory use. Nonetheless, there is still some space for suggesting explanations, which could then be evaluated with proper experiments or logical arguments.

The underlying unity of nature is a crucial theoretical foundation for Bacon's claim insofar as it grounds the possibility of trusting what analogies suggest. Thus, analogical hypotheses are heuristic because they are not completely imagined (as chimeras) but rather derive from the special status of nature. As I will later discuss, this idea permeates modern theories of analogies and Kant's early treatment of the issue.

Shifting now to Descartes, the discussion of analogies becomes more structured. While authors like Gallison (1984) introduce Descartes' comparison method as a scientific tool to discuss the invisible through the visible analogically, other authors stress the role of analogies in Descartes' metaphysics (Marion, 1981; Agostini, 2016), reintroducing the debate between univocity and equivocity into the picture of modern philosophy of science. It is precisely because Descartes takes something from both worlds (natural philosophy and metaphysics) that a brief discussion of his theory of analogy is of great importance in preparation for Kant.

A crucial concept that brings scientific and metaphysical analogies together in Descartes is that of *comparaison*. The process of comparison is what provides the faculty of imagination of the proper material to bridge the gap from the visible to the invisible. However, comparing two different phenomena is not a mere pedagogical effort as it was for Galileo:

> In every train of reasoning it is by comparison merely that we attain to a precise knowledge of truth (…). Other than that which consists in the simple and naked intuition of single independent objects (all knowledge) is a matter of comparison of two things or more, with each other (1985, Vol. 1, Rule XIV).

Far more important than expository analogies, comparisons between similar phenomena are the key to grasp knowledge in new domains, as specified by Descartes: "The chief part of our human industry consists merely in so transmuting these ratios as to show clearly an equivalence

[20] Park further explains Bacon's way of limiting the powerful imagination by dividing Bacon's natural philosophy into the three stages: natural history, physics, and metaphysics. See pp. 297–299 for a full explanation, which is beyond the aim of this work.

between the matter sought for and something else already known (1985, Vol. 1, pp. 55–56).” Galison summarizes Descartes’ position on comparisons through analogies in science with these words: “For Descartes, the natural philosopher is in just such a position, struggling to assess the hidden mechanisms of nature from superficial appearances and from his knowledge of similar, though larger, machines (1984, p. 326).”

Descartes’ attempt in natural philosophy is to construct an analogical discourse concerning unobservable entities through comparison with known ones. As Galileo and Bacon taught, this operation must be based on a specific criterion; otherwise, imagination works freely and creates chimeras. Hence, Descartes wrote:

> But in the analogies which I employ, I compare movements only with other movements, or shapes with other shapes; that is, I compare things that are too small to be perceived by the senses with other things that can be so perceived, the latter differing from the former simply as a large circle differs from a small one. I maintain, therefore, that analogies of this sort are the most appropriate means available to the human mind for laying bare the truth in problems of physics. I would go so far as to say that, when someone makes an assertion concerning nature which cannot be explained by any such analogy, I think I have demonstrative knowledge that the point is false (1985, Vol. 3, pp. 120-123).

Descartes’ criterion is a certain univocity between the two elements compared, which must be of the same kind (shapes with shapes, movements with movements). Hence, analogies in natural philosophy, according to Descartes, are not limited to an expository use. However, neither are they properly explanatory: they do not offer explanations of the true causes of phenomena, but rather, they provide a valuable source for creating a discourse concerning unobservable entities. Rather than starting from the invisible cause and, subsequently, deriving the explanation of phenomena, Descartes inverted the order, using phenomena as a basis for the deduction of information concerning the unobservable.

By enabling predication of the unknown, these comparative analogies reintroduce to the picture the question concerning the validity of such novel discourse: are unobservable entities describable by the same attributes that the scientist employs for observable objects? Following Rule XIV, comparison yields a “precise knowledge of truth,” which could suggest the constitutive capability of this method. Descartes’ stance towards metaphysical analogies further problematizes this position.

According to both Marion (1981) and Agostini (2016), while faced with the problem of divine predication, Descartes remains on the side of equivocity. Specifically, Agostini argues

that Descartes' doctrine of *sui causa* offers a hint of the author's attempt to answer the problem of divine predication by utilizing his method of comparison. Rather than treating analogy as a typical metaphysical doctrine of proportionality or attribution, Descartes reflects on the nature of the efficient cause and builds a comparison with the formal cause.[21] For this work, it is enough to understand that analogical comparison allows the predication of something related to God: its ability to be the cause of itself. This predication, even though it remains equivocal,[22] offers nonetheless more than a heuristic suggestion of what the direction to take might be for the theologian to talk about God. The *sui causa* doctrine suggests an accurate predication of an attribute of God, thus yielding constitutive knowledge about the divine. As Agostini puts it, "(…) the analogy of the *sui causa* does not have merely a heuristic value, but constitutes a demonstration in its own right (…) (2016, p. 151)."

With the reintroduction of the univocity-equivocity debate in modern philosophy, Descartes offers a chance to reflect on the historical development of the doctrines of analogy so far. In particular, the discussion on the validity of analogies from a constitutive perspective breaks the history of the concept of analogy into two parts: those who conceive of it merely as an instrumental tool to describe the invisible or metaphysical, and those who rely on the analogical power of describing the sought item, claiming that true knowledge of unobservable entities could be obtained through this method. According to this interpretation, surprising similarities across eras emerge: Plato, Aquinas, and Galileo, for example, are united by their shared skepticism regarding the possibility of creating a constitutive language of analogical predication. Their use, respectively, of myth, limited equivocity, and expository discourse all suggest a particular attention not to overstep the limits of logic or empirical evidence. On the contrary, Aristotle, Scotus, Suárez, and Descartes profess a particular faith in the capabilities of analogies to grasp true knowledge of metaphysical entities. A certain commonality between the two members of the analogous relationship, regardless of the univocal (as in Suárez) or equivocal (as in Descartes' metaphysics) nature of this commonality, allows the natural

[21] The nature of the *sui causa* analogy is explained by the "analogous extension of the concept of efficient cause to that of formal cause or essence, carried out according to the model of mathematical procedures based on the extension of the concept of a circular line to that of a straight line, or of a rectilinear polygon with infinite sides to that of a circle (Agostini, 2016, p. 152)." The predication of a nature of God, namely that it can be the efficient cause of itself, depends on an analogous comparison between the two concepts of cause.

[22] For an extensive explanation of Descartes' placement in the equivocity-univocity debate, I suggest Marion, 1981, particularly *Livre 1*. Here, Marion suggests that, from a scientific perspective, Descartes proposes a certain univocity between the subjects of analogy, which must pertain to the same nature in order to be valid. However, from a metaphysical perspective, the *sui causa* analogy (pp. 427–443) suggests that divine predication depends on a clear distinction between the two natures, which can nonetheless be compared with each other. This double nature of analogy (univocal in science and equivocal in metaphysics) is also problematized by Agostini (2016, pp. 145–146).

philosopher, the metaphysician, or the theologian to construct a more-than-heuristic predication, which must be considered as truly valid.

As a general remark, I maintain that, taking into account the relevant exceptions, those thinkers who lean towards the univocal side of analogy are usually inclined to believe in the power of this argumentative tool. In contrast, those who lean towards equivocity remain skeptical, but ready to accept a heuristic utility of the analogical method.

The double nature of the analogical discourse (scientific and metaphysical) will emerge again in the discussion of Kant's early works. As I will discuss, the treatment of a certain univocity in the continuity of nature in his early physical works will be paired with a tendency to equivocal predication once the problem of the validity of the metaphysical discourse becomes pivotal in his works of the mid-1760s.

4.3 British Influences

In his *Principia Mathematica* (1983), Newton introduced the analogy of nature as the third rule of reasoning in philosophy:

> The qualities of bodies, which admit neither intensification nor remission of degrees, and which are found to belong to all bodies within the reach of our experiments, are to be esteemed the universal qualities of all bodies whatsoever. For since the qualities of bodies are only known to us by experiments, we are to hold for universal all such as universally agree with experiments; and such as are not liable to diminution can never be taken away. We are certainly not to relinquish the evidence of experiments for the sake of dreams and vain fictions of our own devising; nor are we to recede from the analogy of Nature, which is wont to be simple, and always consonant to itself. We no other way know the extension of bodies than by our senses, nor do these reach it in all bodies; but because we perceive extension in all that are sensible, therefore we ascribe it universally to all others also (1983, pp. 398–399).

This passage introduces many themes that must be discussed to correctly grasp the origin of Kant's early take on analogies, especially concerning his *Allgemeine Naturgeschichte*. The analogy of nature is a construct that conceals a long tradition, especially in seventeenth-century England. Hence, in this section, I will briefly discuss the origin of this concept, providing an overview of the British influences on the early works of Kant.

In order to properly understand Newton's analogy of nature, two parallel philosophical topics must first be explained: the problem of transduction and the theory of the great chain of beings.

In paragraph 4.2, I introduced analogy in natural philosophers such as Galileo or Descartes, who used this tool as an argumentative aid to infer properties of the unknowable through what is known to the senses (empirical evidence is always the basis of such argumentation). In the seventeenth century, many philosophers declined this known-unknown dichotomy in terms of an atomistic view of the universe.[23] The general question was whether there could be any justification to infer properties of unobservable entities, such as the elemental particles of nature, starting from the empirical evidence concerning observable nature. Traditionally, this has been referred to as the problem of transduction.[24]

McGuire (1970, pp. 6–15) offers a synthetic reconstruction of how prominent modern authors such as Locke, Gassendi, Boyle, and Leibniz all placed their ideas on the spectrum of the atomistic dichotomy between observable and unobservable, postulating the existence of simple and primordial atoms that constitute the entirety of the observable bodies in nature. Newton shared a similar idea, suggesting that the constitution of the world is based on a division between *corpus* and *particula*:

> Now the smallest Particles of Matter may cohere by the strongest attractions, and compose bigger Particles of weaker Virtue… and so on for divers successions, until the Progressions end in the biggest Particles on which the Operations in Chymistry, and the Colours of natural Bodies depend, and which by cohering compose Bodies of a sensible Magnitude (1952, p. 394).

The distinction between observable bodies and simple substances had a prominent ontological relevance in seventeenth-century England, so that McGuire describes it as the "new ontology in England (1970, p. 8)," and Passmore inserts it in what he calls the theory of "Two-Worlds (1961, p. 38)." McGuire (pp. 16–21) further notes that the problem of transduction took a particular metaphysical turn on the continent, where authors like Galilei, Leibniz, or Descartes attempted to find a metaphysical answer. In contrast, it took a different direction in England, where the empiricist approach dominated the scene.

[23] See Chalmers (2019) for a reconstruction of the history of atomism in modern and contemporary scientific thought. Chalmers also dedicates an entire section to Newton's form of atomism. On this, see also McGuire (1970). For a reconstruction of atomism in ancient, medieval, and contemporary times (with special reference to Newton), see also Lasswitz (1890).
[24] A lengthy introduction to the problem of transduction can be found in Mandelbaum (1964). McGuire (1970) also discusses at length the nature of transduction in modern philosophy.

Be that as it may, the division of the ontology of nature into two worlds, which comes as a consequence of a renowned atomistic tendency in seventeenth-century England, brings the problem of transduction as a heavy burden: once the world has been split into two, what is the relationship between these two parts? What is the relationship between the objects of the two worlds? Can attributes of the bodies be predicated of the simple components? The widespread theory of the great chain of being offers an answer to these questions.[25]

British modern authors frequently referred to this theory in connection with the analogy of nature. McGuire meticulously reconstructs the influence of such an idea in authors contemporary to Newton (1970, pp. 28–38). In his *Experimental Philosophy*, Henry Power professed a belief in the existence of a continuous (and metaphysical) chain linking bodies at all levels, allowing the application of what is valid for the macrocosm to the microcosm. Similarly, Ralph Cudworth uses this doctrine to argue for a particular priority of the spiritual over matter, thus suggesting that the whole universe is linked by a progressive ladder, where less perfect bodies are linked with more perfect ones, reaching God at the top of the pyramid. Joseph Glanvill, then, offers a similar reconstruction, connecting the theory of the great chain of being with the concept of the analogy of nature with these words:

> And that all the upper Stories of the Universe are furnished with Inhabitants, 'tis infinitely reasonable to conclude from the Analogy of Nature; since we see there is nothing so contemptible and vile in the World we reside in, but hath its living Creatures that dwell upon it; the Earth, the Water, the inferior Air, the Bodies of Animals, the Flesh, the Skin, the Entrails, the Leaves, the Roots, the Stalks of Vegetables; yea, and all kind of Minerals in the subterraneous Regions. I say, all these have their proper Inhabitants; yea, I suppose this Rule may hold in all distinct Kinds of Bodies in the World, *That they have their peculiar Animals*. The Certainty of which, I believe, the Improvement of micro-scopical Observations will discover. From which I infer, That since this little Spot is so thickly peopled in every Atom of it, 'tis Weakness to think, that all the vast Spaces above, and Hollows under Ground, are desert and uninhabited. And if both the superior and lower Continents of the Universe have their Inhabitants also, 'tis exceedingly improbable, arguing from the same Analogy, that they are all of the meer insensible Nature, but that they are, at least, some of the rational and intellectual Orders (1966, p. 5).

[25] Lovejoy (2001) is an unescapable reference for the study of the history of the idea of the great chain of being in philosophy. In this work, I do not wish to offer a broad overview of the entire history of this idea. I focus merely on the modern British context, where the idea was intimately connected to the concept of the analogy of nature. Both Newton and Kant, as I maintain, were greatly influenced by this doctrine.

According to Glanvill, the improvement of scientific tools will, eventually, allow the observation of hierarchies in nature, organized according to a continuous link that permits the passage from the visible to the invisible, from the known to the unknown, from the empirically true to the analogically true.

Locke takes part in this group of philosophers by ascribing to the view that analogy is the way in which man can get to know what cannot be observed starting from what is known. His *Essay concerning Human Understanding* is filled with references to a nature without jumps, which progresses according to an ordered and continuous chain of things:

> Thus, finding in all parts of the Creation, that fall under human Observation, that there is a gradual connection of one with another, without any great or discernible gaps between, in all that great variety of Things we see in the World, which are so closely linked together, that, in the several ranks of beings, it is not easy to discover the bounds betwixt them, we have reason to be persuaded that, in such gentle steps Things ascend upwards in degrees of perfection. 'Tis a hard matter to say when Sensible and Rational begin, and where Insensible and Irrational end; and who is there quicksighted enough to determine precisely which is the lowest Species of living things, and which the first of those which have no life?... Observing, I say, such gradual and gentle descents downwards in those parts of the Creation that are beneath man, the Rule of Analogy may make it probable, that it is so also in things above us and our observation; and that there are several ranks of intelligent Beings, excelling us in several degrees of perfection, ascending upwards towards the infinite Perfection of the Creator, by gentle steps and differences, that are every one at no great distance from the next to it. This sort of probability, which is the best conduct of rational Experiments, and the rise of Hypothesis, has also its Use and influence: and wary Reasoning from Analogy leads us often into the discovery of truths and useful productions, which would otherwise lie concealed (1975, 4.16.12, pp. 339–340).

Locke's thoughts are crucial: analogy leads to the discovery of truths. Such a claim can safely be considered constitutive insofar as it maintains that what analogy discovers is philosophically and scientifically valid.

It is time now to go back to Newton's quote and the analogy of nature. As I discussed, the concept of the analogy of nature must be understood in relation to the idea of a great chain of being, since these two views are essentially intertwined. As McGuire (1970) notes, Newton's solution to the transduction problem was a continuist view of the relation between composite bodies and their constituent particles. He writes:

> Put simply, the gap between composite bodies and constituent particles is filled by a chain of bodies imperceptibly changing one into another until the elemental simplicity of voidless primordial particles is reached. Thus knowledge of essential qualities of sensible bodies is more securely transferred to the imperceptible in terms of the postulation of a chain which exists between the two orders (1970, p. 40).

Newton uses this ontological basis to construct knowledge about two kinds of unobservable phenomena: elementary particles and unobservable celestial bodies. The continuity of nature allows for the analogical application of rules that apply to observables (such as gravity) to all the rest of the bodies. Hence, the law of gravity can be safely generalized as a universal law.

The metaphysical doctrines of the unity of nature, which are paired with the idea of the great chain of being, lie at the core of the British empiricist tradition that I discussed in this section. Especially in the case of Newton, the topic of the relation between the two worlds (visible and invisible) is intimately connected to the idea of the analogy of nature. There is substantial evidence that Kant was heavily influenced by Newton during his early years as a philosopher in Königsberg.[26]

Leaving the analysis of Kant's knowledge of the British discussion to a later point in this treatise, I want to add a final remark on the nature of the transduction debate in seventeenth-century England. The analogy of nature has been described as a constitutive doctrine that grounds the validity of inferences from the observable to the unobservable through the ontological-metaphysical doctrine of the great chain of being. The constitutive claims coming from this theory are of a specific kind: predication concerning the invisible still regards an invisible that is part of the bodily structure of the universe. In other words, all of the discussed authors use metaphysical doctrines to ground the passage from the empirically visible to what is invisible, but technically material. Immaterial invisibles, such as God or souls, are problematic issues in this regard.

If God, for example, is reintroduced into the picture, the great chain of being seems to imply a certain univocity between the entities involved in it. If God is the ultimate end of the great chain, nothing prevents us from claiming that the "being" of God shares something with the "being" of all the creatures in the big continuative chain. In other words, the provocative

[26] On the British influences on Kant, see Kuehn, 2001, 154-158 and 194-201. The primary source of Kant's knowledge of Newton, however, was undoubtedly Martin Knutzen, his teacher and mentor during Kant's last student years. Knutzen's work, which focused primarily on astronomy and physics, was heavily influenced by British authors. Kant's free access to Knutzen's library justifies the influences of these ontological and metaphysical ideas in his early work *Allgemeine Naturgeschichte*, as I will later discuss. On this, and also on the relevance of Locke in Kant, see Kuehn, 2001, pp. 78–86.

question here is: is God part of the chain, and therefore univocal with it, or is it equivocal and external to it? Can there be an analogical middle way to position God as the creator of the chain that participates in it while remaining essentially distinguished from it?

All of these theoretical problems are the origin of frequent discussions among modern authors, who argue about God's direct or indirect involvement in the course of nature. This is an issue that will also return in Kant's precritical works, as I will show. My aim here is limited to pointing out that the univocity-equivocity debate determines the status of analogies also at this point in the history of Western thought. The problem, again, reduces to this: if the analogical discourse can be constitutive in modern natural sciences, where there is univocity between the starting item and the sought item, what is the status of the analogical discourse in cases where one of the two members of the analogy is neither physical, nor observable, nor does it share a common nature with the similar known object?

5. Kant and his Contemporaries

In this section, I provide a reconstruction of the most relevant philosophical currents and an overview of the pivotal authors' ideas on analogies in Germany during the seventeenth and eighteenth centuries. The criterion followed for the selection of the authors and philosophical currents analyzed comes from the direct influence that these had on Kant.

Numerous sources attest to the myriad names and currents that directly influenced the young Kant during his early years at the University of Königsberg. The first one, worth mentioning at this stage, is Giorgio Tonelli's *Elementi metodologici e metafisici in Kant dal 1745 al 1768* (1959). In his work, Tonelli provides a precise reconstruction of the major philosophical currents that characterized Kant's Germany, dividing them into three main groups. This approach is also shared by Erdman (1876), who, while discussing the intellectual panorama in Königsberg between 1700 and 1750, dedicates three different paragraphs to *Aristotelismus, Pietismus,* and *Wolfianismus*. Following these authors, I divide the most relevant philosophical currents into three groups: scholastic Aristotelianism, the Wolffian tradition and its development, and Pietism.[27]

[27] It is worth remembering that such division between philosophical currents cannot be taken too literally. Most of the figures that I will discuss can be characterized as eclectic, sometimes taking from the Aristotelian tradition, sometimes moving towards a Wolffianism that included also influences from abroad (especially France and England). Hence, this division serves primarily the purpose of a clear exposition of the myriads of authors prior to Kant who influenced him. For an example of an alternative division, see Beck (1969).

In Tonelli's work, great attention is devoted to the identification of those figures who represented such philosophical or religious currents, thus offering an initial map to understand Kant's indebtedness to his contemporaries properly.

Wolff (1679–1754) is identified as progenitor of a long-standing tradition of thought that extends to Baumgarten (1714–1762), Meier (1718–1777), Knutzen (1713–1751), and Mendelssohn (1729–1786), to mention only some figures. Tonelli himself notes that Kant's relationship to this group of philosophers is ambiguous: although the young Kant has often been labeled a Wolffian, Tonelli argues that his philosophical orientation, especially as evidenced in the early precritical writings, is more eclectic, thereby yielding the image of a thinker ranging from Wolffianism to the German Lutheran Aristotelian tradition (p. XIX).

Authors as Baumgarten and Meier, who represent an evolution of Wolffianism that diverges from it in certain respects, thus become key interlocutors for understanding the young Kant's thought. Unsurprisingly, Professor Kant would cite Meier's logic and Baumgarten's metaphysics as valuable points of reference (see Tonelli, 1959, pp. XV–XX).

By contrast, figures who developed out of orthodox Wolffianism and became eclectic, partly under foreign influences, include Knutzen (1713–1751), Kant's teacher, and Mendelssohn (1729–1786), both a friend and a rival of Kant.

With respect to the Pietist tradition, the leading figure in Kantian Germany is Crusius (1715–1775), opponent of the Wolffianism that was ascendant in German universities. As Tonelli observes (an assessment corroborated by the most up-to-date biographies of Kant)[28] the *milieu* into which Kant was born and in which he was raised was permeated by Pietism and its associated religious ideals. There is thus no doubt that, as he grew up, Kant encountered the writings of this religious movement, which asserted itself with fervor in Germany during the latter half of the seventeenth century.

Beyond Pietism, the Berlin Academy positioned itself among the critical currents opposed to Wolffianism. As Tonelli notes (p. XVII), its presidency was repeatedly entrusted to figures of Francophone or Swiss provenance, exerting significant influence on the German intellectual landscape of the period, with Maupertuis (1698–1759) standing out in particular. Tonelli also mentions several minor authors and currents (the German Spinozism of Lau and Fischer, contemporaries of Kant in Königsberg, along with marked English influences from the latter half of the eighteenth century), which undoubtedly played a role in the German

[28] See Kuehn, 2001, pp. 34–55 for a reconstruction of Kant's relationship with Pietism in his youth. For an introduction to the relationship between Kant and Pietism, I recommend Wood (2020), especially chapter one.

intellectual field between the seventeenth and eighteenth centuries; however, dwelling on them here would lead too far from the central focus of this study.

What must be clarified at the outset of this final section, before turning to Kant's works, is the role of the Lutheran Aristotelian-Scholastic current upon which all the aforementioned movements, whether critically or in continuity, rested. It is with reference to this current, therefore, that the reconstruction of the most salient influences for the young Kant will begin, consistently emphasizing the contribution that each group's principal authors made to the history of analogy as a philosophical concept.

5.1 Aristotelianism and Transcendental Philosophy

The influence of the scholastic interpretation of Aristotle in early modern Germany is a complex topic, one that is directly interwoven with the issues raised in the preceding sections of this chapter. The works of Hinske (1968), Rumore (2007), and Tommasi (2008) provide invaluable guidance in tracing the connection between the problem of predication, introduced earlier, and the theme of the transcendental within the German Lutheran Aristotelian tradition. The focus of this paragraph is devoted to how leading thinkers in late seventeenth- and early eighteenth-century Germany recovered Aristotelian conceptions of *analogia entis*, thereby restoring the question of transcendental terms to the center of logical and metaphysical debate in German universities.

As mentioned in the paragraph on Aristotle (Section I – 2), transcendental terms, like *ens*, are at the core of the metaphysics of analogy. These terms represent a common focal point that allows a predication that, depending on the historical period or the author at stake, sometimes leans towards equivocity and sometimes towards univocity. As I have argued, the possibility of predicating these transcendental terms in analogous ways is at the core of the medieval discussions aiming at bridging the gap between creatures and the divine.

Hinske (1968) recognizes the relevance of the medieval authors in transmitting the Aristotelian doctrine of transcendentals to the German modern authors of the seventeenth century, particularly focusing on three crucial names: Johann Heinrich Alsted (1588–1638), Christoph Scheibler (1589–1653), and Johannes Scharf (1595–1660). Hinske notes that, according to these authors, metaphysics was essentially a synonym of philosophy of the transcendentals, recognizing that the analysis of terms like *ens*, *bonum*, *verum*, *etc.*, used in connection to the first predicaments, characterized the central philosophical issue in metaphysics.

Alsted's *Metaphysica* (1620) divides this branch of philosophy into two: *Metaphysica generalis*, the study of transcendentals, and *Metaphysica specialis*, the study of Aristotle's predicaments. The same holds for Scharf, who treats metaphysics as the doctrine of transcendentals in his *Metaphysica exemplaris* (1655). In his work, the doctrine of transcendentals always aims at solving the problem of divine predication, which can be tackled through the analogical relationship of a prior to a posterior, thus following earlier medieval theories of analogy.[29] Hence, the problem of predication is intimately connected to the ambiguous status of analogy, which remains between univocity and equivocity. In his *Opus metaphysicum* (1657), Scheibler leans toward the side of equivocity, marking a distinction between the *ens* of creatures and that of the divine, which his spiritual teacher, Suárez, would criticize.[30]

Hinske (1968) is skeptical concerning the possibility that Kant knew these texts directly during his student years. The *Vorlesungsverzeichnisse der Universität Königsberg (1720 – 1804)* (Oberhausen, M., & Pozzo, R., 1999), however, prove that Kant was influenced by the followers of these intellectuals in Germany.[31] One of the figures who held courses on poetry and rhetoric was Thomas Burckhard (1686–1744), an Aristotelian who taught at the Albertina for nearly thirty years (and when Kant was a student there). This professor used Franz Albert Aepinus' (1673–1750) work on metaphysics, *Introduction in philosophiam*, as a reference manual for his lectures.[32] As Hinske (1968) and Tommasi (2008) note, Aepinus was considered among the most influential Aristotelians alive at his time, gathering influences from the three authors I introduced before (Alsted, Scharf, Scheibler) to produce a doctrine of the analogical

[29] "Sed & hoc notabile est, quod conceptus Entis in respectu ad immediate inferiora sit analogicus. Sic analogice πρὸς ἓν καὶ ὁμώνυμον, tribuitur ens Deo & creaturis. Creatura est Ens & Deus est ens, sed ita tamen per analogiam, ut Deus primario sit Ens & independenter, sed creatura secundario Ens dicitur, & dependenter a Deo: quia nisi Deus Ens esset, hoc est, nisi Deus revera esset, nulla creatura essentiam habere posse, quandoquidem omnem suam Entitatem unice habet a Deo per creationem. Sic Ens analogice tribuitur Substantiae & Accidenti; revera quidem, et Substantia et Accidens est Ens, sed ita per analogiam, ut Substantia per se sit, adeoque primario Ens sit." (Scharf, 1655, I, chapter 1, p. 21).

[30] "Igitur Ens, qua Ens est, est subjectum Metaphysicae. Hoc prius explico. Ens in praesenti sumitur, juxta famosius & principalius suum significatum. Analogia enim per se posita stant pro suo significato famosiori, ut vulgaris habet regula. Proinde de quocunque dicitur Ens per posterius sive aequivoco & transsumpta ad id appellatione Entis, ob aliquam similitudinem cum ipso, id nunc voce entis non venit. Atque ita per se in praesenti, intelligitur Ens reale & positivum, quodque non per aggregationem sed per se Unum est. Nam Ens rationis & negationes & entia per accidens, non sunt nisi aequivoco entia, ut supra dictum est." (Scheibler, 1657, I, chapter 1, pp. 40 – 41). See also Lamanna (2016).

[31] See in particular Vol. II, p. 751.

[32] See in particular Tommasi (2008, pp. 63–65). Burckhard stopped referring to Aepinus in his programs for his lectures from 1728 onwards, while Kant started to attend his lectures in 1740. However, Tommasi argues that, in all probability, Burckhard kept using Aepinus as a reference point for his lectures, which always remained centered on his Aristotelianism. Hence, it can be safely argued that Kant got to know the tradition of the *philosophia transcendentalis* mainly through Burckhard. Tommasi writes "nonostante la menzionata distanza temporale tra l'ultimo riferimento eplicito ad Aepinus (1727) e gli studi di Kant (1740–1744), appare pressoché impossibile che l'aristotelismo tedesco fosse completamente scomparso nell'ambiente di Königsberg (Burckhard rimanda direttamente a questa corrente e lo stesso Aepinus muore solo nel 1750) e che di conseguenza Kant non abbia avuto almeno conoscenza mediata della *Philosophia transcendentalis* di Aepinus." (pp. 67–68).

application of categories from metaphysics to other disciplines, and recovering the Aristotelian-Thomistic doctrine of the *analogia entis*.

Aepinus can be described as a moderate rationalist. Some of his principal ideas include the consideration of the principle of non-contradiction as the foundation of metaphysics, the identification of metaphysics with the science of transcendentals, the collocation of metaphysics as the origin of other disciplines, to which its tenets can be applied analogically, and the analogical treatment of "*ens*", substantially in continuity with the Aristotelian-Thomistic tradition.[33]

Beside Aepinus, Rumore (2007) reconstructs the Aristotelianism in Königsberg by mentioning a long list of Aristotelian professors who held the chair of Logic and Metaphysics at the Albertina, among which we remember Paul Rabe (1656–1713), Johann Boese (1683–1719), Johann Jacob Rohde (1690–1727), and Georg Thegen (1651–1729). This reconstruction creates a picture of Königsberg as one of the centers of the Aristotelian tradition in Germany at least until the first half of the eighteenth century, thus suggesting that Kant must have been, at least indirectly, in touch with this tradition.

It is worth mentioning here also that Tonelli (1964) argues that Kant's encounter with modern scholastic Aristotelianism depends on Joachim Georg Darjes (1714–1791), Johann Heinrich Lambert (1728–1777), and Johann Nicolas Tetens (1736–1807), contemporaries of Kant who eclectically embraced some Aristotelian doctrines of the times. For the sake of brevity, it is enough to note that Kant encountered, directly or indirectly, the German scholastic Aristotelianism during his early years at the university. This philosophical current developed in Germany through the influence of scholastic philosophers and saw Alsted, Scharf, and Scheibler as pivotal authors among others. Subsequently, Aepinus systematized the Aristotelian doctrine of transcendentals and *analogia entis* (with a Thomistic influence) into the manuals that Burckhard used during his lectures. Kant encountered this current, and, therefore, the Aristotelian-Thomistic doctrine of analogy probably directly during such lectures, and surely indirectly by living in such a cultural climate, as argued by Rumore (2007).

Before shifting the focus to the second group of influential authors, it is worth spending some words to clarify the importance of the discussion concerning the transcendentals in the *Kant-Forschung*. As I have shown, there is extensive material concerning the history of the term "transcendental", ranging from the analysis of the historical origins of the term to the discussion of the meaning of the term before and after Kant's critical works. Tonelli (1964),

[33] See Aepinus (1714), *pars* II, *cap.*1 "*Principiis essendi enti*" and *cap*. 2 "*Principiis cognoscendi entis".*

Hinske (1968), and Tommasi (2008), to name only a few,[34] all argue for a drastic differentiation between how the term was used by these authors and by the Kant of the critical period. Nonetheless, it is equally clear that the young Kant was intimately connected to a tradition that kept the discussion concerning the analogical nature of transcendentals alive. This is Kant's first contact point with the long-standing quarrel between the supporters of univocity and those of equivocity in analogical inferences. As I will argue, Kant's new understanding of the term in his critical philosophy was prepared by the precise awareness of this long-standing tradition, according to which the attempts to provide an analogical discourse about God were still inclined towards constitutive aims.

5.2 Wolff

Let us now reconstruct the influence on the German intellectual landscape and on the discussion concerning analogy in one of the pivotal figures of modern philosophy: Christian Wolff (1679–1754). I will first introduce Wolff's relationship with Kant, before dealing with his conception of analogy and, finally, discussing the development of his doctrine among his followers.

It must be noted from the outset that a lot of the difficulties of the previous section disappear when talking about the relationship between Kant and Wolff. While Kant's contact with Protestant Aristotelianism required special attention to be understood, Wolff's influence on the young philosopher is immediately evident. Direct mentions of Wolff appear in the first treatises published by Kant. In his *Gedanken von der wahren Schätzung der lebendigen Kräfte* (1747), Kant criticizes strongly Wolff's estimation of living forces, both lamenting a "verbose and unintelligible (§103, 1:113)" style and method and a wrong argumentation.[35] Moreover, Wolff also comes back in Kant's *Nova dilucidatio* (1755) as the object of a criticism concerning the nature of the principle of sufficient reason (Section II, IV), its justification (Section II, VIII), and in Kant's discussion of his principle of succession (Section III, XII). To mention another work, the Leibniz-Wolffian theory of monads plays a crucial role also in *Monadologia physica*

[34] Doyle (2012, pp. 189–190) writes: "Thus, while Scholastics (whether one thinks of St. Thomas or of "decadent Scholasticism") evidently believed transcendentals to be most general properties of things in themselves, Kant's transcendentals are on the side of knowledge. In effect, they are *a priori* conditions presupposed by the very enterprise of knowing." Discussions concerning the role and history of the transcendental in Kant grew consistently in the twentieth century, starting from the works of Gideon (1903) and Knittermeyer (1920), with Tommasi representing only the latest systematic attempt to reconstruct the origin of this term in Kant's writings.

[35] See in particular §§103–105 and Supplement IV.

(1756), where Kant attempts to reconcile the metaphysical theory of monads with the Newtonian laws of attraction and repulsion.[36]

To this direct proof, it must be added that secondary literature stresses the relevance of Wolff (and Pietism) as the two leading currents in late seventeenth- and eighteenth-century Germany. Erdman (1876), Campo (1939), Tonelli (1959), Wundt (1992), Rumore (2007), Sgarbi (2013), to name a few, all note the progressive relevance of Wolff's philosophy in Germany, especially after the publication of his *Deutsche Metaphysik* (1719-1720). Particularly, Rumore (2007, pp. 26–30) argues that even the most Aristotelian figures in Königsberg, during the first half of the eighteenth century, started to move towards eclectic positions, incorporating some tenets of Wolff's philosophy into their philosophical ideas. One of these figures will be Joachim Georg Darjes (1714–1791), as I will discuss later. Tonelli (1959, p. XIX), moreover, pictures Kant as one of those eclectic philosophers who took a lot from Wolff, but also developed critically his own positions, embracing a mixture of Aristotelian, Leibnizian, and Lockeian influences.

Reconstructing in more detail the influence of Wolff in Königsberg is beyond the scope of this work. It suffices to say, as argued, that Kant knew Wolff's texts and his doctrines directly, making this author an inescapable reference point for this work. Bearing this in mind, I turn now to the analysis of the role of analogies in Wolff.

Tommasi (2011) summarizes the different occurrences of the term in Wolff's *oeuvre* by distinguishing three different cases: analogy as a synonym of "similarity", analogy as a hermeneutical tool, and analogy in his proof of the existence of God. The first occurrence is related to empirical and rational psychology and is not relevant to the aim of this work since it represents a case of simple synonymity.

The second occurrence offers a means to disentangle contradictions emerging from biblical texts. Tommasi (2011, pp. 5–7) refers to it as the *analogia fidei* (analogy of faith): a hermeneutical principle according to which every interpretation of Scripture must preserve cohesion and coherence with the whole of the Christian faith, that is, with the integral content of revelation and the truths believed by the Church in their mutual consonance. Originally, it alludes to *Romans 12:6*, where *analoghía* denotes measure, or proportion to faith, meaning that any given passage is to be understood in proportion to the entirety of the faith, and not in an isolated or contradictory manner.

[36] Kant's critical stance against Wolff continues in almost all his precritical works. For a complete overview, I recommend Campo's *Cristiano Wolff e il razionalismo precritico* (1936).

Thirdly, and most importantly, Wolff uses analogies in his *Gottesbeweis*. In his *Ontologia* (1730), to propose his argument for the existence of an *ens perfectissimum*, Wolff differentiates between two kinds of *ens*: "Since anything whatsoever either is or is not (§ 53), every being is either a necessary being or it is not a necessary being. Therefore, since a contingent being is that which is not necessary (§ 310), every being is either a necessary being or a contingent one."[37]

What is relevant for my purposes is that Wolff introduces two levels of being, one necessary and one contingent. Despite their difference in terms of mode of being (one is contingent and one is necessary), these two are both kinds of being. Although Wolff does not mention analogies directly, the nature of his argument shows that a Scotian conception of univocity underlies his proof:

> A necessary being exists. The human soul exists (§ 21 of Empirical Psychology), that is, we ourselves exist (§ 14 of Empirical Psychology). Since nothing is without a sufficient reason why it is rather than is not (§ 70 of Ontology), a sufficient reason must be given for why our soul exists, or why we exist. Therefore this reason is either contained in ourselves, or in some being different from us (§ 53 of Ontology). Now if you suppose that we have the reason of our existence in a being which in turn has the reason of its own existence in another, one would not arrive at a sufficient reason unless it finally rests in some being that has in itself the sufficient reason of its own existence. Thus either we ourselves are a necessary being, or there exists a necessary being distinct from us (§ 309 of Ontology); consequently, a necessary being exists.[38]

The existence of the contingent being, namely the human soul, can be used as a basis to argue for the existence of the necessary being. This means that Wolff positions the *ens* of the soul and that of God on the same ontological level. As Tommasi (2011, p. 62) notes, this operation is of Scotian flavor: being is conceived univocally, allowing predication of the same *ens* in two different cases: the divine and the contingent. Although the *modes* of being of these two cases

[37] "Quoniam quodlibet vel est, vel non est (§. 53); omne ens vel ens necessarium est, vel necessarium ens non est. Quamobrem cum ens contingens sit, quod necessarium non est (§. 310); ens omne vel est ens necessarium, vel contingens." Wolff, 1730, § 311. My translation.

[38] "Existit ens necessarium. Anima humana existit (§. 21 Psychol. empir.), seu nos existimus (§. 14 Psychol. empir.). Quoniam nihil est sine ratione sufficiente, cur potius sit, quam non sit (§. 70 Ontol.); ratio sufficiens detur necesse est, cur anima nostra existat, seu cur nos existamus. Haec adeo ratio aut in nobismetipsis continetur, aut in ente quodam alio a nobis diverso (§. 53 Ontol.). Quod si ponas nos rationem existentiae habere in ente, quod denuo rationem existentiae suae in alio habeat; non pervenietur ad rationem sufficientem, nisi tandem in ente aliquo subsistat, quod existentiae suae rationem sufficientem in seipso habet. Aut igitur nosmetipsi sumus ens necessarium, aut datur ens necessarium aliud a nobis diversum (§. 309 Ontol.), consequenter ens necessarium existit." (1736, I, 25 f., § 24). My translation.

are different, this does not preclude the univocity between the two. Hence, existence can be predicated analogically of God and creatures.

The presence of this argument in Wolff's work on ontology and natural theology clearly suggests Kant's awareness of the univocity-equivocity discussion (if not from a historical perspective, at least in Wolff's indirect formulation). There is no doubt that, when Kant criticized Wolff's argument for the existence of God, claiming that existence is not a predicate ("*Das Dasein ist gar kein Prädicat oder Determination von irgendeinem Dinge*"),[39] he was aware of the contemporary discussions concerning the transcendental term *ens* and, consequently, of the analogical predication of being through univocity or equivocity. If this awareness was not coming from the Aristotelian influences of Burckhard and Aepinus, it surely came from his readings of Wolff.

5.3 After Wolff

Further relevant uses of analogies come from the followers of Wolff. For the sake of brevity, I will briefly discuss analogy in some key authors that Kant knew personally or constituted a constant reference point in his works: Martin Knutzen (1713–1751), Joachim Darjes (1714–1791), Alexander Baumgarten (1714–1762), and Georg Friedrich Meier (1718–1777). All of these authors can be considered philosophically connected to Wolff insofar as they developed his doctrines even further throughout eighteenth-century Germany. Moreover, they offer a sufficient overview of the uses of analogy among the eclectic Wolffians.

Starting from Knutzen, this figure represented a fundamental intellectual point of reference for Kant in his university years. Knutzen was his teacher and, as the most famous astronomer in Königsberg, introduced Kant to the most influential British scientists and philosophers of the time. When Kant entered the Albertina, Knutzen was a young professor in Logic and Metaphysics,[40] a Pietist who followed the core ideas of Wolffian philosophy while critically engaging with it.[41] His expertise in Wolffian philosophy was equal to his knowledge of British authors. As Kuehn (2001) notes, Knutzen knew very well Locke's texts and British Deism, against which he published *Philosophical Proof of the Truth of Christianity* precisely in 1740, when Kant entered the university.

[39] Kant, *Der einzig mögliche Beweisgrund zu einer Demonstration des Daseins Gottes*, p. 72, 2–3.
[40] See *Vorlesungsverzeichnisse der Universität Königsberg* (Oberhausen & Pozzo, 1999), II, p. 733.
[41] For a critical analysis of Knutzen's Wolffianism, see Erdman (1876).

Rather than dwelling on Knutzen's metaphysical, ontological, or theological doctrines (which, for the most part, are in continuity or slight criticism with Wolff), it is more instructive to observe that Knutzen very probably constituted Kant's earliest point of contact with the English intellectual scene. Besides Locke and Deism, Kant also encountered Newton, a principal authority in Knutzen's writings, in this way. Hence, Kant's encounter with the analogy of nature, a keystone of Newton's *Principia* (as indicated in Section I – 4.3), most certainly happened through Knutzen's intermediation.[42]

Moving now to Darjes, his contribution must be framed in continuity with Wolff's program of mathematization of metaphysics and philosophy in general. To be more precise, Darjes was a proponent of the *ars characteristica combinatoria*, of which Leibniz was the first exponent,[43] besides also being a student of Aepinus. Tommasi (2008, pp. 139–143) notes that Darjes' *ars combinatoria* aims at a process of symbolization of qualities which serves as a counterpart to mathematical equations. While mathematics uses symbols to produce new results through its equations, philosophy, according to Darjes, can use the same method to produce philosophical equations, thereby starting with immediately certain concepts and combining them to formulate knowledge regarding qualities.

As Tommasi (2008, *ibid*.) notes, the role of analogy in Darjes's *ars characteristica combinatoria* consists in the presence of a proportional relation between signs and the things signified. In this sense, deriving from the Aristotelian use of proportion as analogy, the relation between the signs employed to construct the philosophical equation must be analogous to the relation between the things signified by those signs. Given that the things signified are philosophical concepts or subjects, it is easy to understand that this method is supposed to help the metaphysician create analogical predicates about the divine through proportion. However, this proportionality necessitates a certain univocity of language: the same language expresses physical and metaphysical truths. As I have noted before, this is a well-known problem in the history of the concept of analogy, and Kant's direct reference to Darjes' *ars combinatoria* certifies his awareness of it.[44]

Baumgarten's influence on Kant is a well-known topic.[45] What remains less known is how Baumgarten's few mentions of analogy influence Kant's later treatment of the divine in his *De mundi sensibilis* (1770). Leaving the analysis of Kant's text for later, I want to focus here

[42] Given the nature of this chapter, I limit myself here to mentioning Erdman as a pivotal source for the analysis of Knutzen's contribution to natural sciences. See Erdman (1876), pp. 122–129.
[43] Leibniz, 1666, *Dissertatio de arte combinatoria*.
[44] Kant refers to Darjes' method in his *Nova dilucidatio*, Section I, Proposition II, I: 390. For a broader analysis of the relationship between Kant and Darjes, see Lorini (2011).
[45] For a complete overview of this topic, see Rumore, 2007, pp. 79–96.

on Baumgarten's *Metaphysics* (2014), where analogy is used in natural theology as a strategy to infer God's characteristics starting from the contingent:

> If we discern something IN A NECESSARY BEING that is partially the same and partially different from those things represented in a contingent being, and nevertheless we do not understand the differences well enough and have not found a particular name for it, then we call it an ANALOGUE OF THAT WHICH we have noticed AS SIMILAR IN A CONTINGENT BEING. It is ATTRIBUTED TO GOD BY ANALOGY EMINENTLY (excellence) if the realities in its concept seem to prevail, or REDUCTIVELY (by way of negation) if negations seem to reign (§ 826).

Therefore, it is possible to predicate analogically an attribute of God when the philosopher notes a similarity between the necessary and the contingent being. When this similarity is not known well enough to formulate a new name for the attribute of the divine, then the contingent attribute can be predicated analogically of the divine. This kind of analogical predication, once again, brings to the picture the perennial problem of describing God through human language.

Let us conclude this paragraph with Meier. Although much of Meier's contribution is, as is well known, to be found in his *Vernunftlehre* (which Kant knew, having studied it as a student and used it in his teaching),[46] here, I focus on one use of the term analogy in Meier's works that bears on his argument for the presence of a soul in animals. This occurs in his *Versuch eines neuen Lehrgebäudes von den Seelen der Thiere* (1749, pp. 32–44). In this work, Meier enumerates several arguments in favor of the existence of an animal soul and, among them, includes the "*abgedroschene*" proof by analogy. This proof clearly refers to Aristotelian proportionality: given the similarities in internal organs between humans and animals, it is legitimate to presume an additional similarity, namely, the presence of an animal soul analogous to the human one. Therefore, among the other occurrences of analogy we encounter in Kant's era, one can also include the occurrence I have previously designated as scientific and proportional in the case of Aristotle. In this case, however, the attribute of the analogical-proportional relationship is of a spiritual kind, so it cannot be labelled as scientific.

5.4 Pietism

[46] Several authors offer a complete reconstruction of Meier's influence on Kant through his *Vernunftlehre*, which is beyond the scope of this work. For a complete overview, I suggest Wundt (1992, pp. 226–228), Pozzo (2005), and Rumore (2007, pp. 97–146).

Let us conclude this historical reconstruction of the occurrences of analogies in modern philosophy with the most influential Pietist during Kant's time: Christian August Crusius (1715–1775). Once again, there is no doubt that this theological and philosophical current influenced Kant. This is because of two reasons: Kant came from a Pietist family, and Pietism was the prominent adversary of Wolffianism in most universities in Germany, especially during the first half of the eighteenth century. Together with Wolff's philosophy, it can be safely stated that Pietism was the other prominent philosophical and religious current in Kant's time.[47]

Crusius appears several times in Kant's precritical works. In *Nova dilucidatio*, he is mentioned as the proponent of the principle of determining ground, which works better than the Wolffian principle of sufficient ground (Section II, IV, I: 393; Section II, IX, I: 405). Moreover, in *Beweisgrund* (1763), Crusius is mentioned, together with Wolff and Baumgarten, to criticize his conception of the relationship between existence and possibility (First Reflection, 3, II: 76-77). Hence, there is no doubt that Kant familiarized himself quite well with Crusius' doctrines.

Sufficient authors have been analyzed to suggest Kant's knowledge of the problem of the univocity or equivocity of analogy in metaphysics and theology. Crusius makes a more useful contribution in the field of logic with his use of analogy in connection to the inductive method. This appears in his *Weg zur Gewissheit* (1747, pp. 675–681), where he discusses the nature of induction as an instance of analogical arguments. Crusius believes that the perception of similarities between known and unknown objects grounds the analogy between the two, therefore allowing the construction of an inductive inference. However, this is possible only if there is no ground to suggest the difference between the two objects at stake (Crusius, 1747, §§384–385). In the absence of a reason to demarcate the two similar objects, Crusius allows analogical predication, thus recovering an inductive use that we encountered first with Aristotle (Section I – 2).

As Van de Berg and Demarest (2024) note, Crusius' argument is tightly connected to a discussion of probability: inductive and analogical inferences, if not falsified, produce the highest degree of probability, thus implying Crusius' faith in the truth of the similarities perceived among the objects of the inference. The discourse on probability will be crucial in the analysis of Kant's precritical occurrences of analogies. As of now, it suffices to say that these kinds of inferences, according to Crusius, acquire a high degree of probability, but cannot

[47] For the sake of brevity, I will not provide a complete reconstruction of the central doctrines of Pietism and their influence on Kant. Among the extensive literature on the topic, I recommend Ritschl (1966), Tonelli (1987, particularly *L'ambiente storico-culturale di Königsberg e la formazione della filosofia kantiana*), and Reardon (1988). As Kuehn notes (2001), Kant attended a Pietist gymnasium (*Collegium Frideridianum*) where he most certainly already encountered Pietism in the form of his director, Franz Albert Schultz (1692–1763). On this, see Fehl (2005) and Grote (2022).

be as immediately certain as other inferences (deductive inferences, mathematical equations). Analogy, when conceived as an inferential method, leads to probable inferences, but never certain results.

6. Conclusive Remarks

The historical reconstruction of the concept of analogy in Western philosophy offered here is useful in two respects. First, it supplies a framework for what it means to speak of analogy across the history of philosophy and its distinct eras. This historical frame prevents us from approaching Kant's works in ways that risk anachronism, an outcome that is inevitable if one attempts to assess a concept without first situating it historically. The second benefit of this opening chapter, therefore, lies precisely in enabling an approach to Kant that clarifies how the concept entered the philosophical discourse of his time. The work undertaken thus far, accordingly, clears the ground for a better understanding of the nature of analogy in the precritical Kant by providing clear historiographical bearings and source references for the author himself.

On this basis, analogy may be synthetically divided into two principal branches: on the one hand, its deployment in scientific contexts; on the other, its deployment in metaphysical contexts. By this distinction the emphasis falls on the object for which analogy serves as a vehicle: in the case of scientific analogies, the aim is to extend our grasp of some features of nature by means of analogical inferences grounded in a metaphysical convention often referred to as the "analogy of nature". If Aristotle was the first to construe this material proportionality, by which scientific discoveries rest on extending one genus by reference to another, the English empiricists were the great reformers of this type of analogy, locating the warrant for analogical inferences in the uniformity of nature. Thus, Newton comes to place at the foundation of his mathematical principles a thoroughly metaphysical rule that justifies the passage from inferences valid for the visible to inferences that bear on the invisible and not directly knowable (but still materially constituted, as in the case of planets or atoms). In this way, early modern English philosophy reread the Aristotelian origin of analogy by highlighting its utility for scientific inquiry, counting its greatest exponents among those who affirm the concept's heuristic value, which results, in turn, in the regulative character of its claims.

Opposed to this regulative approach stands a long line of thinkers who grasped the metaphysical aspect of analogy as the possibility of predicating the divine. Beginning with the interpretation (or misinterpretation) of Aristotelian doctrines, medieval authors focused on the

problem of the *analogia entis* in order to confront the difficulty of predicating divine attributes. Transcendental terms, thus, became instruments for constructing a bridge between two ontological orders wholly distinct: the divine and the contingent. Hence the great dispute concerning the value of this form of predication: if, in order to frame judgments about the divine, one must accept analogical predication, then problematizing the epistemic standing of such analogical predication, as Aquinas and Scotus did, becomes essential for assessing how much truth such analogical language can deliver in our cognition of the divine.

Predicative analogy is often taken to be synonymous either with univocity between the being of the divine and that of the contingent, implying that God and creatures share the same nature and are subject to the same attributes, and that what is established logically about the divine holds true; or with equivocity between the divine and the contingent, thus maintaining a radical difference in the natures of the two analogates and concluding, notwithstanding surface similarities, that predication concerning the divine remains always limited and incomplete, as Aquinas taught.

On the side of a constitutive, univocal analogy, one fully capable of reaching metaphysical subjects with true predicates, stand the German metaphysicians who shaped the intellectual *milieu* in which Kant was formed. The content of their discussions involving analogy (whether explicitly or implicitly) remains indebted to the Aristotelian tradition of the *analogia entis* since it exploits the transcendental as a bridge for predication not only of the divine, but also of non-material features such as animal souls (Crusius). Wolff, Baumgarten, Meier, and Knutzen likewise return repeatedly to the necessary univocity between discourse about the divine and discourse about the contingent, without which neither demonstrations of God's existence nor discourse about the soul would hold. Thus, the conviction that truth can be predicated analogically remains a fixed point within the intellectual horizon that frames Kant.

Kant's eclecticism, already noted by Tonelli, will prove a decisive keystone for the subsequent development of analogy in his writings. His dual philosophical indebtedness, both to the English heuristics and to the German metaphysical-theological tradition of Aristotelianism, Wolffian, and Pietist provenance, is consistently reflected in his precritical works, where traces of both tendencies (univocal analogy and equivocal analogy) are represented. As a spectator of this theater of implicit disputes concerning analogy, Kant occupies a privileged position from which to articulate his own response to the question of the philosophical status of analogy.

Accordingly, themes encountered in this reconstruction will reappear in Kant's writings. The transition from a scientific conception of analogy to a metaphysical one, already

distinguished in Aristotle, takes place around the mid-1760s. In this transition, crucial issues such as the medieval question of the validity of analogies, later taken up by Suárez, resurface with force as a central problem for securing the scientific character of metaphysics. Moreover, the symbolization associated with the *ars characteristica combinatoria* will be discernible in the writings of the late precritical period, where the attempt to construct a symbolic-analogical language is accompanied by residual influences from Baumgarten (regarding the possibility of extending finite attributes to the metaphysical) and from Crusius (regarding the probability of analogies). It is now time, therefore, to turn to the Kantian texts from the period between 1747 and 1763.

Section II – The First Part of Kant's Precritical Production (1747–1763)

I divide Kant's precritical works into two groups, with 1762 as the bridge year between them.[48] The principal criteria for such division are two: firstly, the chronological criteria must always be kept in mind while trying to understand the development of a philosopher's ideas. In doing so, I will use the year of composition as the reference, rather than the year of publication. As I will discuss in the paragraphs dedicated to the works written between 1762 and 1763, keeping in mind the year of composition is an operation that facilitates the understanding of the central topics of Kant's precritical philosophy, while at the same time suggesting a clear interpretative key to his method in metaphysics.

Secondly, a content-related criterion suggests that a demarcation must be made between two groups of precritical works. While metaphysics remains at the center of Kant's works, before *Beweisgrund* (1762), his philosophical works discussed the interplay between natural sciences and metaphysics, mainly engaging with the physical and cosmological problems of the time. From 1762 onwards, these discussions ceased to concern material objects, leaving space for more classical metaphysical discussions of God, the soul, and the world. Such a difference is mirrored in Kant's use of analogies and his analogical method, which changes and evolves throughout the two phases.

Guyer and Wood (1992, Introduction, p. 37) support this same view. They maintain that Kant's production before 1763 was rarely philosophical in character. His interests were closer to Newtonian physics and, broadly speaking, the natural sciences, with metaphysics making sporadic appearances (*Nova dilucidatio*, *Beweisgrund*). On the contrary, after *Beweisgrund*, Kant dedicated himself entirely to the problem of the method of metaphysics, leading the way for a period of intense philosophical and methodological work.

Following these ideas, I propose the following division of Kant's works. In the first part, I will discuss *Naturgeschichte*, *De igne*, and *Beweisgrund*. In the constellation of the first precritical writings, these are the three that acquire special relevance due to the use of analogies that Kant frequently makes. The subsequent period will concern *Untersuchung*, *Begriff der*

[48] The list of abbreviations for Kant's works is provided at the beginning of this work. As for the reference system, I will mainly refer to the collection *Gesammelte Schriften (Akademie Ausgabe)*; see Kant (1900–), thus following the standard citation system among Kant scholars (volume: page number of the Academy Edition). Two other German editions of Kant's works were Kant (1968) for the precritical writings, and Kant (1781/1787) for the *KrV*. As for other translations, I used Kant (1992) for reference in English and Kant (2014) for the Latin text translated into Italian. See Bibliography for the complete list of Kant's works used in this study.

negativen Größen, *Träume*, and *De mundi sensibilis*. In these works, Kant directly addresses the problem of predication in metaphysics, suggesting analogies as a potential resolution to this long-standing philosophical topic.

In this picture, many of Kant's precritical works are deliberately omitted. Of the period before 1763, those that I will not analyze are *Gedanken* (I, 3–181), the two small treatises on the nature of planet Earth (1754, I, 185–213), *Nova dilucidatio* (I, 387–416), the three treatises on earthquakes and physical geography (I, 419–472), the work on the theory of the winds (I, 491–503), the work on physical geography (1757, II, 3–12), *Neuer Lehrbegriff der Bewegung und Ruhe* (1758, II, 15–25), *Versuch einiger Betrachtungen über den Optimismus* (1759, II, 29–35), the thought on the death of his friend Johann Friedrich (1760, II, 39–44), and the work on logic and the four syllogistic figures (1762, II, 47–61). Of the second period, the neglected works are *Beobachtungen über das Gefühl des Schönen* (1764, II, 207–256), *Versuch über die Krankheiten des Kopfes* (1764, II, 259–271), the announcment of his lecture plan in 1765 (II, 305–313), *Von dem ersten Grunde des Unterschiedes der Gegenden im Raume* (1768, II, 377–383), and some other minor works published after *De mundi*.

These works are intentionally excluded from my analysis because of their limited relevance to Kant's use of analogies. Nevertheless, some of them will be briefly discussed (as, for example, *Nova dilucidatio*) in order to provide some necessary contextualization for the more prominent precritical works at stake. Furthermore, a detailed analysis of each precritical work would detract from the present work's focus on analogies and their use throughout Kant's precritical period.

I cannot, however, refrain from mentioning secondary literature that provides general frameworks for the development of Kant's philosophy outside a thematic approach like mine. In the Italian *Kant-forschung*, Campo (1939, 1943, 1953), Oggioni (1948), Tonelli (1959, 1987), Assunto (1982), Lamacchia (1995), and Agostini (2014) are points of reference, providing several attempts at systematically reconstructing Kant's precritical project. Campo (1953), for example, offers an organization of Kant's precritical works similar to mine. He distinguishes between the works prior to the 1760s, which deal with the natural sciences, and those of the second half of the 1760s, in which Kant abandons a naturalistic approach and focuses more on metaphysics and its method. Most notable is also his effort to provide a thorough interpretation of Kant's first precritical work (Campo, 1943).

The relevance of Tonelli's work is twofold. In *Elementi metodologici e metafisici in Kant dal 1745 al 1768* (1959), he outlines an extensive analysis of many of the works that I will

discuss and, at the same time, contextualizes them inside the theological and philosophical debates of the time.

Assunto provided one of the first Italian translations of the precritical works. Among the many insights that one would gain from reading his introduction to the collection of Kant's works, Assunto is one of the few figures in the *Kant-forschung* who places *Untersuchung* and *Begriff der negativen Größen* in an order that prioritizes the year of composition rather than the year of publication. As I will discuss later, this small precaution proves extremely useful for interpreting Kant's philosophical development.

Building on Campo's insights and likely influenced by Guyer and Wood (1992), Agostini (2014) offers a deeper understanding of the connecting threads among the numerous precritical works, finding elements of continuity throughout the entire 23-year period of Kant's work. His edition of the Latin dissertations represents an essential reference point for the precision with which each of Kant's minor works is briefly and acutely outlined.

Finally, Lamacchia (1995) provides a connecting point for all Kant scholars facing the problematic task of organizing Kant's precritical eclecticism.

Besides Wood and Guyer (2002), the English-language secondary literature often separates the whole of Kant's works in numerous small pieces. It is the case, for example, with Kuehn (2001), who, despite recognizing the emergence of common themes throughout the entire precritical period, denies that this commonality also signals a continuity of intent. For this reason, he struggles to see a project delineated in Kant's early efforts.

Schönfeld (2000), in contrast, offers a continuist view. In my approach, I get very close to the distinction proposed by Martin Schönfeld, who separated the precritical period into three parts: the starting point (1740s), the precritical project (1750s), and the crisis (1760s). Although this approach gives much greater weight to what came before the *Untersuchung*, it still provides a similar account to mine, insofar as the precritical project is understood as a continuous development towards the formulation of a method for metaphysics. Schönfeld sees in the works after the first phase an attempt to create a continuous project in Kant's production, culminating in this crisis of the years around 1762 and in the collapse of the precritical project.[49]

Among the numerous sources in French, I mention De Vleeschauer (1939) and Laberge (1973), two systematic attempts at reconstructing Kant's precritical doctrines that find a

[49] For the sake of brevity, I want to briefly mention here other valuable English-language references that contributed to the discussion concerning the relationship between the precritical and the critical period. Beck (1969, Chapter XXVII) and Laywine (1993), for example are other valuable English resources that seek to trace the origins of critical concepts in the precritical works. On this topic, see also Watkins (2005), and De Boer (2020).

common thread across the individual works. In particular, De Vleeschauwer (1939) argues for continuity in Kant's attempt to reform metaphysics across his precritical years. He writes that the sole Kantian problem was the method of metaphysics (p. 14) and provides a coherent division of his works that aims at connecting them under several criteria.

To conclude this overview of secondary literature, the German *Kant-forschung* has produced several benchmark studies for analyzing Kant's development during the precritical period. A case in point is Adickes (1924–1929), primarily in his *Kant als Naturforscher*, as well as Waschkies (1987), whose work examines Kant's thinking in physics and its connections to theology in the final precritical writings, and Cassirer (1921), notably in his biography of Kant. Cassirer, in particular, provides a scattered view of the precritical Kant. He divides the precritical period into five parts: scientific years, the problem of the method in metaphysics, critique of dogmatic metaphysics, *De mundi sensibilis*, and the discovery of the critical problem. Although this division provides a complete picture of the philosophical problematics in Kant's mind at the time, it still misses the bigger picture, separating the works into atomistic parts that are too far from each other.

1. Allgemeine Naturgeschichte und Theorie des Himmels

The *Naturgeschichte* contains the first use of the word analogy in Kant's precritical production. In total, I distinguish six different occurrences of analogy that make this treatise relevant. Before delving into each of them in detail, it is worth providing a brief introduction to the context of this work.

Cassirer (1921) situates the *Naturgeschichte* at the end of the first period of Kant's philosophical production, which comprises his works on the natural sciences and cosmology. The full title of the book explains the reason for this choice: "*Allgemeine Naturgeschichte und Theorie des Himmels oder Versuch von der Verfassung und dem mechanischen Ursprunge des ganzen Weltgebäudes nach Newtonischen Grundsätzen abgehandelt.*" Kant aimed to develop a theory that could account for the motion of the stars in accordance with Newton's mechanical laws. As I argued in Section I of this work (4.2, 4.3), Kant's knowledge of Newton was based on Knutzen's teachings and on a direct familiarity with Newton's text. Surely, when writing this text, Kant knew very well the doctrine of the analogy of nature, as I will discuss.

Knutzen's strong influence on Kant determined his interests during the years before *Naturgeschichte*, prompting him to write on natural sciences and modern physics. His first published treatise (*Gedanken von der wahren Schätzung der lebendigen Kräfte und*

Beurtheilung der Beweise, deren sich Herr von Leibniz und andere Mechaniker in dieser Streitsache bedient haben, nebst einigen vorhergehenden Betrachtungen, welche die Kraft der Körper überhaupt betreffen) was a discussion of the leading theories concerning living forces at his time (Leibniz and Descartes), certifying his interest in physics and antural sciences in the clearest possible way.

After this treatise and before the *Naturgeschichte*, he published two more small treatises on questions concerning the planet Earth and its characteristics, showing his interest in astronomy and cosmology. Reading the titles of these first publications may seem strange to any reader familiar with Kant's critical works. However, a deep understanding of other disciplines was fundamental for scholars at the time.

Given these premises, Cassirer suggested *Naturgeschichte* as the final work of Kant's first precritical phase, a period in which he aimed to explain the whole structure and constitution of the Universe solely using Newton's theories. As I argue, analogical reasoning plays a significant role in Kant's argument for such a comprehensive cosmological explanation, making this treatise an important first encounter between Kant's understanding of the natural sciences and metaphysics.

1.1 A Methodological Premise

In the preface of *Naturgeschichte*, Kant uses the term "analogy" or its variations three times. These are three direct uses of the term (meaning that the term appears in the text), which introduce the problem at stake for us. Being an introductory section to a cosmological work, the first pages are dedicated to the relationship between religion and the theories that will be presented. This gives the reader a clear picture of the motivation behind the whole work:

> To discover the system that connects the great parts of creation in the whole extent of infinity, to derive the formation of the celestial bodies themselves and the origin of their motion out of the first state of nature through mechanical laws: insights such as these would appear to go well beyond the powers of human reason.[50]

[50] "Das Systematische, welches die großen Glieder der Schöpfung im ganzen Umfange der Unendlichkeit verbindet, zu entwerfen, die Bildung der Weltkörper selber und den Ursprung ihrer Bewegungen aus dem ersten Zustande der Natur durch mechanische Gesetze herzuleiten: solche Einsichten scheinen sehr weit die Höhe der menschlichen Vernunft zu übersteigen." *Naturgeschichte*, I: 221, 5–10.

Even though these aims sound quite ambitious, Kant decides to write about them. To save himself from religious controversies, however, he must first tranquilize those who might think that his mechanical explanation of the Cosmos could deprive God of its relevance. Embarking on an imaginary battle against the defenders of religion, Kant explains two ideas (I: 223–226): (1) a mechanical explanation of the constitution of nature is based solely on nature's ability to order itself, following a precise scheme of rules that are not constantly imposed or controlled by a divine-like entity; (2) the absence of God's direct presence does not imply that God is useless since this divine entity was the first engine that designed the laws of nature.

To better explain his ideas, Kant refers to Epicurus, arguing that the Greek philosopher proposed a systematization of the laws of nature that describe the movement of constitutive atoms in a similar way to his theory. However, Epicurus still relied on chance to explain why atoms relate to each other:

> The aforementioned teachers of the mechanical origins of the Universe derived all the order that could be perceived in it from the accidental chance that made the atoms come together so fortuitously that they constituted a well-ordered whole.[51]

Kant, on the contrary, claims that the relations between the atoms of matter depend on precise physical laws, and those physical laws, in turn, depend on God as the first engine of the Universe:

> In my theory, however, I find that matter is tied to certain necessary laws. In their complete dissolution and dispersion, I see a beautiful and orderly whole develop quite naturally. This does not happen through accident or by chance, but rather, one can see that natural properties bring it about in a necessary fashion.[52]

The author sees matter as governed by stable laws, as Newton explained in his *Principia*, as he will explain later in the treatise. Furthermore, the primordial material (*Urstoff*) combines according to these laws, resulting in beautiful combinations (*schöne Verbindungen*). Using these words, Kant positions himself within the tradition of all those philosophers who found a

[51] "Die angeführten Lehrer der mechanischen Erzeugung des Weltbaues leiteten alle Ordnung, die sich an demselben wahrnehmen lässt, aus dem ungefähren Zufall her, der die Atomen so glücklich zusammen treffen ließ, dass sie ein wohlgeordnetes Ganze ausmachten." *Naturgeschichte*, I: 227, 16–26.

[52] "In meiner Lehrverfassung hingegen finde ich die Materie an gewisse notwendige Gesetze gebunden. Ich sehe in ihrer gänzlichen Auflösung und Zerstreuung ein schönes und ordentliches Ganze sich ganz natürlich daraus entwickeln. Es geschieht dieses nicht durch einen Zufall und von ungefähr, sondern man bemerkt, daß natürliche Eigenschaften es notwendig also mit sich bringen." *Naturgeschichte*, I: 227, 25–30.

proof of God's existence in the design of nature (I will discuss this in more detail in 1.3). The cause of this beauty and harmony, for Kant, is not the laws in themselves, but the one who planned the whole project. God is the reason why beautiful natural results arise: "(…) a God exists precisely because nature cannot behave in any way other than in a regular and orderly manner, even in chaos."[53]

Hence, according to Kant, God is still inside the great chain of beings and provides the logical basis for the existence of nature, but not for its function. No mention, however, is found concerning the ontological relationship that God and nature have, thus leaving our question concerning the nature of this relationship (univocal or equivocal) aside.

One of the first important profits from the initial pages of the treatise is that Kant avoids chance at all costs. In presenting his theory of the constitution of the Universe, Kant aims to provide reasonable explanations without relying on Epicurean chance, religious assumptions, or any other occult hypothesis. As in almost all his works, Kant pairs this great ambition with a moderate tone, asking whether the limited human understanding could achieve gigantic tasks such as providing a history of the Universe and a system of its actual components. Despite the careful tone, he fears no failure:

> I shall destroy this difficulty by demonstrating clearly that of all the investigations that could be raised in the study of nature, this is the one in which one can most easily and most surely reach back as far as its beginning. Just as of all the tasks facing research into nature, none has been resolved with greater accuracy and certainty than the true constitution of the Universe on the large scale, the laws of motion, and the internal mechanism of the orbits of all the planets into which Newtonian philosophy can give such insights as can be found in no other part of philosophy: just so, I maintain, that of all the things in nature whose first cause we can investigate, the origin of the world system and the generation of the heavenly bodies together with the causes of their motions is the one which we might first hope to understand thoroughly and reliably.[54]

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[53] "Da sie also sich einer höchst weisen Absicht unterworfen befindet, so muß sie notwendig in solche übereinstimmenden Verhältnisse durch eine über sie herrschende erste Ursache versetzet worden sein, und es ist ein Gott eben deswegen, weil die Natur auch selbst im Chaos nicht anders als regelmäßig und ordentlich verfahren kann." *Naturgeschichte*, I: 228, 9–11.

[54] "Ich vernichte diese Schwierigkeit, indem ich deutlich zeige, daß eben diese Untersuchung unter allen, die in der Naturlehre aufgeworfen werden können, diejenige sei, in welcher man am leichtesten und sichersten bis zum Ursprunge gelangen kann. — Ebenso wie unter allen Aufgaben der Naturforschung keine mit mehr Richtigkeit und Gewissheit aufgelöst worden, als die wahre Verfassung des Weltbaues im Großen, die Gesetze der Bewegungen und das innere Triebwerk der Umläufe aller Planeten, als worin die Newtonische Weltweisheit solche Einsichten gebären kann, dergleichen man sonst in keinem Theile der Weltweisheit antrifft: eben also, behaupte ich, sei unter allen Naturdingen, deren erste Ursache man nachforscht, der Ursprung des Weltsystems und die Erzeugung der Himmelskörper samt den Ursachen ihrer Bewegungen diejenigen, was man am ersten gründlich und zuverlässig einzusehen hoffen darf." *Naturgeschichte*, I: 229, 15–28.

Hence, it is time to deal with Kant's summary of the arguments he will present during the treatise to see why he was so convinced of the correctness of his ideas.

Firstly, Kant relates his discoveries to Mr. Thomas Wright of Durham, or at least to what he knew about the British author. The two explanations of the cosmos are so similar, according to Kant, that he cannot "precisely determine the boundaries between Mr. Wright's system and my own, nor in what parts I have merely copied his design or developed it further." As stated by Kant (I: 252, 2–6), Wright's theory of heavenly bodies was familiar to him thanks to a small summary of his *An Original Theory or New Hypothesis of the Universe*, published in 1751 in the *Freie Urteile* from Hamburg. By reading this small summary, Kant realized that their theories shared a common understanding of the fundamental structure of the Universe. It is worth summarizing it here since it will become relevant again in the following sections of this chapter. Kant writes:

> The first part concerns a new system for the large-scale structure of the Universe. Herr Wright of Durham, with whose treatise I became acquainted through the Hamburg *Freie Urteile* of the year 1751, first gave me cause to regard the fixed stars not as a scattered milling mass without any visible order, but rather as a system with the greatest similarity to a planetary one, so that, just as in the latter the planets are very close to a common plane, so also the fixed stars in their position relate as closely as possible to a certain plane, which has to be thought of as extending through the entire heavens, and where they are most densely massed, they form the bright band that is called the Milky Way. I have become convinced that, because this zone, illuminated by countless suns, has very exactly the direction of a very large circle, our Sun must also be very close to this large plane of reference. While pursuing the causes of this feature, I have found the following to be very probable: that the fixed stars could actually be slowly moving planets of a higher order.[55]

This description presents the Universe as a Russian nesting doll: first, Kant observes that planets and fixed Stars all lie in a common plane of reference. Secondly, he claims that those fixed stars, in turn, are slightly moving. This means that the structure of a Solar system (planets

[55] "Der erste Theil geht mit einem neuen System des Weltbaudes im Großen um. Herrn Wright von Durham, dessen Abhandlung ich aus den hamburgischen freien Urtheilen vom Jahr 1751 habe kennen lernen, hat mir zuerst Anlass gegeben, die Sterne nicht als ein ohne sichtbare Ordnung zerstreutes Gewimmel, sondern als ein System anzusehen, welches mit einem planetischen die größe Ähnlichkeit hat, so daß, gleichwie in diesem die Planeten sich einer gemeinschaftlichen Fläche sehr nahe befinden, also auch die Fixsterne sich in ihren Lagen auf eine gewisse Fläche, die durch den ganzen Himmel muß gezogen gedacht werden, so nahe als möglich beziehen und durch ihre dichteste Häufung zu derselben denjenigen lichten Streif darstellen, welcher die Milchstraße genannt wird. Ich habe mich vergewissert, daß, weil diese von unzähligen Sonnen erleuchtete Zone sehr genau die Richtung eines größten Zirkels hat, unsere Sonne sich dieser großen Beziehungsfläche gleichfalls sehr nahe befinden müsse. Indem ich den Ursachen dieser Bestimmung nachgegangen bin, habe ich sehr wahrscheinlich zu sein befunden: dass die sogenannten Fixsterne oder feste Sterne wohl eigentlich langsam bewegte Wandelsterne einer höheren Ordnung sein könnten." *Naturgeschichte*, I: 231, 2–20.

revolving around their Sun) might be replicated on a bigger scale in the case of the Milky Way: systems of fixed stars are revolving around a common central reference point, placed at the center of the common plane of reference. As I will discuss later, according to Kant, the structure of the Solar system is a small-scale picture of what the entire Universe looks like.

Although the text does not yet provide an explanation of Kant's faith in this theory, it is safe to assume that the similarity between his findings and those of Wright brings us back to the design theory I described before. Simply put, two authors working in such different contexts arrived at similar results: according to Kant, it cannot be a matter of chance.

Kant states that the similarity between his theory and Wright's ideas inspired him to proceed further in the attempt to explain the structure of the Universe. In particular, he has reasons to believe that nebulous stars fall perfectly under the mentioned matryoshka structure. In this description, we find the first direct use of the term "analogy" in Kant. He writes:

> I observed the kind of nebulous stars that Herr von Maupertius considers in his *treatise on the Figure of the Stars*, and which have the figure of more or less open ellipses, and readily assured myself that they could be nothing other than an accumulation of many fixed stars. The roundness of these figures that is measured at all times taught me that an inconceivably numerous mass of stars must be arranged here around a common centre point, because otherwise their free positions in relation to one another would present irregular shapes but not measured figures. I also realized that in the system in which they are united, they must be mainly limited to one plane, because they do not present circular but elliptical figures, and that, because of their pale light, they must be incomprehensibly distant from us. The treatise itself will present to the investigation of the unprejudiced reader what I have concluded from these analogies.[56]

Firstly, it is crucial to remember that the contemporary concept of nebula is very different from that of nebulous stars that Kant is considering. A nebula, today, is a star-forming region of the interstellar medium, filled mainly with cosmic dust and hydrogen. On the contrary, the modern concept of a nebula is essentially what is now called a galaxy (Rossi, 1989).

[56] "Ich betrachtete die art neblichter Sterne, deren Herr von Maupertuis in der Abhandlung von der Figur der Sterne gedenkt, und die die Figur von mehr oder weniger offenen Ellipsen vorstellen, und versicherte mich leicht, daß sie nichts anders, als eine Häufung vieler Fixsterne sein können. Die jederzeit abgemessene Rundung dieser Figuren gelehrten mich, daß hier ein unbegreiflich zahlreiches Sternenheer, und zwar um einen gemeinschaftlichen Mittelpunkt müsste geordnet sein, weil sonst ihre freien Stellungen gegeneinander wohl irreguläre Gestalten, aber nicht abgemessene Figuren vorstellen würden. Ich sah auch ein: daß sie in dem System, darin sie sich vereinigt befinden, vornehmlich auf eine Fläche beschränkt sein müssten, weil sie nicht zirkelrunde, sondern elliptische Figuren abbilden, und daß sie wegen ihres blassen Lichts unbegreiflich weit von uns abstehen. Was ich aus diesen Analogien geschlossen habe, wird die Abhandlung selber der Untersuchung des vorurteilfreien Lesers darlegen." *Naturgeschichte*, I: 232–234.

Kant's description of his findings on nebulous stars generalizes the previous quote on the Milky Way. All nebulous stars are composed of moving systems of fixed stars (as contradictory as this might sound), related to a single plane of reference and disposed in an elliptical shape. This theory is nowadays called the nebular hypothesis. Although Kant is commonly regarded as the founder of this theory, Emanuel Swedenborg, whose work Kant was well acquainted with, developed a similar systematic account of the Universe (Swedenborg, 1734).

Crucially, in this quote, Kant uses the term "*Analogien*" for the first time in his published works. Analogy is used as a synonym for similarities: the shapes of nebulous stars are always round when measured, i.e., they are analogous. Analogous is also the placement in a single plane of reference, whose center must be the center of each nebulous star. The similarity between the results of his measurements is, moreover, taken as a sign that some further conclusions must be taken from such analogies ("*Was ich aus diesen Analogien geschlossen habe*").

What do we take from this first use of analogy? I will later discuss why Kant derives relevant conclusions from the analogy between the placement and shape of the nebulous stars. However, for now, it is enough to note that this use of analogy is paired with an interpretation. In other words, here the analogy is not a casual awareness of the similarity between unconnected systems (according to Kant, this would be an Epicurean perspective), but rather a hint at a hidden reason for the similarity between the elements at stake. Simply put, analogies are always there for a reason; Epicurean chance cannot be accepted.

Going back to Kant's faith in his enterprise to describe the structure and the history of the Universe, the last pages of the *Vorrede* explain the reasons behind Kant's confidence in his theory, coupled, however, with an awareness of the limitations of a cosmological structure that does not seem to be strictly grounded in mathematical calculations. He writes:

> It is with the greatest care that I have indeed relinquished all arbitrary inventions. I have, after I placed the world in the simplest chaos, made use of no forces other than those of attraction and repulsion to develop the great order of nature, two forces which are equally certain, equally simple, and equally original and universal. They have both been borrowed from Newtonian philosophy. The former is now a law of nature that is beyond doubt. The second, which Newtonian science is unable to provide with as much clarity as it has for the first, I will assume here only in the sense that no one rejects it, namely in relation to the smallest dispersion of matter as, for instance, in vapours. It is for these so simple reasons that I have derived the

> following system, without any artifice or consideration of other consequences than those upon which the attention of the reader would have arrived by itself.[57]

Newton's forces of attraction and repulsion are the core of Kant's faith in the possibility of describing the constitution of the Universe. Drawing on Newton's philosophy is an operation that surely provides a solid basis for his attempt. However, the question remains whether his propositions will be strictly deduced from the Newtonian laws or, on the contrary, will be derived from other methods. Kant immediately realizes this problem and gives his answer:

> Finally, I ask to be permitted a short explanation relating to the validity and the presumed value of those propositions which will appear in the following theory and according to which I would wish to be examined by fair judges. The author is properly judged according to the stamp he puts on his wares; I therefore hope that one will not require any more strict responsibility of my opinions in the different parts of this treatise than the value I give to them myself. In fact, the greatest geometrical acuity and mathematical infallibility can never be demanded of a treatise of this kind. If the system is based on analogies and harmonies in accordance with the rules of credibility and a correct way of thinking, it has satisfied all the requirements of its object.[58]

Kant also specifies in which contexts he was able to obtain all the demands (*Forderungen*) of his enterprise: "in the theory of the system of fixed stars, in the hypothesis of the nature of the nebulous stars, in the general plan of the mechanical creation of the universe, in the theory of the ring of Saturn and several others."[59]

This long quote presents the second use of analogy in *Naturgeschichte*. Analogy is here addressed as a method of research that cannot attain the same degree of validity as mathematics

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[57] "Ich habe mich in der Tat mit größter Behutsamkeit aller willkürlichen Erdichtungen entschlagen. Ich habe, nachdem ich die Welt in das einfachste Chaos versetzt, keine anderen Kräfte als die Anziehung und Zurückstoßungkraft zur Entwickelung der großen Ordnung der Natur angewandt, zwei Kräfte, welche beide gleich gewiss, gleich einfach und zugleich gleich ursprünglich und allgemein sind. Beide sind aus der Newtonischen Weltweisheit entlehnt. Die erstere ist ein nunmehr außer Zweifel gesetztes Naturgesetz. Die zweite, welcher vielleicht die Naturwissenschaft des Newton nicht so viel Deutlichkeit als der ersten gewähren kann, nehme ich hier nur in demjenigen Verstande an, da sie niemand in Abrede ist, nämlich bei der feinsten Auflösung der Materie, wie z. B. bei den Dünften. Aus diesen so einfachen gründen habe ich auf eine ungekünstelte Art, ohne andere Folgen zu ersinnen, als diejenigen, worauf die Aufmerksamkeit des Lesers ganz von selber verfallen muss, das folgende System hergeleitet." *Naturgeschichte*, I: 234–235.

[58] "Man erlaubt mir schließlich wegen der Gültigkeit und des angeblichen wertes derjenigen Sätze, die in der folgenden Theorie vorkommen werden und wonach ich sie vor billigen Richtern geprüft zu werden Münsche, eine kurze Erklärung zu tun. Man beurteilt billig den Verfasser nach demjenigen Stempel, den er auf seine Waare druckt; daher hoffe ich, man werde in den verschiedenen Theilen dieser Abhandlung keine strengere Verantwortung meiner Meinungen fordern, als nach Maßgebung des Werts, den ich von ihnen selber ausgebe. Überhaupt kann die größte geometrische Schärfe und mathematische Unfehlbarkeit niemals von einer Abhandlung dieser Art verlangt werden. Wenn das System auf Analogien und Übereinstimmungen nach den Regeln der Glaubwürdigkeit und einer richtigen Denkungsart gegründet ist, so hat es allen Forderungen seines Objekts genug getan." *Naturgeschichte*, I: 235, 6–18.

[59] "(…) in der Theorie des Fixsternensystemen, in der Hypothese von der Beschaffenheit der neblichten Sterne, in dem allgemeinen Entwurfe von der mechanischen Erzeugungsart des Weltbaues, in der Theorie von dem Saturnusringe und einigen andern." *Naturgeschichte*, I: 235, 20–22.

and geometry. While mathematics and geometry remain at the top of Kant's hierarchy of sciences, a treatise of this kind can only rely on "analogies" (*Analogien*) and "harmonies" (*Übereinstimmungen*) paired with credibility and a correct way of thinking. Nonetheless, basing his discoveries on analogy still seems to be a valuable criterion for constructing his history of the Universe. This means that, according to Kant, geometry and mathematics are not the only possible means of conducting research in cosmology and the natural sciences. Moreover, this quote raises the question concerning what kind of value non-mathematical propositions have. It seems that, according to Kant, analogies can have a constitutive result when they are constructed according to a sound way of thinking.

According to my interpretation, Kant introduces here two distinct kinds of validity: one from mathematical propositions, the other from the rules of credibility and analogy. In mathematics, a proposition is valid only when it follows the set of mathematical rules precisely. There cannot be a proposition that is more or less valid than another: propositions are either valid or invalid. In other terms, the truth values of mathematical and geometrical propositions are unambiguous.

When Kant discusses credibility, harmony, and the proper way of thinking, he introduces a different kind of validity for analogical reasoning. Analogies introduce an element of persuasiveness (as we encountered in Crusius): some of his theories, such as those concerning the system of fixed stars or the hypothesis about the composition of the nebulous stars, are regarded as valid in so far as they follow the mentioned criteria, but other ideas, such as the comparison between the masses of the planets, are seen as less convincing, but still valuable: "Certain other parts of my explanation will be less satisfying, for instance the determination of the relations of eccentricity, the comparison of the masses of the planets, the varied deviations of the comets, and some others."[60]

Kant creates a hierarchy of more or less credible ideas, introducing a probabilistic sort of validity: the more the theory follows criteria of harmony, analogy, and correct way of thinking, the more probable it is.

The third and final occurrence of the term "analogy" in the *Vorrede* is essentially a repetition of the criteria that are supposed to grant persuasiveness to his treatise. He states that his ideas and speculations throughout the *Naturgeschichte* are always supported by analogy and a reasonable credibility ("adhering to the thread of analogy and a reasonable credibility").[61]

[60] "Etwas minder Überzeugung werden einige besondere Theile der Ausführung gewähren, wie z.B. die Bestimmung der Verhältnisse der Ekzentricität, die Vergleichung der Massen der Planeten, die mancherlei Abweichungen der Kometen und einige andere." *Naturgeschichte*, I: 235, 23–27.
[61] "an dem Leitfaden der Analogie und einer vernünftigen Glaubwürdigkeit." *Naturgeschichte*, I: 235, 31–32.

Again, the usefulness of this treatise is strictly connected to the plausibility of analogical discourse.

Several themes arise from this first picture of Kant's use of analogy. Firstly, an actual example of how analogies are used by Kant to suggest new hypotheses must be thoroughly analyzed. This will lead back to the argument of the design of nature that I introduced in these pages. Secondly, it remains to be seen what the characteristics of a "*vernünftige Glaubwürdigkeit*" are. Thirdly, it is still unclear why his cosmological theory cannot fall under the umbrella of mathematical theories, and it must rely on analogy and rational credibility to exist. As I show, this has to do with the nature of the object at stake.

Although these three themes remain open, the *Vorrede* provides a helpful introduction to Kant's conception of analogy. Analogies are valuable instruments for creating theories with probabilistic rather than certain (logical) validity. In the following sections, I will analyze in detail what these analogies are, starting with the example of Kant's nebular theory.

1.2 The Nebular Hypothesis

Kant introduces his nebular hypothesis in part one of *Naturgeschichte*. The author opens this section with a significant quote from Alexander Pope: "Is the great chain that draws all to free, And drawn supports, upheld by God or thee?"[62] This quote comes from the first epistle of Pope's *Essay on Man* (1754). This epistle is essentially an ode to nature and God's perfection. Pope strongly believes that nature is perfectly organized according to the rules of beauty and harmony. This organization is part of God's plan to create a great chain of beings, which does not have empty parts and in which every being finds its perfect placement, man included:

> All nature is but art unknown to thee;
> All chance, direction which thou canst not see;
> All discord, harmony not understood;
> All partial evil, universal good;
> And, spite of pride, in erring reason's spite,
> One truth is clear, 'Whatever is, is right.' (Pope, 1954, p. 12)

[62] "Seht jene grosse Wunderkette, die alle Theile dieser Welt vereinet und zusammenzieht und die das große Ganz' erhält." *Naturgeschichte*, I: 241.

Taking the perspective of man, Pope suggests that nature and God are order, and if man cannot comprehend this order, it is just because their knowledge is limited.

As we have seen, Kant already came close to similar ideas in the *Vorrede* when he spoke of faith in God's plans for the organization of nature. Nature is harmonious and pleasing; the beauty, harmony, and analogies we see are nothing but a result of a divine project that implemented physical laws into nature. In some respects, however, nature has still escaped men's attempts to understand it. For Pope, this is because men's reason is limited.

Moving on to the next part of the text, part one of the treatise begins with a short outline of the fundamental principles of Newton's philosophy. There, Kant summarizes Newton's discoveries to introduce the reader to the fundamental laws of physics, which will be used throughout his work: gravity, attraction, and repulsion. Moreover, Kant provides an operational definition of a "systematic arrangement" (*Systematische Verfassung*, I: 246, 26), which he considers crucial to his argument. A systematic arrangement (in this case, of a cosmic structure) is described as follows:

> If, therefore, a certain number of heavenly bodies that are arranged around a common central point and move around this, are simultaneously restricted to a certain plane in such a way that they have the freedom to deviate from it to either side only as little as possible; if such deviation occurs gradually only in those that are most remote from the centre point and thus participate less in the relationships than the others: then, I say, that these bodies are related to each other in a systematic constitution.[63]

This is the case, for example, of the Solar System, in which all planets are positioned in the equatorial plane of the Sun without deviating from the plane (there can be a gradual deviation only at the extreme borders of the system), and all have the same common mid-point (the Sun).

After clarifying his definitions and methods, Kant presents his theory. Let us first follow all the steps of his argument closely before analyzing the role of analogies in it.

Kant's starting point is the recognition of Wright's role in finding order among chaos. Previous cosmological theories, according to Kant, have never been able to account for the relationship between two different systems of fixed stars. The ordered structure relation between planets and their fixed stars was not to be found in a larger picture, with fixed stars

[63] " Wenn daher eine gewisse Anzahl Himmelskörper, die um einen gemeinschaftlichen Mittelpunkt geordnet sind und sich um selbigen bewegen, zugleich auf eine gewisse Fläche so beschränkt worden, daß sie von selbiger zu beiden Seiten nur so wenig als möglich abzuweichen die Freiheit haben; wenn die Abweichung nur bei denen, die von dem Mittelpunkt am weitesten entfernt sind und daher an den Beziehungen weniger Anteil als die andern haben, stufenweise stattfindet: so sage ich, diese Körper befinden sich in einer systematischen Verfassung zusammen verbunden." *Naturgeschichte*, I: 246, 19–27.

that seemed to be subject to no law governing their positions relative to each other. In Kant's words: "the fixed stars were not given any law by which their situations in relation to each other were restricted, and they were seen to fill all the heavens and all the heavens of heavens without any order or intention."[64]

Wright proposed a solution that brings order into the picture. Kant writes: "He regarded the fixed stars not as a disorderly mass distributed without any intent, but rather found a systematic constitution in the whole and a universal relationship between these stars and a main plane of the space they occupy."[65] Kant wished to start with this idea and expand on it.

The starting point, for the author, is to recognize that the Milky Way, described by him as a "crowd of stars" (*Menge der Sterne*, I: 248, 19–20), always presents itself in an immense circular orientation to the viewer, who can spot some relations between the fixed stars that compose it in terms of their distance from each other. Kant thinks that this observation could hint at a particular arrangement of the fixed stars that compose the Milky Way: "they are not distributed in all directions arbitrarily, but must relate principally to a particular plane that passes through our point of view and to which they are set to be found as close as possible."[66]

Based on these ideas and Wright's proposals, Kant develops his own hypothesis:

> Now, if we think a plane drawn through the firmament in unlimited distances and assume that all the fixed stars and systems stand in a universal relationship to this plane so that they are closer to it than to other regions, then an eye situated in this plane of reference will perceive, in its view into the field of stars at the concave spherical surface of the firmament, this densest concentration of stars in the direction of such a drawn plane in the form of a zone illuminated by much more light. This light band will extend in the direction of a largest circle because the position of the observer is in the plane itself. In this zone there will be a multitude of stars which, because they are so small as to be indistinguishable as individual bright points and because of their apparent density, appear as a uniform whitish shimmering, in a word, as a milky way. The remaining heavenly array, the relationship of which to the drawn plane gradually diminishes or which may also be closer to the standpoint of the observer, will be perceived as more widely distributed even though still related to this plane on account of its concentration. Finally, it

[64] "Die Fixsterne bekamen sein Gesetz, durch welches ihre Lagen gegen einander eingeschränkt wurden, und man sah sie alle Himmel und aller Himmel Himmel ohne Ordnung und ohne Absicht erfüllen." *Naturgeschichte*, I: 247–248

[65] "Er betrachtete die Fixsterne nicht als ein ungeordnetes und ohne Absicht zerstreutes Gewimmel, sondern er fand eine systematische Verfassung im Ganzen und eine allgemeine Beziehung dieser Gestirne gegen einen Hauptplan der Räume, die sie einnehmen." *Naturgeschichte*, I: 248, 10–13.

[66] "(…) so folgt aus dieser Erscheinung, daß in den Entfernungen, darin sie einer hinter dem anderen von uns abstehen, sie sich nicht in einer nach allen Seiten gleichmäßigen Verstreuung befinden, sondern sie auf eine gewisse Fläche vornehmlich beziehen müssen, die durch unseren Gesichtspunkt geht, und welcher sie sich so nahe als möglich zu befinden bestimmt sind." *Naturgeschichte*, I: 248–249.

> follows from this that, because from our solar system this system of fixed stars is perceived in the direction of a largest circle, it is part of this very same great plane and constitutes a system with them.[67]

The hypothesis of a plane of reference which connects all systems of fixed stars explains the astronomer's observations: the Solar System is located inside this plane of reference and, therefore, what is seen from this perspective is a vast band of light (the mass of all the other fixed stars) that acquires the shape of a massive circle because the onlooker's viewpoint is on the plane itself. This means that the Solar System should be part of this systematic arrangement and subject to the higher-order mechanisms that govern it. These mechanisms are what Kant tries to explain using analogies.

At this point in the argument, Kant relies on Newtonian forces. "Appearance" (*Allem Ansehen nach*, I: 250, 2) suggests to him that the powerful force of attraction and repulsion of fixed stars has an extension which is larger than that of their system. As proof of this, he cites that the comets above Saturn's orbit are still forced by the Sun's gravitational pull to curve their trajectories and move in orbits (I: 250, 3–5). If these forces extend so far, their action must influence at least the fixed stars that are placed close to them. According to Kant, this continuous and reciprocal attraction is paired with a repulsive force that pulls away from a central point, recreating a dynamic that is familiar to the observer of the planets in the Solar System. The equilibrium between attraction and repulsion generates order, bringing about timeless orbits (*ewige Kreisumläufe*, I: 250, 20) and preserving the structure of creation from collapse (*dadurch das Gebäude der Schöpfung vor der Zerstörung gesichert wird*, I: 250, 20–22).

Once again, Newton's laws impose order on chaos, allowing Kant to create a theory that takes the structure of our planetary system and extends it to larger systems. This is where analogy plays a significant role:

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[67] "Wenn wir uns nun eine ebene Fläche durch den Sternen Himmel hindurch in unbeschränkte Weiten gezogen denken, und annehmen , dass zu dieser Fläche alle Fixsterne und Systeme eine allgemeine Beziehung ihres Ortes haben, um sich derselben näher als anderen Gegenden zu befinden, so wird ein Auge, das dieser Beziehungsfläche nahe ist, bei seiner Aussicht in das Feld der Gestirne, an der hohlen Kugelfläche des Firmaments diese dichteste Häufung der Sterne in der Richtung der gezogenen Fläche unter der Gestalt einer von mehreren Lichtern erleuchteten Zone erblicken. Dieser lichte Streif wird nach der Richtung eines großen Zirkels fortgehen, wenn der Stand des Zuschauers in der Fläche selbst ist. In dieser Zone wird es von Sternen wimmeln, welche durch die nicht zu unterscheidende Kleinheit der hellen Punkte, die sich einzeln dem Auge entziehen, und durch ihre scheinbare Dichtigkeit einen einförmig weißlichen Schimmer, mit einem Worte, eine Milchstraße darstellen. Das übrige Himmelsheer, dessen Beziehung gegen die gezogene Fläche sich nach und nach vermindert, oder welches sich auch dem Stande des Beobachters näher befindet, wird mehr zerstreut, doch der zunehmenden Häufung nach, auf eben diese Fläche beziehend gesehen werden. Endlich folgt hieraus, dass unsere Sonnenwelt, weil von ihr aus diesem System der Fixsterne in der Richtung eines größten Zirkels gesehen wird, mit in eben derselben großen Fläche befindlich sei und mit den übrigen ein System ausmache." *Naturgeschichte*, I: 249, 12–33.

> Thus all the suns of the firmament have orbital motions either around one universal centre point or around many. In this context, we may use the analogy of what has been observed in the orbits of our solar system, namely that the same cause that has imparted centrifugal force to the planets as a result of which they describe their orbits, has also arranged them in such a way that they all relate to one plane, which is therefore also the cause, whatever it may be, that what has given the power of rotation, to the suns of the upper world, as so many moving stars of higher orders of worlds, has, at the same time, brought their orbits into one plane as much as possible and striven to limit derivations therefrom. According to this representation, the system of the fixed stars may be described approximately by the planetary one, if the latter is extended infinitely.[68]

And he later writes:

> The shape of the heavens of the fixed stars therefore has no other cause than being exactly the same systematic constitution on a large scale as the planetary system has on a small one, in that all suns make up one system, whose universal plane of reference is the Milky Way. Those with the least reference to this plane are seen as being to one side, but they are less concentrated precisely because they are more widely dispersed and rarer. They are, as it were, the comets among the suns.[69]

That fixed stars are moving is something completely new to modern cosmology, but Kant is not afraid of supporting his theory, given that it was based on nature and analogy ("*Die Glaubwürdigkeit der Sache selber aus den Gründen der Natur und der Analogie unterstützen diese Hoffnung so gut, daß sie die Aufmerksamkeit der Naturforscher reizen können, sie in Erfüllung zu bringen*." I: 253, 2–5).

Supported by analogy, nature, Wright's ideas, and Newton's laws, Kant takes the argument a step further, introducing what is nowadays called the nebular hypothesis. Firstly, he refers to Maupertuis and the *Treatise on the Shape of Stars* (*Discours sur les différentes figures des astres,* 1732), in which the French author described the presence of particular elliptical

[68] "So haben denn alle Sonnen der Firmaments Umlaufsbewegungen entweder um einen allgemeinen Mittelpunkt oder um viele. Man kann sich aber allhier der Analogie bedienen dessen, was bei den Kreisläufen unserer Sonnenwelt bemerkt wird: daß nämlich, gleichwie eben dieselbe Ursache, die den Planeten die Centrifugalkraft, durch die sie ihre Umläufe verrichten, erteilt hat, ihre Laufkreise auch so gerichtet, daß sie sich alle auf eine Fläche beziehen, also auch die Ursachen welche es auch immer sein mag, die den Sonnen der Oberwelt als so viel Wandelsternen höherer Weltordnungen die Kraft der Umwendung gegeben, ihre Kreise zugleich so viel möglich auf eine Fläche gebracht und die Abweichungen von derselben einzuschränken bestrebt gewesen. Nach dieser Vorstellung kann man das System der Fixsterne einigermaßen durch das planetische abschildern, wenn man dieses unendlich vergrößert." *Naturgeschichte*, I: 250, 23–36.

[69] "Die Gestalt des Himmels der Fixsterne hat also keine andere Ursache, als eben eine dergleichen systematische Verfassung im Großen, als der planetische Weltbau im kleinen hat, indem alle Sonnen ein System ausmachen, dessen allgemeine Beziehungsfläche die Milchstraße ist; die sich am wenigsten auf diese Fläche beziehende werden zur Seite gesehen, sie sind aber eben deswegen weniger gehäuft, weit zerstreuter und seltener. Es sind so zu sagen die Kometen unter den Sonnen." *Naturgeschichte*, I: 251, 22–28.

bodies in space that can be identified only by the shape of the light they emit. Kant claims that these bodies are exactly what he has been describing so far in the treatise: they are masses of fixed stars placed in a single plane of reference revolving around a central spot. The author calls them nebulous stars, but we now know these objects are galaxies. While commenting on the nature of elliptical bodies in Maupertuis, Kant writes:

> It is much more natural and conceivable that these are not single stars of such size, but systems of many stars, whose distance from us exhibits them as being in so narrow a space that the light, which is imperceptible from each one individually, becomes a uniform pale shimmering with their immeasurable number. The analogy with the solar system in which we exist, its shape which is just as it must be according to our theory, the weakness of the light, which requires us to presuppose an infinite distance: all this is in agreement with holding the elliptical figures to be the same solar systems and, so to speak, Milky Ways, the constitution of which we have just developed; and if presumptions in which analogy and observation correspond to support each other completely have the same value as formal proofs, then we will have to regard the certainty of these systems as proved.[70]

Therefore, the Milky Way is not alone: other nebulous stars are supposedly crowding the immensity of space, and, given their shape and all the other characteristics they share with Kant's theory, it is safe to say that they also follow the same systematic arrangement: a reference point in the middle and a mass of orbiting fixed stars revolving around it (placed in a common plane of reference).

As a further final hypothesis, Kant also suggests that even the nebulous stars could be nothing more than small parts of an indefinitely larger system, guided by the laws of nature and structured according to the same systematic arrangement. Planets orbit around fixed stars, which orbit around the central point of nebulous stars, which in turn could potentially orbit around the center of the Universe. Kant's Matryoshka structure has been fully explained.

The guidance of analogy and the uniformity of the laws of nature have allowed this discovery. Kant writes: "If the parts of nature are observed according to intentions and a

[70] "Weit natürlicher und begreiflicher ist es, daß es nicht einzelne so große Sterne, sondern Systemata von vielen seien, deren Entfernung sie in einem so engen Raume darstellt, daß das Licht, welches von jedem derselben einzeln unmerklich ist, bei ihrer unermesslichen Menge in einen einförmichten blassen Schimmer ausschlägt. Die Analogie mit dem Sternensystem, darin wir uns befinden, ihre Gestalt, welche gerade so ist, als sie es nach unserem Lehrbegriffe sein muß, die Schwäche des Lichts, die eine vorausgesetzte unendliche Entfernung erfordert: alles stimmt vollkommen überein, diese elliptische Figuren für eben dergleichen Weltordnungen und, so zu reden, Milchstraßen zu halten, deren Verfassung wir eben entwickelt haben; und wenn Mutmaßungen, in denen Analogie und Beobachtung vollkommen übereinstimmen, einander zu unterstützen, eben dieselbe Würdigkeit haben als förmliche Beweise, so wird man die Gewissheit dieser Systemen für ausgemacht halten müssen." *Naturgeschichte*, I: 254–255.

discovered plan, certain properties are revealed that would otherwise be overlooked and remain hidden if our observation is spread over all objects without any guidance."[71]

Having now reached the end of Kant's argument, it is time to comment on how analogies are used in it. Kant's method here is to rely on three elements: analogies, the uniformity of nature, and the theory of design. This, I claim, corresponds to a cosmological theory built through an analogical method and grounded in metaphysical assumptions (the great chain of beings, the uniformity of nature).

The first step of this method is to spot similarities among different systems. Let us take the Solar System and the Milky Way as an example. Kant notes several similarities between these two systems: planets and fixed stars are placed in a common plane of reference, they follow the Newtonian laws of attraction and repulsion, and so on.

A set of assumptions then strengthens these similarities. Firstly, as we have seen, Kant repeatedly mentions that he assumes the validity of Newtonian laws for all physical matter in his treatise. Considering the nature of Newton's laws, we can safely say that these propositions are scientifically valid.

Secondly, many of Kant's claims suggest that he accepts two further theories: the design theory of God's existence (*Vorrede*) and the conception of nature as harmonious, uniform, and beautiful. All of these conceptions are clearly derived from the English influences I discussed before (Section I – 4.2, 4.3), especially from Newton's analogy of nature and Pope's conception of the great chain of beings, started by God and kept in order by nature's laws. These are metaphysical assumptions, not supported by any evidence, mathematical expression, or logical proposition. Hence, these metaphysical laws are assumed, not deduced.

Kant, then, uses these metaphysical assumptions to give meaning to the similarities between planets and fixed stars. The fact that they share so many elements cannot be a matter of chance (against Epicurus); it must be interpreted as a sign of some other similarities. Given that the two systems share so many common elements, and given that nature is uniform, it is safe to assume that the two systems are analogous to each other. Therefore, they will share some other characteristics that neither observation nor mathematics can reach. Hence, both planets and fixed stars are part of what Kant calls a systematic arrangement, and, generalizing this theory, all Solar Systems are analogous to nebulous stars. Thus, the new similarities discovered are the coincidence of structure, the reference to a central point, and the orbital movement. This

[71] "Wenn man die Theile der Natur nach Absichten und einem entdeckten Entwurfe betrachtet, so eröffnen sich gewisse Eigenschaften, die sonst übersehen werden und verborgen bleiben, wenn sich die Beobachtung ohne Anleitung auf alle Gegenstände zerstreut." *Naturgeschichte*, I: 255, 31–34.

is what I call Kant's analogical method supported by metaphysical assumptions. It must be remembered that this method is still used in natural sciences, where the object of research is physical.

Following Kant's approach in the *Vorrede*, we must remember that this method is not mathematically valid; rather, it is probabilistic: the more similarities we find between the two systems, the more probable it is that they are analogous and share further characteristics. The similarities, however, are based on the conviction that God's design provides beauty and uniformity in nature.

Kant presented the nebular hypothesis as one of those theories of his *Naturgeschichte* that achieved the highest degree of validity possible for a non-mathematical or geometrical account. This, as I have shown, is thanks to his analogical method. Let us further analyze the remaining arguments to understand his use of analogy in this treatise.

1.3 Density and Masses of Planets

In the second chapter of *Naturgeschichte*, divided into two sub-parts, Kant proposes his idea concerning the constituting elements of planets. In this chapter, analogy plays a pivotal role again, suggesting Kant's faith in this argumentative tool. There are three cases where analogy is used (directly or indirectly). Before analyzing the three occurrences, it is worth briefly summarizing the topics of the two parts that compose Chapter 2.

Kant aims to clarify the internal structure of planets, thereby reconstructing the history of the Cosmos's development. Before beginning to do so, he makes a methodological premise:

> One might, if one wished to be expansive, ultimately arrive at the framework I propose to present of the origin of the Universe by pursuing on one's own a series of conclusions following from one another in the way of a mathematical method with all the splendour this involves and with even greater lustre than the presentation of physical matters generally tends to display; however I would prefer to present my opinions in the form of a hypothesis and leave it to the insight of the reader to examine their worthiness rather than to make their validity suspect by the illusion of a fallacious argument and, by convincing the ignorant, to lose the approval of the experts.[72]

[72] "Man könnte, wenn man weitläufig sein wollte, durch eine Reihe aus einander gefolgerter Schlüsse nach der Art einer mathematischen Methode mit allem Gepränge, daß diese mit sich führt, und noch mit größerem Schein, als ihr Anzug in physischen Materien gemeinhin zu sein pflegt, endlich auf den Entwurf lieber kommen, den ich von dem Ursprunge des Weltgebäudes darlegen werde; allein ich will meine Meinungen lieber in der Gestalt einer Hypothese vortragen und der Einsicht des Lesers es überlassen, ihre Richtigkeit zu prüfen, als durch den Schein einer erschlichenen Beweisführung ihre Gültigkeit

The premise is that his theory will be presented as a hypothesis rather than a formally rigorous mathematical argument. Regardless of the reasons why Kant decides to do so, what is relevant here is that he believes in the possibility of reaching mathematical certainty for his argument. He writes that the mathematical exposition could reach a higher degree of plausibility, eliminating any doubt concerning his theory. However, he will not present it in such a form. As we will see, this proposal is essentially based on analogies, so the plot concerning the capacity of analogies to reach a mathematical degree of validity thickens (this will be especially evident with the third occurrence of this chapter).

Kant's proposal can be summarized as follows (I: 269–277):

A - In its original state, the cosmos was filled with elemental material, leaving no empty space between the individual components.

B - This primordial material is in constant motion, driven by the forces of attraction and repulsion inherent to the individual elements.

C - The individual elements have varying densities, and those with greater density attract other elemental components. This gradually leads to the formation of increasingly dense accumulations of matter, known as planets.

D - The characteristics of the matter accumulated at a point in space depend on its position relative to the Sun or the fixed star in question. The closer a planet is to the Sun, the denser the planet and the materials that compose it will be. Conversely, the farther a planet is from the Sun, the lower its density. This is an inverse proportional relationship.

E - The forces of attraction and repulsion between the different accumulations of primordial material create a balance that shapes the orbits of the planets around their fixed star.

F - The Sun's gravitational force determines the mass of the planets in a directly proportional manner: the closer a planet is to the Sun, the more matter will be drawn away by the Sun's gravitational force. This means that the farther a planet is from the Sun, the greater its mass will be.

verdächtig machen und, indem ich die Untersuchung annehme, den Beifall der Kenner verlieren." *Naturgeschichte*, I: 263, 5–15.

> G - In summary, the relationship between distance from the Sun and the density of planets is inversely proportional. In contrast, the relationship between distance from the Sun and a planet's mass is directly proportional.

It is possible now to look at the first occurrence of analogical thinking, which in this case is of an indirect kind (the word analogy is not used, but the structure of the argument is clearly analogical). It appears as a further methodological premise:

> In order to understand clearly the formation of the Universe, we shall now limit our observation from the infinite sum total of nature to one particular system, such as the one belonging to our Sun. After we have considered its creation, we shall proceed in a similar manner to the origin of the higher world orders and be able to summarize the infinity of the whole of creation in one doctrine.[73]

This method recurs in *Naturgeschichte*. As we saw in the previous chapter, this is Kant's matryoshka structure of the Universe: small systems are embedded in larger systems that work, essentially, according to the same laws and are structured analogously, following the analogy of nature. This was the case, for example, of the relationship between systems of fixed stars and nebulous stars such as the Milky Way.

In this case, the operation is the same. He claims that an analysis of the Solar System's constitutive elements and characteristics will yield principles that can then be generalized. This generalization is indirectly analogical: starting from the metaphysical assumption that nature is a uniform system, he presupposes that all parts of nature, observable and unobservable, share common elementary particles that behave in the same way. Both the planets of the Solar system and the planets inside other possible systems of fixed stars must share the identical constitutive particles. Furthermore, both members of the two systems follow the usual Newtonian laws of attraction and repulsion. Therefore, it is safe to assume that what works for the Solar system will also work for the rest of the Universe. This is a generalization by analogy, insofar as it claims that the rest of the Universe is analogous to the Solar system in terms of its constitutive elements. This means, from a practical perspective, that Kant's hypothesis concerning the direct proportionality between a planet's distance from the Sun and its mass, as well as the inverse

[73] "Wir wollen, um die Bildung des Weltbaues deutlich zu begreifen, unsere Betrachtung von dem unendlichen Inbegriff der Natur auf ein besonderes System einschränken, so wie dieses zu unserer Sonne gehörige ist. Nachdem wir die Erzeugung desselben erwogen haben, so werden wir auf eine ähnliche Weise zu dem Ursprung der höheren Weltordnungen fortschreiten und die Unendlichkeit der ganzen Schöpfung in einem Lehrbegriffe zusammenfassen können." *Naturgeschichte*, I: 265, 9–15.

proportionality between that distance and its density, is plausible and analogically valid throughout the entire Universe.

In the second part of the chapter, we find the remaining two occurrences of analogies, which this time are both direct. The first one comes when Kant explains the relationship between the distance planet-Sun and the mass of the planet:

> Although, therefore, in general the planets are of greater mass the further they are from the Sun, as altogether Saturn and Jupiter, the two main elements of our system, are in fact the largest because they are most distant from the Sun, there are nonetheless departures from this analogy, in which however the characteristic of the general formation, which we assert for all heavenly bodies, shines forth at all times: namely that a planet of exceptional size will deprive those planets nearest to it on both sides of the mass that would be due to them because of their distance from the Sun, by absorbing part of the matter that should have belonged to their formation.[74]

The context of this occurrence suggests a lesser theoretical meaning for my purpose. As I propose, Kant uses the word "*Analogie*" here as an abbreviation for "direct proportionality." In the text, Kant supports the view that an analogy holds between the distance between the planet and the Sun and the mass of the planets, but distance and mass have nothing in common in philosophical terms. There is no similarity between the two systems that eventually allows for the plausibility of further similarity between them (the structure of the analogical argument I have been following throughout the analysis). Instead, distance and mass are related insofar as the increase of the former determines the increase of the latter. There is uniformity and continuity between the two because there is a direct determination of one element in the other. If the distance increases, then the mass increases. In analogical cases, such as the one concerning the constitutive elements of the Universe, there is no dependent relation between the two systems/elements of the relation: the density of the planet Earth does not determine any change (increase or decrease) in another system. On the one hand, we are talking about a dynamic relation between two elements that vary with the other; on the other hand, we are discussing analogies or similarities among potentially unrelated systems.

[74] "Obgleich also im Ganzen die Planeten von größerer Masse sind, nachdem sie weiter von der Sonne entfernt sind, wie denn überhaupt Saturn und Jupiter, als die zwei hauptstücke unseres Systems, darum die größten sind, weil sie von der Sonne am weitesten entfernt sind, so finden sich dennoch Abweichungen von dieser Analogie, in denen aber jederzeit das Merkmal der allgemeinen Bildung hervorleuchtet, die wir von den Himmelskörpern behaupten: daß nämlich ein Planet von ausnehmender Größe die nächsten von beiden Seiten der ihnen wegen ihrer Sonnenweite gebührenden Masse beraubt, indem er einen Teil der Materien sich zueignet, die zu jener ihrer Bildung kommen sollten." *Naturgeschichte*, I: 275, 3–13.

Hence, I claim that "analogy", here, is better understood as "proportional relation". Rather than a significant occurrence of the analogical method, this becomes a philological and interpretative question for another work.

The last use of analogy in the second chapter reconnects to many of the topics I have treated so far. To fully grasp its relevance to my aims, it is worth quoting the whole paragraph at stake:

> I shall conclude this chapter by adding an analogy which, all by itself, is able to raise the present theory of the mechanical formation of the heavenly bodies from the probability of a hypothesis to a certainty. If the Sun is made up of the particles of the same basic material of which the planets have constituted themselves, and if the only difference lies in the fact that in the former the matter of all types has been gathered without any differentiation, while in the latter they have been distributed at various distances in accordance with the constitution of the density of their varieties by their very own attractive forces, and so if the matter of all the planets together is considered in its entire distribution, a density will have to emerge which is almost equivalent to the density of the Sun's body. Now this necessary consequence of our system finds a fortunate confirmation in the comparison that Herr von Buffon, that so deservedly famous philosopher, has proposed between the densities of the entire planetary matter and of the suns; he found a similarity between the two of them that was 640 to 650. If the necessary consequences that result from a doctrine in a non-artificial way are confirmed by the actual relations in nature, then can we believe that mere arbitrariness has caused this agreement between theory and observation?[75]

The first thing to notice is that, according to Kant, the analogy that he is about to discuss can elevate his theory from the mere probability of a hypothesis to formal certainty (*förmlichen Gewißheit*). While discussing the *Vorrede*, I introduced the difference between mathematical validity, which is bivalent (either valid or invalid, true or false), and probabilistic validity, which is multivalent (a proposition can be more or less valid). Here, Kant is indirectly specifying an

[75] " Ich beschließe dieses Hauptstück, indem ich eine Analogie hinzufüge, die an und für sich allein gegenwärtige Theorie von der mechanischen Bildung der Himmelskörper über die Wahrscheinlichkeit der Hypothese zu einer förmlichen Gewissheit erheben kann. Wenn die Sonne aus den Partikeln desselben Grundstoffes, daraus die Planeten sich gebildet haben, zusammengesetzt ist; und wenn nur darin allein der Unterschied besteht, bei diesen aber in verschiedenen Entfernungen nach Beschaffenheit der Dichtigkeit ihrer Sorten vertheilt worden; so wird, wenn man die Materie aller Planeten zusammen vereinigt betrachtet, in ihrer ganzen Vermischung eine Dichtigkeit herauskommen müssen, die der Dichtigkeit des Sonnenkörpers beinahe gleich ist. Nun findet diese nötige Folgerung unseres Systems eine glückliche Bestätigung in der Vergleichung, die der Herr von Buffon, dieser so würdigberühmte Philosoph, zwischen den Dichtigkeiten der gesammten planetischen Materie und der Sonnen ihrer angestellt hat; er fand eine Ähnlichkeit zwischen beiden, wie zwischen 640 und 650. Wenn ungekünstelte und notwendige Folgerungen aus einer Lehrverfassung in den wirklichen Verhältnissen der Natur so glückliche Bestätigungen antreffen: kann man denn wohl glauben, daß ein bloßes Ungefähr diese Übereinstimmung zwischen der Theorie und der Beobachtung veranlasse?" *Naturgeschichte*, I: 277, 7–28.

important characteristic of his multivalent analogical validity, namely that it can reach a probability of 100% and, therefore, a similar degree of validity to that of mathematics. This statement is significant at this stage of his precritical production because it indicates his total faith in the analogical process, capable of reaching a complete statistical validity. This claim will change in later works, as I will discuss.

This analogy is structured as follows: Kant's hypothesis showed that the materials that compose the Sun and the planets are the same (see A-D of my summary). Furthermore, the placement of this material in the Solar System is determined by a specific law, namely by the distance between the Sun and a particular planet (inverse proportionality). According to this law, the Sun is an agglomerate of materials of all densities, whereas the planets are composed of materials that have a specific density (which varies according to their distance from the Sun). However, suppose the materials that compose the single planets are the same as those that compose the Sun. In that case, it is safe to assume (this is the analogical conclusion) that the density of the total sum of the materials composing all the planets of the Solar System will be almost equal (*beinahe gleich*) to the total density of the Sun.

Here, Kant repeats the recurrent structure of his analogical arguments. Given that there are relevant similarities between two systems (the Sun and the sum of all planets of the Solar System), it is safe to assume that there will be a further similarity suggested by the previous ones (namely that the density of the Sun is almost equal to the density of the sum of all planets of the Solar System). What a relevant similarity is, is determined by the set of metaphysical assumptions at the basis of Kant's argument, which are, as stated before, harmony and continuity in nature and God's perfect design of the Universe.

A confirmation of the second of these metaphysical assumptions is the consequence of the agreement between this analogy and Buffon's calculations. Kant quotes Buffon, noting that, according to the French scientist and philosopher, the density of the two systems at stake in his analogy is almost the same. Kant takes this mathematical calculation as evidence that his theory is completely valid (100% valid), although its source is analogical rather than mathematical. Finally, the accordance between his theoretical conception and Buffon's calculations, according to Kant, cannot be seen as a mere result of contingency; there must be a divine-like plan governing nature, and this agreement between theory and observation (*Übereinstimmung zwischen der Theorie und der Beobachtung*).

Summarizing my analysis of the first two chapters of *Naturgeschichte*, three main results have emerged. First, Kant adopts a recurrent structure for his analogical arguments, exemplified in the cases of nebulous stars and the density of the components of the Solar

System. Secondly, this analogical argument is always supported by a set of foundational metaphysical assumptions, namely the law of continuity of nature, the theory of divine design of the Universe, and the analogy of nature. Thirdly, his analogical arguments can reach a mathematical degree of validity, equalizing multivalent and bivalent validities.

1.4 Saturn's Rings

In the fifth chapter of *Naturgeschichte*, there is one relevant use of analogy. It reiterates the author's belief in the possibility of multivalent validity to reach perfect validity, as I claim. Kant concludes this chapter with the following words:

> I consider it more advisable completely to forgo the fleeting applause such correspondences might arouse for the true pleasure that arises from the perception of regular connections when physical analogies support each other to designate physical truths.[76]

First, it is necessary to provide some contextual information to understand these words. The chapter aims to use the theory of the mechanical evolution of the Universe to explain the formation of Saturn's rings. His aim, he writes, is to point out the secret (*das Geheimniss anzeigen*, I: 291, 23) that lies behind the transformation of the natural vapors which orbit around Saturn into rings. This transformation, accordingly, depends on a single cause which he assumes as accurate: "I am assuming that Saturn has had an axial rotation and nothing more than this is needed to reveal the whole secret."[77] The accordance between this assumption and the description of the raw state of the planet's first development that he provided before is sufficient, according to Kant, to explain the origin of Saturn's ring.

Kant proceeds with his technical explanation in the following pages (I: 292–294), claiming that the planet's axial rotation determines the placement of specific particles in an equatorial shape, forming a giant vaporous ring around Saturn. Those who accept this mechanical law resulting from the composition of planets, according to the author, can easily understand that this phenomenon would happen on all the planets or comets that present an axial rotation.

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[76] " Ich finde es für rathsamer, den flüchtigen Beifall, den solche Übereinstimmungen erwecken können, dem wahren Vergnügen völlig aufzuopfern, welches aus der Wahrnehmung des regelmäßigen Zusammenhanges entspringt, wenn physische Analogien einander zur Bezeichnung physischer Wahrheiten unterstützen." *Naturgeschichte*, I: 304, 14–18.

[77] "Ich nehme an: Saturn habe eine Umdrehung um die Axe gehabt, und nichts mehr, als dieses ist nötig, um das ganze Geheimnis aufzudecken." *Naturgeschichte*, I: 291, 26–28.

It follows that, under certain conditions, even planet Earth might have been affected by the same condition in a distant past:

> Could we not imagine that the Earth once had a ring like Saturn? It could have risen from its surface just as Saturn's did and have remained for a long time while the Earth was slowed down by who knows what cause from a much faster rotation to its present rate, (…).[78]

Why does Kant believe that this is possible? Here lies what he called a "physical analogy" (*physische Analogie*) in the quote opening this section. Certain similarities between Saturn and Earth suggest that other similarities may exist. If we think about rings, Earth is obviously devoid of them, but that does not mean it is impossible that this planet had them in the past. Knowing that Earth has axial rotation, Kant imagines a past with a ring surrounding it, probably destroyed by two causes: the passage of a comet, which disrupted the delicate balance between attraction and repulsion in the orbiting vapors, and a reduction in the velocity of the axial rotation.

This theory presents once again the typical analogical structure of Kant's arguments: a set of shared assumptions and similarities between two systems allows the establishment of a further similarity, in this case, the presence of a ring around the Earth. The validity of this analogy, furthermore, introduces a reflection concerning the nature of Kant's method.

In this case, there is no evidence whatsoever to support the analogy. Or rather, there is no scientific calculation that improves the plausibility of the theory at stake. This was the case with the hypothesis about the density and mass of planets, since Buffon provided calculations that were useful to Kant. However, the only evidence the author can cite in this case comes from the holy scriptures. Kant refers to a passage in Genesis in which the "waters of the firmament" are frequently mentioned and, according to the author, have caused many problems for interpreters of all ages. For him, the waters of the firmament are nothing but planetary rings, surrounding the Earth just like Saturn's rings. After their disappearance, the vapors that constituted them, which were rich in water, turned into violent rain and, eventually, into the most horrifying of all inundations (*einem der allergrausamsten Wolkenbrüche*, I: 303, 34) ever seen on the planet. In Genesis, rainbows began to appear after the great flood, symbols reminiscent of the rings and also reassuring Noah of his pact with God: no such flooding would ever happen again (*Genesis* 9:12-17).

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[78] "Könnte man sich nicht einbilden, dass die Erde eben sowohl, wie Saturn ehemals einen Ring gehabt habe? Er möchte nun von ihrer Oberfläche ebenso, wie von Saturns seiner aufgestiegen sein und habe sich lange Zeit erhalten, indessen dass die Erde von einer viel schnelleren Umdrehung, als die gegenwärtige ist, durch wer weiß was für Ursachen bis zu gegenwärtigem Grade aufgehalten worden, (…)." *Naturgeschichte*, I: 303, 3–8.

Physical analogies confirm biblical stories. Yet, as Kant states (I: 304, 14–18), biblical stories cannot confirm physical analogies. Going back to the quote I put at the beginning of this paragraph, Kant prefers to search for the true pleasure that comes from perceiving regularities and connections between physical analogies and physical truths (I: 304, 14–18). During the analysis of the *Vorrede*, I highlighted Kant's particular idea on God's interference in worldly matters: God is the source of the systematic arrangement, but it does not interfere at each stage of his perfect chain of being, which is always kept in order by the strength (continuity) of natural laws.

Rainbows and biblical tales are, therefore, not enough to confirm a physical analogy. This analogy needs constant confirmation through the perception of additional similarities or useful mathematical calculations (such as Buffon's work on the density of the Sun and the planets of the Solar System), which would eventually elevate it to the level of a physical truth. Once again, Kant is dealing with the problematic passage from plausibility to total validity, from a percentage inferior to 100% to 100%. In other words, when does a continuous cumulation of similarities and analogical confirmations of a hypothesis allow this hypothesis to become a valid theory?

Although Kant is not asking these questions directly at this stage, our previous analyses suggest that, in *Naturgeschichte*, Kant takes the presence of physical analogies to be a good sign of a scientific hypothesis's validity. In the previous chapter, I showed that Kant believed his analogical theory of the density of the planets to be formally valid, not merely reasonably plausible. The perception of an analogy between two different systems becomes a helpful hint for the philosopher: the interconnection and confirmation that the analogical hypothesis encounters from other sources (i.e., Buffon) render the analogy a valuable interpretative key, used also in other apparently unrelated contexts to predict further physical laws or, in this case, characteristics of the cosmos.

What is relevant at this stage of Kant's precritical production is that the passage from a large number of valuable analogies to a formally valid theory (a passage which is typically addressed as one of the most problematic in inductive inferences) is still based on the aforementioned metaphysical assumptions (God's design of the Universe, uniformity of nature, analogy of nature). Thanks to these assumptions, analogies acquire a validity that surpasses a mere heuristic utility.

1.4 The Center of the Universe

The seventh section of part two of *Naturgeschichte* summarizes the methods and theories employed in the previous parts. Hence, it is no surprise that Kant takes time to reflect explicitly on the meaning of his analogical method. Furthermore, Kant's summary is also helpful for him to extract two new hypotheses from his structure of the Universe: (1) there is a center of the Universe around which everything started to develop, and (2) creation is a continuous cycle that gradually encounters destruction as part of its cycle. Before the methodological part, let us start with the constructive part of the section (where he introduces hypotheses 1 and 2).

In reconstructing his own argument, Kant repeatedly highlights the relevance of what I called his metaphysical assumptions for the analogical method. Kant believes that "It is true that the formation, the shape, the beauty and perfection are relationships of the building blocks and of the substances that constitute the material of the universe; (…)."[79] Furthermore, "(…) attraction is precisely that universal relationship that unites the parts of nature in one space: it therefore extends to the entire expanse of space into all the reaches of its infinity."[80] All nature is united and works harmoniously and beautifully, ultimately, because a divine understanding designed it in such a way. God, however, is not constantly interfering in the process, but it is the source of the initial creation of both the material composing nature and the laws of nature.

A natural system that works on its own (without God's constant interference) is thus more beautiful and perfect than a world full of miracles: "A world constitution that could not sustain itself without a miracle does not have the character of permanence that is a feature of God's choice; (…)."[81] Precisely because of nature's independence, its development unfolds in time: "Creation is not the work of a moment.", and "Creation is never complete."[82]

All these statements reinforce and ground Kant's argumentative structure. Once again, the similarities found among different systems make his hypotheses increasingly plausible, unveiling more characteristics of the Universe:

> All the fixed stars that the eye discovers in the hollow depth of the heavens and that appear to demonstrate a kind of extravagance, are suns and centre points of similar systems. The analogy thus does not permit any doubt here that these were formed and generated in the same manner

[79] "Es ist wahr, die Ausbildung, die Form, die Schönheit und Vollkommenheit sind Beziehungen der Grundstücke und der Substanzen, die den Stoff des Weltbaues ausmachen; und man bemerkt es an den Anstalten, die die Weisheit Gottes noch zu aller Zeit trifft; (…)." *Naturgeschichte*, I: 310, 2–5.
[80] " (...) die Anziehung ist eben diese allgemeine Beziehung, welche die Theile der Natur in einem Raume vereinigt: sie erstreckt sich also auf die ganze Ausdehnung desselben bis in alle Weiten ihrer Unendlichkeit." *Naturgeschichte*, I: 380, 31–34.
[81] "Eine Weltverfassung, die sich ohne ein Wunder nicht erhielt, hat nicht den Charakter der Beständigkeit, die das Merkmal der Wahl Gottes ist; (…)." *Naturgeschichte*, I: 311, 10–12.
[82] "Die Schöpfung ist nicht das Werk von einem Augenblicke." *Naturgeschichte*, I: 314, 2–3; and "Die Schöpfung ist niemals vollendet." *Naturgeschichte*, I: 314, 27–28.

> as the one in which we find ourselves, out of the smallest parts of elementary matter that filled empty space, that infinite extent of divine presence.[83]

The matryoshka analogy, according to Kant, is safely extensible to any part of the Universe, making the systematic arrangement of the Solar System a small-scale model of the entire cosmos. Hence, the Universe has a central point:

> Will then that systematic relationship that we considered earlier in all parts separately now extend to the whole and encompass the entire Universe, everything in nature, in a single system through the combination of attraction and centrifugal force? I say yes (…).[84]

And:

> We can assume as probable that it was around this universal centre point of the sinking of all nature, both formed and raw, at which the lump with the most exceptional attraction is doubtless to be found, which embraces in its sphere of attraction all the worlds and orders that time has produced and that eternity will produce, that nature made the beginning of its formation, and that the systems will be most densely concentrated there but that further away in the infinitude of space, they will become lost with ever greater degrees of dispersion. We could deduce this rule from the analogy with our solar system, and this constitution can in any show that at great distances, not only the universal central body but also all the systems orbiting next to it unite their attraction together and exert it from one lump, as it were, towards the systems at an even greater distance. This will then be one of the things that will be helpful in understanding the whole of nature in the whole infinitude of its extent within a single system.[85]

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[83] "Alle Fixsterne, die das Auge an der hohlen Tiefe des Himmels entdeckt, und die eine Art von Verschwendung anzuzeigen scheinen, sind Sonnen und Mittelpunkte von ähnlichen Systemen. Die Analogie erlaubt es also hier nicht, zu zweifeln, daß diese aus der gleichen Art, wie das, darin wir uns befinden, aus den kleinsten Theilen der elementarischen Materie, die den leeren Raum, diesen unendlichen Umfang der göttlichen Gegenwart, erfüllte, gebildet und erzeugt worden." *Naturgeschichte*, I: 306, 27–34.

[84] "Wird denn nun jene systematische Verbindung, die wir vorher bei allen Theilen insonderheit erwogen haben, auch aufs Ganze gehen und das gesammte Universum, das All der Natur, in einem einzigen System durch die Verbindung der Anziehung und der fliehenden Kraft zusammen fassen? Ich sage ja (...)." *Naturgeschichte*, I: 310, 22–26.

[85] "Um diesen allgemeinen Mittelpunkt der Senkung der ganzen Natur, sowohl der gebildeten, als der rohen, in welchem sich ohne Zweifel der Klumpen von der ausnehmendsten Attraction befindet, der in seine Anziehungsphäre alle Welten und Ordnungen, die die Zeit hervorgebracht hat und die Ewigkeit hervorbringen wird, begreift, kann man mit Wahrscheinlichkeit annehmen, daß die Natur den Anfang ihrer Bildung gemacht, und daselbst auch die Systeme am dichtesten gehäuft seien, weiter von demselben aber in der Unendlichkeit des Raumes sich mit immer größeren Graden der Zerstreuung verlieren. Man könnte diese Regel aus der Analogie unseres Sonnenbaues abnehmen, und diese Verfassung kann ohnedem dazu dienen, dass in großen Entfernungen nicht allein der allgemeine Centralkörper, sondern auch alle um ihn zunächst laufende Systemata ihre Anziehung zusammen vereinigen und sie gleichsam aus einem Klumpen gegen die Systemata des noch weiteren Abstandes ausüben. Dieses wird alsdann mit dazu behülflich sein, die ganze Natur in der ganzen Unendlichkeit ihrer Erstreckung in einem einzigen Systema zu begreifen." *Naturgeschichte*, I: 311–312.

The complete arrangement of the Universe has been established: all starts from a single point, which gathered the materials with the highest density around it, thanks to an incredibly strong power of attraction. God lighted this initial fire by granting the power of attraction and repulsion to matter. Nature did the rest. Nebulous stars developed from the center of the Universe, and minor-star systems developed inside them, expanding throughout space gradually in time (since creation is not the work of a moment).

Concluding the constructive part of this section, Kant claims that mortality and destruction are also part of this system, granting equilibrium to the entire systematic arrangement of the Universe (I: 317–322). Destruction is the counter-alter of continuous creation, thus populating space with an unlimited amount of new systematic arrangements.

Once again, the constructive part of this section is supported by Kant's analogical method, which is also the subject of a meta-analysis here. Having provided a complete theory of the story and structure of the cosmos, Kant finds it of utmost importance to explain his method. Analogy is directly involved in this process:

> I am not so devoted to the consequences my theory offers that I would not recognize how the conjecture about the successive expansion of creation through the infinite spaces that contain the material for this in themselves could not completely reject the objection of unprovability. I do, however, expect from those who are in a position to appreciate degrees of probability that such a map of infinity, even though it encompasses a proposal that appears to be determined to remain forever obscured from human understanding, will not immediately be regarded as a fantasy for this reason, especially if one appeals to analogy, which must always guide us in such cases where understanding lacks the thread of infallible proofs. But analogy can also be supported by acceptable reasons and the insight of the reader, in so far as I can flatter myself with such approval, will perhaps be able to add to them with even more important ones.[86]

Kant realizes that his theory cannot fully counter the objection that it is beyond proof (*den Einwurf der Unerweislichkeit nicht völlig ablehnen könne*). In other words, his theory of the cycle between creation and destruction that maintains the Universe's equilibrium will never be

[86] " Ich bin den Folgen, die meine Theorie darbietet, nicht so sehr ergeben, daß ich nicht erkennen sollte, wie die Mutmaßung von der sukzessiven Ausbreitung der Schöpfung durch die unendlichen Räume, die den Stoff dazu in sich fassen, den Einwurf der Unerweislichkeit nicht völlig ablehnen könne. Indessen verspreche ich mir doch von denjenigen, welche die Grade der Wahrscheinlichkeit zu schätzen im Stande sind, daß eine solche Karte der Unendlichkeit, ob sie gleich einen Vorwurf begreift, der bestimmt zu sein scheint, dem menschlichen Verstande auf ewig verborgen zu sein, nicht um deswillen sofort als ein Hirngespinst werde angesehen werden, vornehmlich wenn man die Analogie zu Hülfe nimmt, welche uns allemal in solchen Fällen leiten muss, wo dem Verstande der Faden der untrüglichen Beweise mangelt. Man kann aber auch die Analogie noch durch annehmungswürdige Gründe unterstützen, und die Einsicht des Lesers, wofern ich mich solchen Beifalls schmeicheln darf, wird sie vielleicht mir noch wichtigern vermehren können." *Naturgeschichte*, I: 315, 21–38.

confirmed. Confirmation by mathematical procedures or by physical evidence is out of the question if the topic at stake relies on assumptions and metaphysical tenets. His theory touches on a map that seems to be concealed forever from human understanding (*dem menschlichen Verstande auf ewig verborgen zu sein*), so traditional scientific methods will never work in this case.

Hence, Kant must rely on probability. His map of the Universe lies somewhere between pure fantasy and total certainty. No mathematical validity is reachable in this case. However, by taking analogy as an aid (*wenn man die Analogie zu Hülfe nimmt*), the philosopher has a heuristic advantage which distances his work from pure fantasy. Where mathematics or logic falls short of providing guidance, analogy offers help, yielding an argumentative structure that gains probabilistic validity each time that the hypothetical theory corresponds to the beautiful arrangement of nature. In a circular manner, the unity of nature grounds and strengthens the analogical method, while the hypotheses coming from the analogical method constantly reinforce the conception of the great chain of beings in nature.

Analogy, however, is still worthy of consideration. Kant does not abandon his belief in multivalent probability. His systematic arrangement of the cosmos is too harmonious and plausible to believe that his theory is not valid and useless. Too many phenomena (nebulous stars, the presence of a center of the Universe, the relation between density and mass of celestial bodies, Saturn's rings, and the cycle of creation and destruction of matter) have been explained by his hypothesis. Hence, according to Kant, *Naturgeschichte* and its claims are likely closer to complete validity than to fantasy.

1.5 Aliens

Before summarizing the results of this section and shifting my focus to the next relevant precritical work, it is worth dedicating some time to the analysis of the last use of analogy in *Naturgeschichte*. Kant starts the third part of this work with the title "Part Three, which contains an attempt to compare the inhabitants of the different planets on the basis of the analogies of nature."[87] Once again, Kant will use the well-known analogical method to formulate a hypothesis about the existence of living creatures on other planets and their characteristics. Moreover, this time, the analogy of nature is explicitly mentioned. Let us briefly understand the structure of this argument.

[87] "Dritter Theil, Welcher einen Versuch einer auf die Analogien der Natur gegründeten Vergleichung zwischen den Einwohners verschiedener Planeten in sich enthält." *Naturgeschichte*, I: 349.

Similar to his theory concerning the density and masses of planets, Kant starts the argument by assuming that there is a relationship between the nature of living beings and their distance from the Sun:

> (…) we nonetheless have to admit that the distances of the heavenly bodies from the Sun include certain relations that contain an essential influence on the various properties of the thinking natures present there in terms of their way of being active or passive in relation to the nature of the matter with which they are linked, is tied to and dependent on the number of impressions that the world awakens in them according to the properties of the relation of their abode to the centre point of attraction and of heat.[88]

This assumption generates his research question: "Now what sort of circumstances will be caused among the various kinds of these inhabitants by the relationship of their place in the solar system to the centre point from which the heat that gives life to everything emanates?"[89]

The only possible starting point to answer this question is the human being, who "will have to serve as the basis and general reference point in this comparison." ("muß in dieser Vergleich zum Grunde und zum allgemeinen Beziehungspunkte dienen." *Naturgeschichte*, I: 355, 8–9). The first element of the analogical argument is the human being, whereas the second, lesser-known element is the living beings of other planets, whose existence is assumed as highly probable by the author.

According to Kant, if the characteristics of living beings are determined by their distance from the Sun, then it is their physical constitution that determines those characteristics, because "it is nonetheless certain that the human being, who derives all his concepts and ideas from the impressions the universe stimulates in his soul through his body, depends totally on the constitution of this matter to which the creator has bound him for both their clarity as well as the skill to connect and compare them, which we call the faculty to think."[90]

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[88] "So muss man doch gestehen, daß die Entfernung der Himmelskörper von der Sonne gewisse Verhältnisse mit sich führen, welche einen wesentlichen Einfluss in die verschiedenen Eigenschaften der denkenden Naturen nach sich ziehen, die auf denselben befindlich sind, als deren Art zu wirken und zu leiden an die Beschaffenheit der Materie, mit der sie verknüpft sind, gebunden ist und von dem Maß der Eindrücke abhängt, die die Welt nach den Eigenschaften der Beziehung ihres Wohnplatzes zu dem Mittelpunkte der Attraktion und der Wärme in ihnen erweckt." *Naturgeschichte*, I: 351–352.

[89] "Was für Verhältnisse werden nun unter den verschiedenen Arten dieser Einwohner durch die Beziehung ihres Ortes in dem Weltgebäude zu den Mittelpunkten daraus sich die Wärme verbreitet, die alles belebt, verursacht werden?" *Naturgeschichte*, I: 354–355.

[90] "der Mensch, der alle seine Begriffe und Vorstellungen von den Eindrücken her hat, die das Universum vermittelst des Körpers in seiner Seele erregt, sowohl in Ansehung der Deutlichkeit derselben, als auch der Fertigkeit, dieselbe zu verbinden und zu vergleichen, welche man das Vermögen zu denken nennt, von der Beschaffenheit dieser Materie völlig abhängt, an die der Schöpfer ihn gebunden hat." *Naturgeschichte*, I: 355, 18–23.

Once again, God gave the building blocks, and the mechanical laws of nature explain how they interact. The influence of the Sun determines which impressions are generated in the human mind through the body, which is the source of modifications of the soul. According to Kant, therefore, souls are not directly influenced by the Sun's power of attraction and repulsion. In contrast, their bodies, to which they are inescapably bound, are directly influenced by the Sun, and the consequences of this are reflected in their mental capabilities.

Having established all this, Kant proceeds by introducing the results of his analogical thinking:

> Accordingly, it is clear from this that the powers of the human soul are restricted and hemmed in by the obstacles of the coarse matter to which they are most intimately bound, but something even more remarkable is that this specific constitution of the material has an essential reference to the degree of influence with which the Sun enlivens them in proportion to their distance and prepares them for the performance of animal economy. This necessary reference to the fire that spreads from the centre point of the solar system in order to maintain matter in the requisite movement is the basis for an analogy that is posited from just this between the various inhabitants of the planets; and by means of this ratio, each class thereof is bound by the necessity of its nature to the place that has been assigned to it in the Universe.[91]

The necessary connection to the Sun is the basis of the analogy: both Earth inhabitants and those of other planets share this dependence on the center of their systems. Hence, the characteristics of the living beings of Jupiter, for example, will be of lighter and more volatile material. Just as the material stuff that composes celestial bodies is always of a lighter type in planets more distant from the Sun, also the living beings of these planets will be composed of lighter materials. According to Kant, this would result in different spiritual capabilities than those of the terrestrials. In particular, the more distant the creatures from the Sun, the more developed their spiritual capabilities would be:

> We do not wish to extend these conjectures beyond the limits marked out for a physical treatise, we merely note again the analogy adduced above: that the perfection of the spiritual world as well as of the material world increases and progresses in the planets from Mercury on to Saturn

[91] "Es erhellt demnach hieraus deutlich, daß die Kräfte der menschlichen Seele von den Hindernissen einer groben Materie, an die sie innigst verbunden werden, eingeschränkt und gehemmt werden (…). Diese notwendige Beziehung zu dem Feuer, welches sich aus den Mittelpunkten des Weltsystems verbreitet, um die Materie in der nötigen Regung zu erhalten, ist der Grund einer Analogie, die eben hieraus zwischen den verschiedenen Bewohnern der Planeten fest gesetzt wird; und eine jede Classe derselben ist vermöge dieses Verhältnisses an den Ort durch die Notwendigkeit ihrer Natur gebunden, der ihr in dem Universo angewiesen worden." *Naturgeschichte*, I: 357–358.

> or perhaps even beyond it (insofar as there are yet other planets) in a correct sequence of degrees in proportion to their distances from the Sun.[92]

The analogy is once again tied up with a proportional relationship, suggesting that nature is continuous and harmonious. The phenomena that philosophers and physicists see with the telescope are very similar to those that characterize distant parts of nature, which will never be visible with the telescope, but still conceivable through analogy.

Kant concludes his analogical attempt by supporting his hypothesis with two otherwise inexplicable observations (I: 361–362): the duration of the day in the most distant planets from the Sun is shorter if compared to that of the Earth because brilliant living beings populate those areas, and they do not need more than 8 hours per day to accomplish what humans do in 12 hours of light. Moreover, distant planets have more moons than those that are closer to the Sun because nature compensates for the lack of daylight. More moons are placed in those far areas because nature always finds equilibrium, acting according to God's initial plan.

> Thus everything in the whole extent of nature is connected in an uninterrupted graduated sequence by the eternal harmony that refers all links to each other. God's perfections have revealed themselves clearly in our stages and are no less glorious in the lowest classes than in the more sublime ones.[93]

Naturgeschichte gives a clear picture of how Kant used analogy as a method to extend human knowledge beyond its limits. Starting from a set of shared characteristics between two systems, further characteristics are extracted for the most distant and unknowable one, guided by plausibility and aiming for a multivalent form of validity. This is Kant's first analogical method. Metaphysical assumptions such as God's divine plan of creation and nature's perfection and harmony sustain the argumentative structure. Moreover, sometimes observations (the duration of days on distant planets) and calculations (Buffon's work on the masses of the planets and the Sun) aim to support further the initial hypothesis derived by analogy. The more plausible it is,

[92] "Wir wollen diese Mutmaßungen nicht über die einer physischen Abhandlung vorgezeichnete Grenzen erstrecken, wir bemerken nur nochmals die oben angeführte Analogie: daß die Vollkommenheit der Geisterwelt sowohl, als der materiälischen in den Planeten von dem Mercur an bis zum Saturn, oder vielleicht noch über ihm (sofern noch andere Planeten sind) in einer richtigen Gradenfolge nach der Proportion ihrer Entfernungen von der Sonne wachse und fortschreite." *Naturgeschichte*, I: 360, 21–29.

[93] " So hängt denn alles in dem ganzen Umfange der Natur in einer ununterbrochenen Gradfolge zusammen durch die ewige Harmonie, die alle Glieder aufeinander beziehend macht. Die Vollkommenheiten Gottes haben sich in unserem Stufen deutlich offenbart und sind nicht weniger herrlich in den niedrigsten Classen, als in den erhabnern." *Naturgeschichte*, I: 365, 10–14.

the more it reaches a mathematical kind of validity, which will nonetheless remain multivalent rather than bivalent.

Such a cosmological picture is Kant's early attempt to get metaphysics close to mathematics. What he describes as valuable and plausible hypotheses are, nonetheless, grounded in assumptions or metaphysical tenets, making it impossible for any proper scientist to endorse such a method. However, at this stage of his precritical production, I have argued that Kant repeatedly claims that multivalent validity retains the same value as bivalent validity. Moreover, a constant accumulation of observations suggests that, according to Kant, analogical hypotheses can often reach a complete (100%) degree of multivalent validity.

In conclusion, I argue that *Naturgeschichte* exemplifies Kant's view of physical analogies. Proportions and similarities between analogues are supported by metaphysical assumptions to yield new knowledge about the Universe. Moreover, the total probability of these arguments supports Kant's first analogy as constitutive rather than merely heuristic, in line with the British attitude I discussed earlier. In this context, constitutive claims about nature are labeled scientific claims. Later on, the question would be whether metaphysical analogies could reach the same results. At this stage, Kant's use of the analogy of nature is strongly similar (if not identical) to Newton's formulation, which I introduced in the previous section. After all, Kant's knowledge of British literature on the topic came from Knutzen, his Newtonian professor and sponsor during his early years as a student in Königsberg. This Newtonianism is not restricted to the use of the laws of attraction and repulsion, but it involves the belief in the power of unity and harmony of nature as an argumentative tool capable of directing the inquiry of scientists and philosophers.

2. De Igne

> I have everywhere carefully guarded against freely indulging, as often happens, in hypothetical and arbitrary proofs, and have followed, as diligently as possible, the thread of experience and geometry, without which the way out of the labyrinth of nature can hardly be found. Since the force of fire is manifested principally in the rarefaction of bodies and in breaking down their combination, it will not be thought strange that in following the path of reason I say a little in advance about the cohesion of matter and the nature of fluids.[94]

[94] "Ubivis sollerter cavi, ne hypotheticae et arbitrariae demonstrandi rationi liberius, ut fit, indulgerem, experientiae atque geometriae filum, sine quo e naturae recessibus vix reperitur exitus, quantum potui diligentissime secutus. Quoniam itaque ignis vis in rarefacien discorporibus et ipsorum nexu solvendo potissimum exseritur, ut via et ratione incederem, non putavi alienum fore, pauca de materiae cohaesione et natura fluidorum antea disserere." *De igne*, I: 371, 6–12.

Kant's initial remarks in the *Instituti Ratio* of *De igne* set the tone for the entire work. Experience and geometry are crucial for understanding the recesses of nature. This claim, especially after the extensive analysis of *Naturgeschichte*, distinguishes *De igne* from Kant's history of the cosmos, which is always filled with metaphysical assumptions, cosmological conjectures, and analogical arguments.

With this initial statement, Kant turns his attention to a problem that was extensively treated by the scientists of his period: the nature of fire. The French Academy of Sciences conducted a competition in 1738 concerning this issue ("*La nature et la propagation du feu*"), receiving more than 30 works and publishing those deemed worthy. Among the authors we remember Leonhard Euler, Voltaire, and Émilie du Châtelet, all European intellectuals with whom Kant was familiar.

De igne was Kant's first dissertation in Latin, written to obtain the title of *Magister philosophiae* at the University of Königsberg (the discussion was held in April 1755). In terms of content, many authors have highlighted the difficulty of situating this work within Kant's philosophical production. Mariano Campo (1953) notes the profound difference between the topics of Kant's four Latin dissertations, while also recognizing that themes such as causality, space, and reality appear in all the Latin works (see Agostini, 2014, p. 8).

Giorgio Tonelli (1959) is among the first to recognize Kant's profession of Newtonianism as the *fil rouge* that connects *Naturgeschichte, De igne*, and most of the remaining precritical works. Adickes (1925, Vol. II), on the other hand, frequently reports that a treatise on fire is just the beginning of Kant's long attempt to reconstruct the nature of this phenomenon in many of his later works. Adickes has also pointed out that using experience as the guiding thread of his investigations is a typical feature of the first part of Kant's precritical writings (1925, Vol. II). To this list of typical precritical topics and attitudes, the introduction of analogical reasoning must be regarded as another factor that proves the continuity of aims in Kant's early production.

Kant's ideas about fire in *De Igne* can be summarized as follows:

A-The nature of both fluids and solid bodies can only be explained through an elastic matter, which he identifies with the matter of heat and ether.

B-This elastic matter can account for how the particles in a fluid transmit equal force in all directions, and how particles in solid bodies attract each other without direct contact, thus explaining the phenomena of expansion and contraction (propositions I-V).

C-Fire is constituted entirely by this elastic matter. Heat is understood as an oscillatory vibration of the same elastic matter (propositions VI-VII).

D-The matter of heat is identical to the substance of light, i.e., ether, and has a measurable degree of intensity. The origin of vapors can be explained analogically thanks to his theory of elastic matter and elastic fluids (propositions VIII-XII).

I will constrain my analysis to methodological claims about how Kant articulates his theory throughout *De igne* (and, more specifically, to paragraphs VIII and XI). Even though the nature of the problem at stake and his *Instituti Ratio* suggest a scientific nature for this treatise, point D of my summary brings the problem of the validity of analogical reasoning back to the center of my analysis. Most parts of the treatise discuss geometrical problems and evidence coming from experience. Section I, for example, is full of geometrical theorems that are very technical in kind.

However, starting with proposition VIII, Kant introduces a form of hypothetical reasoning that closely resembles the analogical arguments of *Naturgeschichte*, thereby staining his scientific work with less-than-scientific methodologies. Once again, experience will be used analogically to predict what experience is not making evident in obscure contexts.

Let us start with proposition VIII. Each proposition is divided into two parts: the statement of a theorem and the explanation or argument that leads to the theorem in question. Proposition VIII states: "The matter of heat is nothing but the ether (the matter of light) compressed by a strong attractive (adhesive) force of bodies into their interstices."[95] This proposition states the identity between the matter of heat and ether. Such identity, however, is not supported by any calculation of geometrical demonstration, but by noting similarities between the matter of light and that of heat.

Kant's first step in supporting this idea is to prove that the matter of light can also be found within bodies. This is possible because, as Newton's calculations on the phenomena of refraction and reflection showed (I: 377, 20–21), the elasticity of ether allows it to enter or trespass bodies if needed. Given that the matter of heat is elastic, it is not unbelievable that the two elastic matters are the same. Moreover, according to Kant, the Newtonians found that materials that are highly effective in refracting light also have a strong capacity to retain heat (I: 377, 28–37).

To prove this, oils are the perfect candidate:

[95] "Materia caloris non est nisi ipse aether (s. lucis materia) valida attractionis (s. adhaesionis) corporum vi intra ipsorum in terstitia compressus." *De igne*, I: 377, 16–18.

> For oils (for instance, oil of turpentine), which, according to the experiments of Newton and many others, refract rays of light (i.e., attract them) much more than can be explained by their specific gravity, likewise have a boiling point far higher than can be explained by their specific gravity. Oils are the true fuels of flames, and in this state they scatter light in all directions. Thus is shown that the matter of heat and the matter of light agree as closely as possible or, rather, that they are not different.[96]

Moreover, oils are highly flammable and, once they turn into flames, they spread light. All these experiential proofs are, according to Kant, pointing towards the same direction: ether is the substance of light and fire.

This identity is further supported by glass, whose consistency allows reflection and refraction because the matter of light is within it (I: 378, 12–15), and whose origin hinges on fire. Kant concludes the proposition with these words: "Since we have seen that the matter of fire constitutes a considerable part of glass and is largely dispersed among its solid elements, there is hardly place for doubting that the matter of heat is the same as the ether or the element of light."[97]

The structure of the analogy is as follows: the matter of light (ether) has many similarities and proportional relations with fire (for example, their roles in the formation and function of glass, and the direct proportionality between refraction and heat accumulation). The matter of light and the matter of fire are both elastic matters (on this proposition VII). Therefore, it is safe to assume that the matter of fire and that of light have further similarities, to the point that they become the same matter: ether. Kant does not mention "analogy" directly in the text, but the analogical structure encountered before is clearly here.

Proposition XI clarifies even more directly how Kant uses analogies in *De igne*. Kant tries here to inquire about the nature of air and vapors, putting to good use what he discovered in the previous propositions about the nature of fire. The hypothesis (he calls it "*coniecturae*"; I: 381, 26) is that the nature of vapors and air can be explained through an analogy:

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[96] "Olea enim, quae ex Newtoni aliorumque experimentis multo maiore, quam pro specifica gravitate sua, vi radios lucis refringunt, h. e. attrahunt, etiam longe maiorem, quam pro gravitate sua specifica, ebullitionis gradum recipiunt, sicut oleum thereb. cet., eadem vero olea etiam sunt propria flammarum alimenta, et hoc in statu cum lucem quaqueversum spargant, caloris et lucis materiam, quantum fieri potest proxime convenire aut potius nihil differre testatum reddunt." *De igne*, I: 377, 32–37.

[97] "Quoniam vero materiam ignis vidimus vitri partem haud contemnendam efficere et large per huius solida elementa dispertitam esse, vix dubitationi locus sit, materiam caloris cum aethere s. lucis elemento eandem plane esse." *De igne*, I: 378, 15–18.

> Air is an elastic fluid, almost a thousand times lighter than water, of which the expansive force is proportional to the heat, its expansion from the cold of freezing water to the boiling point under the same atmospheric weight being equal to approximately 1/3 of the volume [it occupied] at the freezing point. These phenomena have nothing that could not be matched by other vapors, save one: many vapors at the degree of cold at which air retains its elasticity undiminished would solidify and show no sign of expansive force. But if one considers the subtlety of the skin of the vapor to be included in the cause of the manifestation by air of a notable elasticity at a lower degree of heat, it is clear that one should not hastily abandon the force of analogy, but rather should see whether, by deducing two kinds of things from the same principle, we could succeed without too great a multiplication of principles. The phenomena that light the way to our conjecture are the following.[98]

According to Kant, that air is an elastic fluid, whose expansive force is proportional to heat, and whose expansion from the freezing point to the boiling point is related to its volume, are all characteristics that the phenomenon of vapor presents almost identically to air. Furthermore, vapors also show a high degree of elasticity, just like air. Hence, the strength of this analogy (*analogiae vim*) must be kept in mind.

The fact that air and vapor share so many characteristics is, once again, an analogical hint to the possibility of reducing two genera to a unique principle. Many phenomena support this idea: experience tells us that bodies containing oils or acids expel air when heated sufficiently (Kant uses plants as examples; I: 381, 28–32). The expulsion of matter from bodies generates elasticity, making air an incredibly elastic fluid. Crucially, vapors share this last characteristic: they are produced by bodies when exposed to high temperatures. Hence, Kant's conjecture acquires more strength than before.

The initial hypothesis is formulated analogically by noticing a list of similarities and proportionalities between apparently different phenomena. The hypothesis is then strengthened by experience, which never provides an *experimentum crucis*, but still indicates that the two apparently different phenomena maintain a strong relationship.

Hence, *De igne* provides examples of Kant's analogical thinking at work in the first phase of the precritical writings. The structure that I pointed out in *Naturgeschichte* is

[98] "Aër est fluidum elasticum, millies fere aqua levius, cuius vis expansiva calori est proportionalis, et cuius a frigore congelascentis aquae usque ad punctum ebullitionis sub eodem pondere atmosphaerae expansio est circiter 1/3 voluminis posteriori gradu ipsi competentis. Haec phaenomena nihil habent, quod non vaporibus etiam competere possit, praeter hoc solum, quod vapores ut plurimum eodem frigoris gradu, in quo aër elasticitatem illibatam servat, consolidentur et vis expansivae nullum indicium prae se ferant. Ast si consideraveris, subtilitatem cuticulae vaporis in causa esse, ut vel minori caloris gradu elasticitatem notabilem exserere possit, patet non statim analogiae vim hic inconsiderate et temere deserendam esse, sed periculum potius faciendum, utrumne duo genera ex eodem principio deducentes nimia entium multiplicatione supersedere possimus." *De igne*, I: 381, 15–27.

reproposed here, but with a crucial difference: the predictions of analogical arguments concern essential elements of matter, rather than the structure of a larger system. At stake is the definition of the substance of fire, light, and vapor, rather than a systematic arrangement.

Moreover, *De Igne* presents analogies in a context where the argumentative flow should be entirely geometrical. Our discussion of validity takes a new turn here: the analogical method, which I defined as multivalent and probabilistic, is used by Kant in a context where all hypotheses should be supported by logic and calculation. Once again, this shows a certain confusion in Kant's conception of scientific validity in his first publications.

In conclusion, it is crucial to remember that the analogical methods Kant uses in both *Naturgeschichte* and *De Igne* concern material objects, even if invisible. All the elements, systems, or, more generally, analogates are part of nature and, therefore, interconnected by the unity and harmony of the physical dimension. Immaterial objects are still not part of his conjectures, making it easier to support the multivalent validity of analogies. The metaphysical dimension remains untouched by predictions and is only involved in the formulation of initial hypotheses.

3. Beweisgrund

3.1 Introduction

With *Der einzig mögliche Beweisgrund zu einer Demonstration des Daseins Gottes*, Kant presents what I consider to be his second major treatise on metaphysics. Published in 1763 (although it had been in Kant's mind for some years at the time of publication),[99] it comes eight years after the *Nova dilucidatio*, his first metaphysical treatise.

Many other early precritical works discussed metaphysical themes, such as *Naturgeschichte* or *Monadologia physica*. However, these works aimed to clarify problems in the natural sciences, such as finding the correct explanation of the structure of the cosmos (in the case of the former) or harmonizing Newton's achievements with Leibniz's philosophy (in the case of the latter). For this reason, they enter the constellation of natural sciences and only accidentally encounter metaphysical problems.

[99] Manfred Kuhen notes that *Beweisgrund* is the product of long speculations of the Prussian philosopher: "its origin can be traced back at least to the fifties, when Kant was working on cosmogony." See Kuehn (2001, 140).

In the case of *Nova dilucidatio* and *Beweisgrund*, the situation is different. Before analyzing *Beweisgrund*, it is worth mentioning some of the core ideas of *Nova dilucidatio*, which will later reappear in the work that I aim to analyze in this paragraph.

Nova dilucidatio is the second of Kant's Latin dissertations, published in the same year as *De igne* (1755). It expresses Kant's concern for the correct method in metaphysics, mixing logical reflections on the principle of non-contradiction in the first section with the introduction of new metaphysical principles in the last section (the principles of succession and co-existence). It aims to shed some light on the "first principles of our cognition (*primis cognitionis nostrae principiis*, I: 387, 2)," beginning an extended reflection on which ones should be the basic principles of metaphysics and how these principles alone allow the construction of an embryonic ontological argument for the existence of God (most of the second section is dedicated to the construction of the proof of the existence of God starting from the principle of *rationis determinantis*, a pivotal argument of discussion with Wolff and Crusius).

Moreover, it is worth noting that *Nova dilucidatio* offers Kant the occasion to criticize what he disliked about the Leibniz-Wolff philosophical scaffolding. The aim itself, namely clarifying the core principles of human cognition, is a critique of those philosophers who considered the principle of non-contradiction as the foundational principle. Kant preferred to use the principle of identity as a foundation for his treatise (propositions II and III of the first section), thereby reshaping the logical structure of metaphysical arguments at its roots.

This short summary is enough for the aim of my work.[100] As I will later discuss, *Nova dilucidatio* does not offer relevant insights from the perspective of the history of analogy, nor concerning transcendentals and the *analogia entis*. This is because, as *Beweisgrund* will show, "existence" is never considered as a predicate in these two works. Hence, *Nova dilucidatio* cannot be at the center of a work that focuses on analogy, because it presents neither a relevant use case for the analogical method nor any indirect hints at metaphysical assumptions related to the concept of the unity of nature or the idea of the great chain of beings.

Nonetheless, it is helpful to remember that *Nova dilucidatio* alludes to a pivotal theme in Kant's precritical writings: the necessity of reformulating the core principles of metaphysics to render it a functioning discipline. Such a theme is directly mentioned in *Beweisgrund*, as I discuss below, and will become increasingly relevant as we approach the silent years (1770-1781).

[100] For a more detailed account, see Campo (1953) and Schönfeld (2000).

Turning now to *Beweisgrund*, we encounter here a metaphysical treatise (no new physical laws, geometrical schemes, or cosmological predictions are mentioned) that offers new insights in connection to the metaphysical assumptions that I enumerated as those that crucially constitute the basis of Kant's analogical arguments. In particular, as I will argue, the *a posteriori* argument for the existence of God is the reformulation of the classical design argument, which roots in a conception of nature essentially equal to that of *Naturgeschichte* (the seventh reflection of *Nova dilucidatio* essentially summarizes all of the crucial arguments of *Naturgeschichte*, proving the intimate connection between the two works, which share similar metaphysical assumptions but have different aims. See Guyer & Wood, p. XXXIX).

Before beginning the analysis, it must be noted that this work contains a further novelty: the use of analogical reasoning is directly connected to a theory concerning a non-physical entity (in this case, the existence of God). As stated at the end of the previous section, this will have crucial implications for our discussion concerning the validity of analogies.

It must not be forgotten that the principal aim of *Beweisgrund* is to put an end to the discussion around the possible arguments for the existence of God. The aim is fundamentally religious, as Guyer and Wood correctly state: "Three religious issues, in particular, absorbed Kant's early attention: the compatibility of scientific explanation with religious faith, the compatibility of natural disasters with the perfection of the world, and the correct method of proving the existence of God (pp. XXXVII-XXXIV)." My goal is to understand thoroughly how these concerns relate to the problem of the analogical method in Kant.

3.2 Ontological Arguments a priori

Kant begins the *Vorrede* with these words:

> Thus, that employment of sound reason, which still lies within the limits of ordinary insights, yields sufficiently convincing proofs of the existence and properties of this Being, though the subtle scholar will everywhere feel the lack of demonstration and of the exactitude of precisely determined concepts and regularly connected syllogisms. (…).
>
> To achieve this purpose, however, one must venture the bottomless abyss of metaphysics. Metaphysics is a dark and shoreless ocean, marked by no beacons. One must proceed as the mariner proceeds on an unnavigated sea: as soon as he makes a landing, he subjects his voyage to scrutiny, with a view to determining whether undetected currents, for example, may not have

> carried him off course, in spite of all the care, prescribed by the art of navigation, which he has taken.[101]

Kant's work begins with an initial remark that warns readers who expect logical demonstrations. No regularly connected syllogism or geometrical proof will be found in *Beweisgrund*. Instead, Kant will have to navigate in the bottomless abyss of metaphysics, always guided by sound reason rather than mathematical proofs.

This statement puts *Beweisgrund* very close to *Naturgeschichte*, where I showed that Kant repeatedly acknowledged the difference between his treatise and a mathematical treatise. In the case of *Naturgeschichte*, analogy helped to camouflage his cosmological ideas as almost certainly valid physical hypotheses. In *Beweisgrund*, however, the object of research will be profoundly different in kind: a non-physical entity like God. Here, metaphysics reigns, and algebraic calculations could hardly help.

Kant knows that:

> The mania for method and the imitation of the mathematician, who advances with a sure step along a well-surfaced road, have occasioned a large number of such mishaps on the slippery ground of metaphysics. These mishaps are constantly before one's eyes, but there is little hope that people will be warned by them, or that they will learn to be more circumspect as a result.[102]

The question that naturally arises at this point is: what method could Kant use to achieve his aim, namely, a sound proof of the existence of God? In other words, what are the different ways in which, according to Kant, the philosopher could obtain knowledge of God's characteristics and of its existence?

Kant divides the text into two macrosections, in which he discusses the ontological and cosmological arguments for the existence of God, respectively. As Logan notes (2007, p. 384), it is highly improbable that Kant was referring to the classical ontological argument of Anselm,

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[101] "Daher derjenige Gebrauch der gesunden Vernunft, der selbst noch innerhalb der Schranken gemeiner Einsichten ist, genugsam überführende Beweistümer von dem Dasein und den Eigenschaften dieses Wesens an die Hand gibt, obgleich der subtile Forscher allerwärts die Demonstration und die Abgemessenheit genau bestimmter Begriffe oder regelmäßig verknüpfter Vernunftschlüsse vermisst. Gleichwohl kann man sich nicht entbrechen diese Demonstration zu suchen, ob sie sich nicht irgendwo darböte (…)." Zu diesem Zweck aber zu gelangen muss man sich auf den bodenlosen Abgrund der Metaphysik wagen. Ein finsterer Ocean ohne Ufer und ohne Leuchttürme, wo man es wie der Seefahrer auf einem unbeschifften Meere anfangen muss, welcher, sobald er irgendwo Land betritt, seine Fahrt prüft und untersucht, ob nicht etwa unbemerkte Seeströme seinen Lauf verwirrt haben, aller Behutsamkeit ungeachtet, die die Kunst zu schiffen nur immer gebieten mag." *Beweisgrund*, II: 65–66.

[102] "Die Methodensucht, die Nachahmung des Mathematikers, der auf einer wohlgebähnten Straße sicher fortschreitet, auf dem schlüpfrigen Boden der Metaphysik hat eine Menge solcher Fehltritte veranlasst, die man beständig vor Augen sieht, und doch ist wenig Hoffnung, daß man dadurch gewarnt und behutsamer zu sein lernen werde." *Beweisgrund*, II: 71, 22–27.

although the argument is based on the predicate of possibility (Logan goes so far as to say that Kant's version of the ontological argument shows his ignorance of the history of philosophy). Regardless of Kant's ignorance of the tradition of ontological arguments, it is worth briefly summarizing it before dealing with the cosmological one, which directly addresses the issue of analogy.

After an initial discussion concerning the nature of the concepts of existence (first reflection) and internal possibility (second reflection), Kant concludes that there must exist a being that is absolutely necessary and which is unique, simple, immutable, eternal, and contains supreme reality (third reflection). It is crucial to remember that, according to Kant, these findings are *a priori* because they originate from reflections on the concepts of existence and possibility. This is why Kant calls it the ontological proof. Finally, in the fourth reflection, the author provides three different proofs suggesting that the absolutely necessary being is a mind with understanding and will, which, in the end, can be called God.

The result is that God, according to Kant, is an absolutely necessary being that entails the ground for the possibility of all other beings. The relationship between its existence and the concept of possibility is, therefore, crucial to understanding the ontological argument. In section 3, Kant gives a short summary of all the proofs that he discusses in *Beweisgrund*. The *a priori* are two: "the argument may proceed either from the possible as a ground to the existence of God as a consequence, or from the possible as a consequence to the divine existence as a ground."[103] Kant believes that the first of these two is the one supported by the Cartesians ("Indessen haben wir einen berühmten Beweis, der auf diesen Grund erbautet ist, nämlich den so genannten Cartesianischen," II: 156, 20–35; II: 157, 1–9). In the case of what Kant calls the Cartesian proof, the existence of possibility is the ground for concluding that God exists (see Guyer & Wood, 2002, XL).

This argument assumes that the concept of existence is a predicate ("Nun nimmt man an, das Dasein sei auch eine Vollkommenheit der Dinge," II: 156, 24–25), something that Kant radically denies in the first reflection. God is taken to be the sum of all possible predicates and perfections, and if existence is one of these predicates/perfections, then God must have it. Yet, Kant prefers a proof that conceives of existence not as a predicate or perfection, but a proof in which the dependency of possibility comes from the existence of God, rather than the other way around. He writes:

[103] "entweder von dem Möglichen als einem Grunde auf das Dasein Gottes als eine Folge, oder aus dem Möglichen als einer Folge auf die göttliche Existenz als einen Grund geschlossen." *Beweisgrund*, II: 156, 1–4.

> On the other hand, the inference from the possibilities of things as consequences to the existence of God as ground is an argument of quite a different kind. What is under investigation here is whether the fact that something is possible does not presuppose something existent, and whether that existence, without which not even internal possibility can occur, does not contain such properties as we combine together in the concept of God.[104]

This is what Kant calls the *a priori* ontological proof, adequately explained and supported in the first reflections of *Beweisgrund* ("Daß dieses geschehen könne, ist in der ganzen ersten Abtheilung dieses Werks gewiesen worden," II: 157, 25–26). A proper reflection on the concepts of existence and possibility yields the idea of an absolutely necessary being, which, in order to be the basis of the internal possibility of the contingent beings, must exist.

We must now understand how much of this argument is connected to the discussion of transcendentals that I introduced in Section I. The answer to this question comes from the nature of Kant's idea of "existence" in *Beweisgrund*. If "existence" is not a predicate, as Kant frequently repeats, then it cannot be taken as an attribute to be applied analogically to one or more subjects. Although Kant clearly differentiates between necessary and contingent being, as did modern metaphysicians before him (see Section I – 5.2, 5.3), this distinction does not help us understand whether there is a way to predicate something of the divine analogically. Instead, Kant's concern is to clarify that the very concept of existence implies necessarily the presence of two kinds of existence: necessary (God) and contingent (creatures). Predication is not a problem at this stage of his philosophical production. Moreover, given that "existence" is not a predicate, he does not identify the possible problem of predicating it in an equivocal or univocal way, thus leading the whole tradition of the problem of *analogia entis* in the background.

3.3 Cosmological Arguments a posteriori

The *a posteriori* proof of the existence of God is the context in which Kant discusses analogy and the relationship between nature and God, a topic he already touched upon in *Naturgeschichte* (Section II – 1.1). Going back to the third reflection, the a posteriori arguments are two:

[104] " Dagegen ist der Schluss von den Möglichkeiten der Dinge als Folgen auf das Dasein Gottes als einen Grund von ganz anderer Art. Hier wird untersucht, ob nicht dazu, daß etwas möglich ist, irgendetwas Existierendes vorausgesetzt sein müsse, und ob dasjenige Dasein, ohne welches selbst keine innere Möglichkeit stattfindet, nicht solche Eigenschaften enthalte, als wir zusammen in die Begriffe der Gottheit verbinden." *Beweisgrund*, II: 157, 4–9.

> In the second case, the argument may proceed from that, the existence of which we experience, to the existence merely of a first and independent cause, and then, by subjecting that concept to analysis, proceed to the derivation of its divine characteristics.; alternatively, the argument may proceed directly from that which experience teaches us to both the existence and the properties of the Divine Being.[105]

The first argument is what Kant calls the old physico-theological argument, which, according to him, was supported by the Wolffians ("ist berühmt und vornehmlich durch die Schule der Wolffischen Philosophen sehr in Ansehen gebracht worden," II: 157, 33–34). The problem with this argument, for Kant, is that it cannot infer directly from empirical observations to the existence of God; it requires a second step of logical analysis that will ultimately determine God's existence. This second step, however, is a reformulation of the ontological argument, erroneously inserted into the cosmological context.[106]

Moreover, the old cosmological argument, or the Leibniz-Wolffian one, fails to recognize another crucial factor: nature's degree of independence from God. This is an argument Kant stressed in *Naturgeschichte* (Section II – 1.1), and it returns here.

In the fifth reflection of the second section, Kant analyses all the advantages and defects of the ordinary physico-theology (*gewöhnliche Physikotheologie*). The first defect of this argument is that "Physico-theology regards all the perfection, harmony and beauty of nature as contingent and as an arrangement instituted by wisdom, whereas many of these things issue with necessary unity from the most essential rules of nature."[107] Hence, "If one listened to what the physico-theological authors have to say, one would be persuaded to imagine that the river-beds had all been hollowed out by God."[108] Moreover, another defect of the old cosmological argument is that it cannot prove the existence of God, but only of an author of the connections between things in nature. He writes: "The physico-theological method can only serve to prove the existence of an Author of the connections and artificial combinations in the world; it does

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[105] "Im zweiten Falle wird wiederum entweder aus demjenigen, dessen Dasein wir erfahren, bloß auf die Existenz einer ersten und unabhängigen Ursache, vermittelst der Zergliederung dieses Begriffs aber auf die göttlichen Eigenschaften derselben geschlossen, oder es werden aus dem, was die Erfahrung lehrt, sowohl das Dasein als auch die Eigenschaften desselben unmittelbar gefolgert." *Beweisgrund*, II: 156, 4–9.

[106] Guyer and Wood share the same view: "The Leibnizian-Wolffian proof of the existence of God *a contingentia mundi* is also subject to brief criticism in *The Only Possible Argument* (AK 2:157-8) on the ground that it is the ontological argument *incognito* and it thus exposed to the same objection." (p. XL), where "the same objection" refers to Kant's critique of the Cartesian argument for the existence of God.

[107] "(...) sie betrachtet alle Vollkommenheit, Harmonie und Schönheit der Natur als zufällig und als eine Anordnung durch Weisheit, da doch viele derselben mit notwendiger Einheit aus den wesentlichsten Regeln der Natur abfließen." *Beweisgrund*, II: 118, 14–17.

[108] "Wenn man die physischtheologischen Verfasser hört, so wird man dahin gebracht sich vorzustellen, ihre Laufrinnen wären alle von Gott ausgehöhlt." *Beweisgrund*, II: 120, 9–11.

not prove the existence of an Author of matter itself, nor does it prove the origin of the constituent parts of the universe."[109]

In short, the old physico-theological proof needs to be reformed. The second *a posteriori* argument is Kant's answer to this need. It can be summarized in two steps. Firstly, Kant notices that the properties of space and geometry suggest that even the most chaotic and complex arrangements of sensible events can be organized and explained by a coherent physical theory. This geometrical understanding must be considered as a picture of the inherent order and harmony that prevail throughout space ("Ich sehe ihn mit einem philosophischen Auge an und werde gewahr: daß bei so nothwendigen Bestimmungen Ordnung und Harmonie und in einem ungeheueren Mannigfaltigen Zusammenfassung und Einheit herrsche." II: 93, 17–20). Geometry gives many proofs of this, showing that "There are solutions in geometry where what seems possible only as a result of complicated preparation presents itself without artifice, as it were, in the thing itself."[110] These coincidences of geometry, precisely like the harmonious arrangements in the conception of nature of *Naturgeschichte*, suggest that searching for a foundation in this regularity and unity is a sane attempt. Hence, "Will this not lead one, as the harmony in the contingent provisions of nature leads one, to the supposition that there is a supreme ground of the very essences of things themselves, for unity in the ground also produces unity in the realm of all its consequences?"[111]

The second step of Kant's argument is to maintain that the cause of nature's unity and harmony lies in its own nature. As explained in *Naturgeschichte* (Section II – 1.1), God provides the conditions for the existence of such an organized nature, but it does not directly determine the physical relations between objects. Kant explains this difference by discussing moral and non-moral dependence upon God. In the second reflection of the second part, Kant explains that the existence of things is morally dependent on God, meaning that God willed their existence in this or that way. In contrast, the reciprocal relations between things in nature are non-morally dependent on God, meaning that nature enacts the physical and mechanical laws on its own, without a direct, miraculous intervention by the divine. Simply put, the fact that attraction and repulsion are the main laws of nature does not depend directly on God. In Kant's words:

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[109] "Diese Methode kann nur dazu dienen, einen Urheber der Verknüpfungen und künstlichen Zusammenfügungen der Welt, aber nicht der Materie selbst und den Ursprung der Bestandteile des Universum zu beweisen." *Beweisgrund*, II: 122, 32–35.
[110] "Es giebt Auflösungen der Geometrie, wo dasjenige, was nur durch weitläuftige Veranstaltung scheint möglich zu sein, sich gleichsam ohne alle Kunst in der Sache selbst darlegt." *Beweisgrund*, II: 95, 3–6.
[111] "wird man dadurch nicht eben sowohl, wie durch die Harmonie in den zufälligen Anstalten der Natur auf die Vermuthung eines obersten Grundes selbst der Wesen der Dinge geführt, da die Einheit des Grundes auch Einheit in dem Umfange aller Folgen veranlaßt?" Beweisgrund, II: 96, 1–5.

> The fact that things, which are so beautifully related to each other, should exist at all, is to be attributed to the wise choice of Him who created them on account of that harmony. But that each of these things should, in virtue of simple grounds, contain such an extensive adaptedness to harmony of many different kinds, and that a wonderful unity in the whole should, as a result, be able to be maintained — that is inherent in the very possibility of the things in question. And since the element of contingency, presupposed by any choice, here disappears, it follows that the ground of this unity, while it may be sought in a wise being, is not to be sought in that being through the mediation of its wisdom itself.[112]

Hence, the value of Kant's revised physico-theological proof is that it accounts for the non-moral dependency of nature on God, while still maintaining the classical structure of *a posteriori* cosmological arguments for the existence of God: nature (and geometry) is beautiful and uniform, so it is allowed to think of a divine cause for this order. This divine cause, however, does not intervene directly in the unfolding of nature. This time, however, the analogy of nature reaches the metaphysical realm, allowing the creation of an argument for the existence of God.

3.4 Analogies and the Validity of the Only Possible Argument

After analyzing the structure of Kant's argument, it is time to evaluate its significance for this work. Let us start with the direct mention of analogy in the text:

> I would remark in passing that the great reciprocal relationship which is to be found among the things in the world does not deserve to be surveyed quite so cursorily, in the light of the frequency with which those same things occasion similarities, analogies, parallels, or however else one chooses to designate them. Without pausing to consider its employment in the play of wit — an employment which is often only imaginary — there is, nonetheless, it seems to me, an important topic for philosophical reflection to be found here. The question is this: how is it possible that an agreement, which is rooted in a certain common ground of uniformity and which holds between very different things, should be so great, so extensive, and yet also so precise?

[112] "Dass Dinge da sind, die so viel schöne Beziehung haben, ist der weisen Wahl desjenigen, der sie um dieser Harmonie willen hervorbrachte, beizumessen, daß aber ein jedes derselben eine so ausgebreitete Schicklichkeit zu vielfältiger Übereinstimmung durch einfache Gründe enthielte, und dadurch eine bewundernswürdige Einheit im Ganzen konnte erhalten werden, liegt selbst in der Möglichkeit der Dinge, und da hier das Zufällige, was bei jeder Wahl voraus gesetzt werden muß verschwindet so kann der Grund dieser Einheit zwar in einem weisen Wesen aber nicht vermittelst seiner Weisheit gesucht werden." *Beweisgrund*, II: 103, 12–20.

> These analogies also constitute a crucial means of acquiring cognition. Mathematics itself offers instances of such analogies.[113]

In this passage, analogies (*Analogien*) are differentiated from similarities (*Ähnlichkeiten*). The reciprocal relationships among things in the world reveal common structures across different contexts, indicating that the same background arrangement characterizes different systems. *Naturgeschichte* provided several examples of this sort, with the most relevant being the matryoshka structure of the Universe. This underlying uniformity, visible only to those who accept that nature is uniform for a reason, is more than a simple similarity because it opens a further argumentative step. A simple similarity, I maintain, does not provide the same argumentative structure as an analogy. This is because, in Kant's so far analyzed precritical works, only when a strong set of metaphysical assumptions supports similarities do they become analogies and, therefore, provide anticipations of otherwise unforeseeable similarities, thus elevating the argument to a constructive reflection. Hence, these analogies are a crucial means to the acquisition of new knowledge (*Diese Analogien sind auch sehr nötige Hilfsmittel unserer Erkenntnis*). As stated before, analogies always imply an interpretation of the similarities at stake, grounded in a set of metaphysical assumptions in the philosopher's mind.

To put this in practice, *Beweisgrund* argues that the analogies to be found in the analysis of space (geometry) and in mathematical structures (Kant claims that mathematics offers clear examples of such analogies, although he refrains from directly discussing them. II: 133, 4–6) clearly suggest that philosophers should accept the existence of a divine being that is the moral cause of the existence of nature, but indirect cause of its mechanisms, which are independently enacted by nature itself. In this context, the acquisition of new knowledge is the revised physico-theological proof of God's existence, now cleaned of its Leibniz-Wolffian dust.

Now, let us discuss the validity of this metaphysical argument. Firstly, it is worth briefly summarizing the four arguments that Kant discusses in the third section:

A: The ontological Cartesian argument;
B: Kant's ontological argument *a priori*;
C: The old Leibnizian-Wolffian physico-theological argument;

[113] "Ich merkte im Vorübergehen an, daß das große Gegenverhältnis, das unter den Dingen der Welt in Ansehung des häufigen Anlasses, den sie zu Ähnlichkeiten, Analogien, Parallelen und, wie man sie sonst nennen will, geben, nicht so ganz flüchtig verdient übersehen zu werden. Ohne mich bei dem Gebrauch, den dieses auf Spiele des Witzes hat und der mehrentheils nur eingebildet ist, aufzuhalten, liegt hierin noch für den Philosophen ein, wie mir dünkt, wichtiger Gegenstand des Nachdenkens verborgen, wie solche Übereinkunst sehr verschiedener Dinge in einem gewissen gemeinschaftlichen Grunde der Gleichförmigkeit so groß und weitläufig und doch zugleich so genau sein könne. Diese Analogien sind auch sehr nötige Hilfsmittel unserer Erkenntnis, die Mathematik selber liefert deren einige." *Beweisgrund*, II: 132–133.

D: Kant's revised physico-theological argument.

As the title of the fourth paragraph of section three suggests (*Es sind überhaupt nur zwei Beweise vom Dasein Gottes möglich*), only arguments B and D can be considered proper arguments. Of these two, however, only one can be considered correct. Kant writes:

> However, if the question were raised, which of the two proofs was the superior, our reply would be this: if it is logical exactitude and completeness that is at issue, then the ontological proof is superior. If, however, one is looking for accessibility to sound common sense, vividness of impression, beauty, and persuasiveness in relation to man's moral motives, then the advantage must be conceded to the cosmological proof.[114]

Both proofs have relevance of their own. The ontological proof is the only possible argument that offers a logical structure. This logical structure, as problematic as it might be, still offers something like the mathematical kind of validity that we distinguished from the multivalent validity. In the context of metaphysical reflections concerning the concepts of existence and possibility, Kent believes it is possible to provide a logical argumentative structure, thus elevating metaphysics very close to the level of ordinary sciences ("in einer solchen Wissenschaft, wie die Metaphysik ist," II: 66, 19–20). Hence, the validity of this ontological argument must be regarded as quasi-bivalent, although Kant warned the reader of the possible inconsistency of this claim (metaphysics is a bottomless abyss). As I will argue, this strong claim will change in the second part of Kant's precritical production, bringing all metaphysical arguments closer to the multivalent ones.

What takes the form of the multivalent argument in *Beweisgrund* is the revised physico-theological one. Even by considering the beauty of nature, its uniformity, and all the analogies mentioned above, the *a posteriori* argument is still not able to reach perfect logical validity. It can be trusted only because sound reason and persuasiveness suggest that its value must not be neglected. Once again, analogies generate persuasive arguments, that acquire strength the more a posteriori evidence of beauty and harmony we can gather.

Nonetheless, this argument remains persuasive, not deductive; metaphysical rather than mathematical. Kant's crucial precritical topic of the methodological differences between these

[114] "Indessen wenn die Frage wäre, welcher denn überhaupt unter beiden der beste sei, so würde man antworten: sobald es auf logische Genauigkeit und Vollständigkeit ankommt, so ist es der ontologische; verlangt man aber Faßlichkeit für den gemeinen richtigen Begriff, Lebhaftigkeit des Eindrucks, Schönheit und Bewegkraft auf die moralischen Triebfedern der menschlichen Natur, so ist die kosmologischen Beweise der Vorzug zuzugestehen." *Beweisgrund*, II: 161, 6–12.

two disciplines becomes now the elephant in the room and a breaking point for his philosophical development.

The conclusion of the first period of Kant's precritical production corresponds to the cumbersome emergence of this elephant, which signals a crucial problem to be solved in the subsequent works: the nature of metaphysical propositions is problematic and, if left unclarified, leaves metaphysics outside the realm of properly called sciences. Persuasion coming from nature and cosmological arguments can surely be valid, even though it cannot reach the bivalent validity of mathematical discourses.

The first part of the precritical period closes with a bridge-work: *Beweisgrund* introduces the pressing problematic of clarifying the nature of metaphysical statements, while endorsing a conception of analogy that remains stable throughout the works analyzed. The problem of the existence of God – the first metaphysical entity treated by Kant which does not have to do with the physical world and the matryoshka structure of *Naturgeschichte* – is solved either by a flawed logic, which still asks us to commit to a ready-made definition of existence and possibility to construct an *a priori* argument, or by a shaky cosmological argument, based on a conception of analogy that is tightly bound to the metaphysical assumption of the unity and analogy of nature.

Metaphysics still needs a proper foundation, even though *Nova dilucidatio* attempted to revise its method back in 1755. Such necessity provides the basis for a new analogical background, where analogy ceases to be intimately connected to the unitary conception of nature and becomes the main soldier in the battle of predication. The centrality of the problem of predication marks the beginning of a new phase in Kant's development, one in which analogical validity starts to move towards what Kant will later call regulative ideas.

Section III – The Second Part of Kant's Precritical Production (1763–1770)

The aim of this section is to understand how the core topics of the first part of Kant's precritical production changed in the period before the silent years through the lenses of the analogical method. The works discussed will be *Untersuchung über die Deutlichkeit der Grundsätze der natürlichen Theologie und der Moral* (*Untersuchung*, 1762), *Versuch den Begriff der negativen Größen in die Weltweisheit einzuführen* (*Begriff der negativen Größen, 1762*) *Träume eines Geistersehers, erläutert durch Träume der Metaphysik* (*Träume*, 1766), and *De mundi sensibilis atque intelligibilis forma et principiis* (*De mundi sensibilis*, 1770). The selecting criteria of the first part have been applied to Kant's works between 1763 and 1770, yielding a group of works that can be considered relevant from two perspectives: the use of analogy, and the insurgence of the problem of predication related to analogy.

My division into two sections is explained by two reasons: the nature of the works (Kant changed focus between 1762 and 1763), and the way analogy is used in these works. The substantial shift in the way analogy is used lies in two factors: its new utility to predicate something about metaphysical entities and its limited capacity (impossible to arrive at a 100% degree of certainty), showing an evolution from Kant's early conception of multivalent validity (if supported by proper evidence, the theory can reach 100% validity). All these statements will be supported by the analysis of the four works mentioned.

Regarding the nature of the works in the two periods, the focus of Kant's production shifted when content and aims are taken into account. The content of what he wrote before 1762–63 was often related to natural sciences, geometry, physics, and geography (the three not-analyzed treatises on earthquakes). *Nova dilucidatio* and *Syllogistische Figuren* are the only two works that can stand apart from the natural sciences, remaining philosophically and metaphysically relevant. Yet, they both do not provide any insight into Kant's use of the analogical method.

On the contrary, the vast majority of the works written from 1762 onwards are mainly philosophical and, more specifically, metaphysical. *Beweisgrund* has been defined as a bridge-work, insofar as it brings out the latent problem of the validity of predicaments concerning non-physical entities, thereby contextualizing analogy within a purely philosophical framework. Yet, it still pertains to the first part of the precritical production for two principal reason (as I will clarify in the course of this section): Kant's inability to clearly distinguish the mathematical

method from the metaphysical one, and Kant's belief in the capability of multivalent validity (and in general any metaphysical argument grounded on sound logic, as in *Beweisgrund*) to reach, or at least approximately reach, complete validity (100%). The significant shift in the second period is the movement towards an approximate conception of multivalent validity, which will ultimately lead to the abandonment of constitutive aims in favor of regulative metaphysics (as I will clarify at the end of this chapter).

Some readers might be confused by the order in which the four cited works will be analyzed. This is because there is confusion about the chronological order of the precritical writings. The *Akademie Ausgabe*, as well as some of the most cited translations of Kant's precritical works (e.g., the English translation by Wood and Guyer), follow this order of presentation: *Beweisgrund*, *Begriff der negativen Größen*, and *Untersuchung*. This order is dictated by the date of publication of the three works. However, suppose another criterion is used to present the three works (for example, in the Italian translation of Rosario Assunto), namely, the date of completion. In that case, the order becomes *Beweisgrund*, *Untersuchung*, and *Begriff der negativen Größen*. This slight inversion of order proves incredibly useful for the topic at stake in this work. Let us first clarify the reasons for the discrepancy between the publication date and the completion date before addressing the reasons for the preferred chronological analysis.

Untersuchung aimed at answering a question posed by the Berlin Academy of Sciences in 1761. The theme, proposed by Johann Sulzer, was announced in June 1761 in the *Berlinische Nachrichten von Staats und Gelehrten Sachen* with the following text:

> The Class of Speculative Philosophy herewith proposes the following question for the year 1763: One wishes to know whether the metaphysical truths in general, and the first principles of *Theologiae naturalis* and morality in particular, admit of distinct proofs to the same degree as geometrical truths; and if they are not capable of such proofs, one wishes to know what the genuine nature of their certainty is, in what degree the said certainty can be brought, and whether this degree is sufficient for complete conviction. (…) Submissions must be made by I January 1763; submissions will not be accepted after that date, no matter what excuses may be offered (Guyer & Wood, 2002, p. LXII).

The dates mentioned, and the confirmation in Kant's correspondence (10:41–42), indicate an overlap in the years during which Kant was preparing some of the works discussed. As Guyer and Wood clarify (2002, p. LIX), Kant probably finished writing *Beweisgrund* by October 1762 (surely no later than December 1762), *Untersuchung* by December of the same year (otherwise

it could not have been accepted by the Academy), and *Begriff der negativen Größen* by mid-1763.

Addressing the order of completion of these works allows me to consider what the philosophical problematics in Kant's mind at the time of the composition of the mentioned works were. The vicinity of these three works, a group which crucially includes also *Beweisgrund*, signals the insurgency of a philosophical necessity and the immediate attempt to respond to this necessity. The philosophical necessity was the realization, in *Beweisgrund*, of the lack of scientific methods in metaphysics. The attempts at responding were a methodological treatise on the differences between mathematics and metaphysics and the limits of both sciences (*Untersuchung*) and a treatise that develops from the new awareness of the limits of metaphysics (*Begriff der negativen Größen*).

In my work, which attempts to reconstruct as precisely as possible the development of an author while keeping in mind a specific interpretative key (the use of analogy), the preferred analysis is one that focuses on the order of completion. This is for at least two reasons. Firstly, the interpretation of *Begriff der negativen Größen* is influenced by the results of *Untersuchung*. As I will discuss, this inversion confirms the crucial new awareness of the problem of predication in metaphysics. Secondly, this new relationship of dependence between the two works enhances the relevance of *Begriff der negativen Größen* within the broader picture of Kant's precritical works.

Before beginning the analysis of *Untersuchung*, it is worth mentioning that the classical disposition of Kant's precritical works, which privileges the order of publication, is not problematic in itself. It becomes problematic when it is uncritically assumed to be the only possible interpretation of the relations between the mentioned works. This risk should be appropriately noted in the introductions of all works that follow the order-of-publication model.

1. Untersuchung

1.1 Mathematics vs. Metaphysics

The goal of *Unteruschung*, as stated previously, is to understand the differences between the method of mathematics and that of metaphysics and to clarify what kind of validity metaphysical statements can achieve. Kant begins the *Vorrede* with these words:

> The question proposed for consideration is such that, if it is appropriately answered, higher philosophy must as a result acquire a determinate form. If the method for attaining the highest possible degree of certainty in this type of cognition has been established, and if the nature of this kind of conviction has been properly understood, then the following effect will be produced: the endless instability of opinions and scholarly sects will be replaced by an immutable rule which will govern didactic method and unite reflective minds in a single effort. It was in this way that, in natural science, Newton's method transformed the chaos of physical hypotheses into a secure procedure based on experience and geometry.[115]

When Kant refers to "höhere Philosophie," he intends metaphysics, following the classical Wolffian division of philosophical disciplines (see Wolff, 1730). The operation of the philosopher must be like that of Newton in this context: the definition of a method that resolves all debates between contrasting metaphysicians. A clarification of the method of metaphysics, here, is seen by Kant as enough to make metaphysics scientific.

To define a method, Kant's argument begins with an enumeration of what is known about this discipline. The characteristics of metaphysics are derived from confrontation with mathematics, an essential element in the search for an answer to the question of the Academy. The first *Betrachtung*, in fact, is entitled: "General comparison of the manner in which certainty is attained in mathematical cognition with the manner in which certainty is attained in philosophical cognition."[116] Follows a list of crucial differences between the two disciplines:

> A (§1): Mathematics and metaphysics arrive at their definitions in two opposite ways. Mathematics derives its definitions arbitrarily, starting from ready-made concepts and combining them to reach the final goal. Kant's example is that of the *trapezium*: this figure is nothing more than an arbitrary connection of four straight lines, determined in advance by a rule. Hence, the concept of the trapezium exists only insofar as its definition is given prior to it. This method is synthetic.
>
> Metaphysics, on the contrary, always starts with a concept that is already given in a confused manner, and the definition of this concept must be found through analysis. Kant's example is time: everyone has an idea of time, but its definition necessitates an

[115] "Die vorgelegte Frage ist von der Art, daß, wenn sie gehörig aufgelöst wird, die höhere Philosophie dadurch eine bestimmte Gestalt bekommen muß. Wenn die Methode fest steht, nach der die höchstmögliche Gewißheit in dieser Art der Erkenntnis kann erlangt werden, und die Natur dieser Überzeugung wohl eingesehen wird, so muß anstatt des ewigen Unbestands der Meinungen und Schulsecten eine unwandelbare Vorschrift der Lehrart die denkenden Köpfe zu einerlei Bemühungen vereinbaren; so wie Newtons Methode in der Naturwissenschaft die Ungebundenheit der physischen Hypothesen in ein sicheres Verfahren nach Erfahrung und Geometrie veränderte." *Untersuchung*, 2:275, 1–11.

[116] "Allgemeine Vergleichung der Art zur Gewißheit im mathematischen Erkenntinisse zu gelangen mit der im philosophichen." *Untersuchung*, 2:276, 2–3.

analysis of all its characteristic marks. This analysis aims to clarify the initial confusion. Kant's analysis of the concept of existence at the beginning of *Beweisgrund* is another example of the attempt to define concepts in metaphysics.

B (§2): Mathematics and metaphysics use different kinds of languages. In mathematics, more specifically in arithmetic, the things posited are symbols (numbers), not the things in themselves. These symbols are used in the arithmetical operations, which, eventually, will be deciphered at the end of the proposition to return to the things in themselves. Furthermore, these symbols are used *in concreto*, meaning that the relations between the arithmetical symbols express concrete relations between things in themselves.
Metaphysics is more unfortunate: the symbols used in philosophy are words, and these symbols can neither have any concrete relations with the thing in itself, concealed with an obscure and non-analyzed concept of the thing, nor indicate the relations of the philosophical thoughts to each other. Symbols in metaphysics must be used *in abstracto*. In metaphysics, abstract reflections will never be substituted by perfectly corresponding numerical signs, thus leaving the philosopher to the confusion of words.

C (§3): Mathematics and metaphysics have a different attitude towards their indemonstrable principles. In mathematics, these indemonstrable principles are very few and usually do not pertain to mathematics (but to philosophy). This is because mathematics creates its own concepts and propositions arbitrarily, which are immediately defined because of point A.
On the contrary, metaphysics has a vast number of unanalyzable and indemonstrable concepts. This is because it starts with obscure concepts that need to be analyzed to find a definition. Most of them, however, lead to no definition because of their obscure nature (Kant gives examples of the concepts of representation, being next to each other, space, time, and many feelings). Hence, specifically in metaphysics, the distinctness of cognition and the possibility of valid inferences often depend on undefinable and indemonstrable concepts.
The burden of philosophy, and in particular of metaphysics, according to Kant, is precisely that its most important business consists in seeking out the indemonstrable fundamental truths among unclear concepts. Unclear concepts will eventually lead to some characteristic marks, perceived in the object at stake, that the understanding immediately perceives, and that constitute the data for the foundation of definitions in

metaphysics. These principles are indemonstrable precisely because they are the first and immediate thing that comes to mind when analyzing an object. No argument or process of formulation can be verified or falsified; there is only an immediate and, therefore, indemonstrable awareness of initial propositions of the mind. Such indemonstrable fundamental judgments are the unstable basis of metaphysical arguments.

D (§4): The object of mathematics and metaphysics is entirely different. Mathematics deals with magnitudes and quantities. On the contrary, the real objects of metaphysics are infinitely many qualities, and Kant defines the goal of distinguishing them from each other as a strenuous business. This is because it is far more difficult to disentangle complex and involved cognitions by means of analysis than it is to combine simple given cognitions by means of synthesis and thus to establish conclusions. Precisely for this reason, metaphysical claims usually do not endure through time, whereas mathematical ones do.

1.2 The validity of Metaphysical Propositions

The absence of a straightforward method to confer validity to metaphysical claims makes the question of the Academy even more important. To find an answer, Kant starts by defining metaphysics: "Metaphysics is nothing other than the philosophy of the fundamental principles of our cognition."[117] In trying to find the first principles of cognition, however, nothing is more damaging than the imitation of the mathematical method, which, as stated in the previous *Betrachtung*, is irreconcilable from several points of view. Hence, the task of the metaphysician is to search for the distinct concept of something without imitating mathematics. In order to do this, Kant lists two fundamental rules that, if followed, should lead the research through a correct path:

> The first and the most important rule is this: one ought not to start with definitions, unless that is, one is merely seeking a nominal definition, such as, for example, the definition: that of which the opposite is impossible is necessary. But even then there are only a few cases where one can confidently establish a distinctly determinate concept right at the very beginning. One ought,

[117] "Die Metaphysik ist nichts anders al seine Philosophie über die ersten Gründe unseres Erkenntnisses." *Untersuchung*, 2:283, 13–14.

> rather, to begin by carefully searching out what is immediately certain in one's object, even before one has its definition. Having established what is immediately certain in the object of one's inquiry, one then proceeds to draw conclusions from it. One's chief concern will be to arrive only at judgements about the object which are true and completely certain. And in doing this, one will not make an elaborate parade of one's hope of arriving at a definition. Indeed, one will never venture to offer such a definition, until one has to concede the definition, once it has presented itself on the basis of the most certain of judgements.
>
> The second rule is this: one ought particularly to distinguish those judgements which have been immediately made about the object and relate to what one initially encountered in that object with certainty. Having established for certain that none of these judgements is contained in another, these judgements are to be placed at the beginning of one's inquiry, as the foundation of all one's inferences, like the axioms of geometry.[118]

The two rules are solidly grounded on the first *Betrachtung*. Provided that metaphysics cannot start from definitions (point A of the first *Betrachtung*), it must start from somewhere else, meaning from some first indemonstrable judgments. This is possible even without aiming to find the definition of the object at stake:

> In philosophy and in particular in metaphysics, one can often come to know a great deal about an object with distinctness and certainty, and even establish reliable conclusions on that basis prior to having a definition of that object, and even, indeed, when one had no intention of furnishing one. In the case of any particular thing, I can be immediately certain about a number of different predicates, even though I am not acquainted with a sufficiently large number of them to be able to furnish a completely determinate concept of the thing, in other words, a definition.[119]

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[118] "Die erste und vornehmste Regel ist diese: daß man ja nicht von Erklärungen anfange, es müsste denn etwa bloß die Worterklärung gesucht werden, z. B.: notwendig ist, dessen Gegenteil unmöglich ist. Aber auch da sind nur wenig Fälle, wo man so zuversichtlich den deutlich bestimmten Begriff gleich zu Anfange festsetzen kann. Vielmehr suche man in seinem Gegenstande zuerst dasjenige mit Sorgfalt auf, dessen man von ihm unmittelbar gewiß ist, auch ehe man die Definition davon hat. Man ziehe daraus Folgerungen und suche hauptsächlich nur wahre und ganz gewisse Urteile von den Objekten zu erwerben; auch ohne sich noch auf eine verhoffte Erklärung Staat zu machen; welche man niemals wagen, sondern dann, wenn die sich aus den augenscheinlichsten Urteilen deutlich darbietet, allererst einräumen muß. Die zweite Regel ist: daß man die unmittelbaren Urteile von dem Gegenstande in Ansehung desjenigen, was man zuerst in ihm mit Gewißheit antrifft, besonders auszeichnet und, nachdem man gewiß ist, daß das eine in dem andern nicht enthalten sei, sie so wie den Axiomen der Geometrie als die Grundlage zu allen Folgerunden voranschickt." *Untersuchung*, 2:285, 20–36.

[119] "In der Philosophie und namentlich in der Metaphysik kann man oft sehr viel von einem Gegenstande deutlich und mit Gewissheit erkennen, auch sichere Folgerungen daraus ableiten, ehe man die Definition desselben besitzt, auch selbst dann, wenn man es für nicht unternimmt, sie zu geben. Von einem jeden Dinge können mir nämlich verschiedenen Prädikaten unmittelbar gewiss sein, ob ich gleich deren noch nicht genug kenne, um den ausführlich bestimmten Begriff der Sache, d.i. die Definition, zu geben. ." *Untersuchung*, 2:284, 11–18.

Hence, in metaphysics, the initial search for propositions that are immediate and self-evident is the beginning of every argument. Moreover, even if a definition of the essence of a thing is not possible, "you can still safely employ those characteristics marks to infer a great deal from them about the thing in question."[120] In other words, even if metaphysics is not able to acquire definitions, it is still valuable for acquiring some cognition concerning the object at stake.

What remains to be discussed is the validity of the limited knowledge obtained through the first indemonstrable principles, discussed in the third *Betracthung* of *Untersuchung*. Kant initially clarifies what his idea of certainty is:

> The degree of this certainty, taken objectively, depends upon the sufficiency in the characteristic marks of the necessity of a truth. But taken subjectively, the degree of certainty increases with the degree of intuition to be found in the cognition of this necessity. In both respects, mathematical certainty is of a different kind to philosophical certainty.[121]

We must bear in mind, firstly, that Kant talks of *Gewißheit* in degrees rather than in bivalent terms. He discusses certainty as something that increases in degree. The certainty of mathematics comes from the fact that it starts with definitions, so if the proper rules of calculus are followed, the correctness and certainty of its propositions cannot be at stake. This does not happen in metaphysics, where definitions of concepts are often not found (second *Betrachtung*) and, in any case, these concepts must be described by abstract words (first *Betrachtung*).

Nevertheless, metaphysics is still capable of reaching its own degree of certainty, which does not concern definitions, but the first indemonstrable propositions that lie at the beginning of the philosophical analysis of a concept. If we recall Kant's definition of metaphysics as the philosophy of the first grounds of cognition (2:283, 13–14), these initial indemonstrable propositions are the first ground of non-mathematical cognition. Metaphysics, according to Kant, can reach a certainty that produces conviction when the philosopher is capable of recognizing the characteristic marks of the concept at stake. This operation should lead to the fundamental propositions underlying this concept. The only risk of this operation is failing to recognize the correct propositions as fundamental, thereby flawing the entire argument. In

[120] "Eben so in der Metaphysik: suchtet durch sichere innere Erfahrung, d. i. Ein unmittelbares augenscheinliches Bewusstsein, diejenigen Merkmale auf, die gewiss in den Begriffen von irgendeiner allgemeinen Beschaffenheit liegen, und ob ihr gleich das ganze Wesen der Sache nicht kennet, so könnt ihr euch doch derselben sicher bedienen, um vieles in dem Dinge daraus herzuleiten." *Untersuchung*, 2:286, 20–21.

[121] "Der Grad dieser Gewißheit, wenn er objektive genommen wird, kommt auf das Zureichende in den Merkmalen von der Notwendigkeit einer Wahrheit an, insofern er aber subjektive betrachtet wird, so ist er insofern größer, als die Erkenntnis dieser Notwendigkeit mehr Anschauung hat. In dieser Betrachtung ist die mathematische Gewißheit von anderer Art als die philosophische." *Naturgeschichte*, 2:290–291.

short, while the correctness of mathematics lies in its initial definitions, that of metaphysics lies in the philosopher's ability not to get lost in the vast and obscure sea of metaphysical concepts. A valid proposition, in metaphysics, is a proposition that has been correctly found as indemonstrable and necessary for the construction of any possible argument. The remaining characteristics of a thing, regardless of the nature of the object at stake, will be valid insofar as they remain tied to the initial indemonstrable proposition. The definition, in this context, has nothing to do with validity. In Kant's words:

> In both sciences, indemonstrable propositions constitute the foundation on the basis of which conclusions are drawn. But whereas in mathematics the definitions are the first indemonstrable concepts of the things defined, in metaphysics, the place of these definitions is taken by a number of indemonstrable propositions which provide the primary data. Their certainty may be just as great as that of the definitions of geometry. They are responsible for furnishing either the stuff, from which the definitions are formed, or the foundation, on the basis of which reliable conclusions are drawn. Metaphysics is as much capable of the certainty which is necessary to produce conviction as mathematics. The only difference is that mathematics is easier and more intuitive in character.[122]

Before analyzing the conclusions to be traced from this work, it is worth mentioning that Kant exemplifies this theory with an indemonstrable proposition that will be relevant also later during the analysis of *Träume*: he claims that "all bodies must consist of simple substances." ("ein jeder Körper aus einfachen Substanzen bestehen müsse." *Untersuchung*, 2:286, 27–28). Starting from this proposition, Kant logically extracts other characteristics of simples, stating that they must have the force of impenetrability and have an extension. In this way, Kant does not arrive at a definition of simple substances, but he is still able to gather some predicates concerning them. The initial premise gives the certainty of these predicates: if the proposition stating that every body must be composed of simple substances is true, then the argument holds. What grants the validity of the initial proposition is the capability of the metaphysician not to get distracted by unreasonable arguments.

1.3 Problematic Analysis

[122] "In beiden sind unerweisliche Sätze, die die Grundlage zu Schlüssen Machen. Nur da die Definitionen in der Mathematik die ersten unerweislichen Begriffe der erklärten Sachen sind, so müssen anderen Statt verschiedene unerweisliche Sätze in der Metaphysik die ersten Data angeben, die aber eben so sicher sein können, und welche entweder den Stoff zu Erklärungen oder den Grund sicherer Folgerungen darbieten. Es ist eben sowohl eine zur Überzeugung nötige Gewissheit, deren die Metaphysik, als welcher die Mathematik fähig ist, nur die letztere ist leichter und einer größeren Anschauung teilhaftig." *Untersuchung*, 2:296, 3–7.

Kant concludes his methodological treatise with his answer to the Academy. By implicitly referring to his *a priori* demonstration of the existence of God of the *Beweigrund*, he claims that a sound natural theology can reach a sufficient (although not mathematical) degree of validity if it identifies the first indemonstrable propositions at stake. The analysis of concepts as existence and possibility will eventually lead to some indemonstrable propositions, such as that "there must be an absolutely necessary being." Subsequently, this proposition becomes the basis for further steps which, eventually, will yield other predicates of the object at stake. Again, the definition of God is of no interest in this enterprise; what is possible is to acquire an indemonstrable proposition, which grants the validity of the subsequent argumentative steps.

Morality does not have a similar fortune. Kant writes:

> Metaphysical cognition of God is thus capable of a high degree of certainty in all those areas where no analogon of contingency is to be encountered. But when it comes to forming a judgement about His free actions, about providence, or about the way in which He exercises justice and goodness, there can only be, in this science, an approximation to certainty, or a certainty which is moral.[123]

The deduction of the moral characteristics of God goes far beyond the limits of metaphysics, although Kant does not say this directly. The argument starting from indemonstrable propositions can reach a certain depth, but it is also limited to those determinations of God that are related to the initial indemonstrable proposition. The whole moral sphere cannot be deduced from existence and possibility, so its characteristics will remain obscure.

The *Untersuchung* is the first proper attempt to provide a method for metaphysics and to investigate the nature of the validity connected to it. In this attempt, what remains problematic is the nature of the argumentative steps that come after the definition of the first indemonstrable propositions. In this sense, according to Kant, after the first two mentioned rules have been followed, one should follow some other general rules that are shared by any other rational method (2:286, 4–7). As I will discuss, these argumentative steps can include analogical reasoning, making the analysis of metaphysics a slippery slope. The strong logical connections between the signs of mathematics are not replicable in metaphysics, where the symbols are

[123] "In allen Stücken demnach, wo nicht ein Analogon der Zufälligkeit anzutreffen, kann die metaphysische Erkenntnis von Gott sehr gewiss sein. Allein das Urteil über seine freien Handlungen, über die Vorsehung, über das Verfahren seine Gerechtigkeit und Güte, da selbst in den Begriffen, die wir von diesen Bestimmungen an uns haben, noch viel Unentwickeltes ist, können in dieser Wissenschaft nur eine Gewissheit durch Annäherung haben, oder eine, die moralisch ist." *Untersuchung*, 2:297, 31–37.

words, and their connection is always problematic (against Darjes). As I will discuss, the argumentative steps that unfold after the decision of the initial indemonstrable propositions are held on analogical grounds.

Although analogies are not directly at the center of this work, they are still indirectly concerned. This is because *Untersuchung* provides an extensive picture of Kant's ideas on validity in the sciences. Complete validity in mathematics is never at stake because this discipline starts with arbitrary definitions. Metaphysics must arrive at definitions, but this, given the obscurity of the objects at stake, is impossible most of the time. This awareness would already have been a proper answer to the Academy's question, but Kant found a workaround in a new idea of validity. Validity in metaphysics becomes the capability of following sound reason. Both the analysis of the initial concept at stake, which is supposed to clarify the fundamental proposition at the basis of the argument, and the subsequent deduction of further propositions from this indemonstrable one are essentially grounded on plausibility and approximation.

The underlying teaching of *Untersuchung* is that metaphysics must abandon not only bivalent validity but also that it struggles to ground its multivalent arguments. It remains unclear how cognition of metaphysical entities such as God can be acquired if the arguments must proceed by means of an undefined sound reasoning. Furthermore, Kant's shift of focus with his definition of metaphysics leaves unanswered the question of what kind of cognition of non-physical entities metaphysics acquires.

With this description of the method of metaphysics, Kant divides this discipline into two parts: one in which the main goal is to find the first principles of cognition, and another in which the objective is to acquire new knowledge of non-physical objects. Even if we concede that the question of the validity of metaphysics is answered in the first of these parts, this discipline remains unstable in its second part, where indemonstrable propositions acquire new cognition via limited argumentative steps that often end up in dead ends (such as the case of morality in the fourth *Betrachtung*).

Mathematics works with extreme validity because the intermediate steps from the initial definition and the final result of the argument are perfectly scaffolded in a system of precise algebraic laws. Metaphysics lacks a system of algebraic laws that could teach the philosopher how to use its symbols, so its intermediate operations remain unclear. *Begriff der negativen Größen* provides an attempt to overcome this obstacle through analogy.

2. Begriff der negativen Größen

2.1 The Definition of a Negative Magnitude

Published in the same year as *Beweisgrund* (1763), this work proceeds Kant's investigation into the methodological differences between mathematics and philosophy (metaphysics in particular). It aims to introduce, in philosophy, the mathematical concept of negative magnitudes, showing how some ideas from the former discipline could also be useful for the latter. This idea, as I will discuss, is analogical in character, and Kant explicitly recognizes this when discussing the use of negative magnitudes to understand the characteristics of God.

Hence, *Begriff der negativen Größen* presents itself in both a mathematical and a metaphysical fashion, as it discusses, first, an explanation of the concept of negative magnitudes and, second, a proposal for how this concept could be helpful in other disciplines, including metaphysics. This overlap of the two disciplines shows again how important the question of the validity of metaphysical arguments had become for the author, who began his quest for the method of metaphysics in *Untersuchung* and developed some aspects of his theory in *Begriff der negativen Größen*.

It is worth quoting the first lines of the *Vorrede* to get a grasp of the problem at stake in *Begriff der negativen Größen*:

> The use to which mathematics can be put in philosophy consists either in the imitation of its method or in the application of its propositions to the objects of philosophy. With respect to the first of these two uses, it has not been noticed that it has had only one benefit, in spite of the great advantage expected of it to start with. Furthermore, the high-sounding titles, with which philosophers, jealous of geometry, were induced to decorate the propositions of philosophy, have now been gradually abandoned (…).
>
> By contrast, the second use to which mathematics has been put in philosophy has been all the more beneficial to the parts of philosophy affected. These parts of philosophy, by turning the doctrines of mathematics to their own advantage, have attained to heights, to which they would not otherwise have been able to aspire. But the parts of philosophy to which I am referring are only the insights of physics—unless, that is, one is obliged to include in philosophy the logic of probability. As for metaphysics, this science, instead of turning certain of the concepts or doctrines of mathematics to its own advantage, has, on the contrary, frequently armed itself against them. And where it might, perhaps, have been able to gain secure foundations on which

> to base its reflections, it is to be seen trying to turn mathematical concepts into subtle fictions, which have little truth to them outside the field of mathematics.[124]

Hence, there are two possible relations between mathematics and philosophy. The first one implies the imitation of the mathematical method in philosophy. As discussed in the *Untersuchung* (2:283, 13–24), this attempt has proven to be a fallible procedure. *Untersuchung* has shown that the methods and validity proper to a scientific metaphysics substantially differ from those of mathematics. When such discrepancies emerge, the imitation of method is an operation doomed to failure. Nonetheless, another kind of collaboration can be found between the two sciences.

The second way in which these two disciplines relate in *Begriff der negativen Größen* is an application of a concept proper to one discipline in the other discipline. Kant aims to argue that, despite past failures, such an operation is possible for negative magnitudes.

Kant explains what negative magnitudes are through the two concepts of logical (*logisch*) and real (*real*) opposition (2:171). Logical opposition involves the principle of non-contradiction and concerns two predicates that would violate this law if they were true at the same time. The predicates "God exists" and "God does not exist", for example, are logically opposite since they cannot be possible at the same time. Real opposition, instead, allows two opposite predicates to exist without violating the law of non-contradiction. Kant's example is the presence of two forces of opposite direction but equal intensity. Their opposition is not logically contradictory, because the existence of one does not preclude that of the other. These two forces, if summed up, would generate the idea of equilibrium, which is still a predicate. Kant also expresses this distinction between logical and real opposition with the terms *privatio* and *defecto* (2:184–185). As the etymology of the words suggests, a *privatio* is the deprivation of something from something that exists (real opposition). A *defecto*, instead, is the total absence of something, the non-existence of something (logical opposition).

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[124] "Der Gebrauch, den man in der Weltweisheit von der Mathematik machen kann, besteht entweder in der Nachahmung ihrer Methode oder in der wirklichen Anwendung ihrer Sätze auf die Gegenstände der Philosophie. Man sieht nicht, daß der erstere bis daher von einigem Nutzen gewesen sei, so großen Vorteil man sich auch anfänglich davon versprach; und es sind auch allmählich die vielbedeutenden Ehrennamen weggefallen, mit denen man die philosophischen Sätze aus Eifersucht gegen die Geometrie ausschmückte, weil man bescheidenlich einfach (...). Der zweite Gebrauch ist dagegen für die Theile der Weltweisheit, die er betroffen hat, desto vorteilhafter geworden, welche dadurch, daß sie die Lehren der Mathematik in ihren Nutzen verwandten, sich zu einer Höhe geschwungen haben, darauf sie sonst keinen Anspruch hätten machen können. Es sind dieses aber auch nur die zur Naturlehre gehörige Einsichten, man müßte denn etwa die Logik der Erwartungen in Glücksfällen auch zur Weltweisheit zählen wollen. Was die Metaphysik anlangt, so hat diese Wissenschaft, anstatt sich einige von den Begriffen oder Lehren der Mathematik zu Nutze zu machen, vielmehr sich öfters wieder sie bewaffnet, und wo sie vielleicht sichere Grundlagen hätte entlehnen können, um ihre Betrachtungen darauf zu gründen, sieht man sie bemüht, aus den Begriffen des Mathematischen nichts als seine Erklärungen und unbrauchbare Formen leerer Wörter zu sich binden." *Untersuchung*, 2:167, 2–24.

Thanks to the introduced concepts, Kant provides this definition of a negative magnitude: "A magnitude is, relative to another magnitude, negative, in so far as it can only be combined with it by means of apposition; in other words, it can only be combined with it so that the one magnitude cancels as much in the other as is equal to itself."[125] Moreover, "In order to extract what is philosophically significant from this concept and to do so without particularly looking at magnitude, we shall begin by offering the following remark. The mathematical concept of negative magnitudes involves the opposition which we have above called real opposition."[126]

2.2 God and Negative Magnitudes

The second section of *Begriff der negativen Größen* is dedicated to enumerating examples of where the concept of negative magnitudes can be found in philosophy. Real oppositions are to be found everywhere according to Kant: the mechanical laws of attraction and repulsion follow this scheme (2:179–180; 2:186–187), psychology provides also examples of the presence of real oppositions in human behaviors and emotions (displeasure and pleasure, 2:180–182), and virtue and vice follow the same real oppositional scheme, thus bringing mathematics into moral philosophy (2:183–184).

Kant then comes to the application of these concepts in the context of metaphysical reflections. The attempt is to apply the concept of negative magnitudes to understand something of the divine:

> If one wished to venture the application of these concepts to the cognition which men may have of the infinite Divinity—a cognition which is so fragile—with what difficulties are our greatest efforts not then surrounded? The foundation of these concepts can only be found within ourselves. It is therefore in most cases unclear whether this idea is to be applied by us to this incomprehensible object in a literal fashion or only by means of a certain analogy (…). In the Supreme Being there can be neither grounds of deprivation nor of real opposition. For since everything is given in and through Him, it follows that, in virtue of His possessing all

[125] "Eine Größe ist in Ansehung einer andern negative, insofern sie mit ihr nicht anders als durch die Entgegensetzung kann zusammen genommen werden, nämlich so, daß eine in der andern, so viel ihr gleich ist, aufhebt." *Untersuchung*, 2:174, 8–11.
[126] "Damit wir aus diesen Begriffen dasjenige, was eigentlich der Gegenstand für die Philosophie ist, herausnehmen, ohne besonders auf die Größe zu sehen, so bemerken wir zuerst, daß in ihm die Entgegensetzung enthalten sei, welche wir oben die reale genannt haben." *Untersuchung*, 2:174, 23–26.

> determinations in His own existence, no inner cancellation is possible. For this reason, the feeling of displeasure is not a predicate which can be appropriately applied to the Divinity.[127]

This quote introduces a fundamental problem that will later characterize Kant's precritical works: the question of which language is adequate to predicate of metaphysical entities (a problem similar to that of Aquinas). The idea of negative magnitudes is a product of human cognition, and applying such a concept to a non-physical entity like God raises some philosophical issues. For this reason, Kant is unsure whether these concepts should be applied to God in a literal sense (*eigentlich*) or by analogy (*vermittelst einiger Analogie*). In other words, no argument can support the validity of human concepts for non-human entities. Validity, in this context, refers to the presence or absence of a proof that allows the application of human predicates to the divine subject of the judgment. In this case, a mathematical concept should be applied to God, which is a metaphysical concept that could exist beyond the limits of mathematics.

Kant recognizes the problematic at stake and realizes that an analogical application of this concept could be the solution, even if limited. The application of the concept of negative magnitude to God implies an initial reflection on whether there could be opposition in God. Kant maintains that God possesses all determinations (*den Allbesitz der Bestimmungen*). For this reason, no inner opposition or cancellation could be possible, for if two real opposites were to be active in God at the same time, they would equilibrate each other and cancel two determinations, thus making God lose one determination, which is impossible.

This argument is analogical insofar as it assumes that the real oppositions conceived by human nature can also be valid at a divine level, thereby elevating a human form of cognition to a divine context. In other words, the logical relations between the opposites are taken to be valid in God's determinations as well. However, this operation is not based on any logical inference, since human understanding would never know whether God's determinations follow the same logic as human ones. The issue at stake becomes ontological and linguistic: how can the philosopher be sure that human cognitive processes would ever be capable of describing non-physical objects?

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[127] "Wenn man es wagen will diese Begriffe auf das so gebrechliche Erkenntnis anzuwenden, welches Menschen von der unendlichen Gottheit haben können, welche Schwierigkeiten umgeben alsdann nicht unsere äußersten Bestrebungen? Da wir die Grundlage zu diesen Begriffen nur von uns selbst hernehmen können, so ist es in den meisten Fällen dunkel, ob wir diese Idee eigentlich oder nur vermittelst einiger Analogie auf diesen unbegreiflichen Gegenstand übertragen sollen. (...) Zu dem höchsten Wesen können keine Gründe der Beraubung oder einer Realantgegensetzung statt finden. Denn weil in ihm und durch ihn alles gegeben ist, so ist durch den Allbesitz der Bestimmungen in seinem eigenen Dasein keine innere Aufhebung möglich. Um deswillen ist das Gefühl der Unlust kein Prädicat, welches der Gottheit geziemend ist." *Untersuchung*, 2:200–201.

The problem of predication and its linguistic-ontological character will become a central theme in Kant's precritical production from this point onwards. *Unteruschung* attempted to provide a method for accounting for the discovery of new cognition concerning metaphysical entities. However, I previously discussed the inefficacy of Kant's argumentative structure, which was still grounded in first indemonstrable propositions. The nature of these propositions, inherently human in character (meaning that they are the first and necessary principles of human cognition), generates the same problem of negative magnitudes: how can any proposition that connects the predicate of possibility, existence, or any of the indemonstrable propositions to a metaphysical entity be proved? Can they be applied in a literal fashion, or do they need to be applied analogically? The latter is the answer in *Begriff der negativen Größen*, which highlights how incomplete the formulation of the method of metaphysics in *Untersuchung* was.

In this context, it is enough to note that, by applying the concept of real opposition to God, Kant acquires new cognition of the divine being: namely, that the feeling of displeasure is not a predicate that can be appropriately applied to God. The inappropriateness of the idea of God's displeasure is only a negative cognition, but it is still something new and analogically obtained. The validity of this argument remains far from bivalent (mathematical). Moreover, the plausibility of this argument remains at stake: in the case of *Naturgeschichte*, the growing plausibility of the matryoshka argument was supported by a series of elements that, according to Kant, ultimately brought it to a complete multivalent validity (100%). In the case of non-physical entities like God, there is no further evidence to indicate the correct direction of a probabilistic hypothesis. The approximation has no means of ceasing to be insecure, thereby revealing the weak logical rigor of analogies.

Begriff der negativen Größen comes at the end of two years of intense philosophical activity by Kant. The problems and ideas at stake in *Beweisgrund*, *Untersuchung*, and *Begriff der negativen Größen*, all composed between the last months of 1762 and the first half of 1763, intersect and overlap. My analysis of the ideas presented in these works highlights the emergence of a crucial issue: the problem of predication.

Kant's first attempt to predicate something about a metaphysical object, God, in the *Beweisgrund*, leads to a twofold conclusion: either a perfect a priori argument establishes the existence of God, or nature convinces us that God must exist. Although the latter analogical proof seems quite convincing, the former takes the title of the only possible one, insofar as it is based on sound logic. However, it is problematic to state that any proof in metaphysics is based on such sound logic. The initial concepts of existence and possibility are challenging to define

in the bottomless abyss of metaphysics, providing a somewhat obscure foundation for a seemingly logical argument.

Untersuchung represents an attempt to resolve this foundational issue. The basis of metaphysical arguments should be first indemonstrable propositions, which are now the measuring stick of the validity of a metaphysical argument and also offer a solid foundation for some argumentative steps that bring the philosopher to new knowledge of the object at stake. However, even granted that the analysis leading to the indemonstrable propositions is correctly carried out, the subsequent steps are still based on a somewhat unclear rational method (2:286).

The use of human propositions, definitions, and concepts remains problematic when applied in metaphysics. The predicative jump from the context of human cognition to that of metaphysical objects still lacks a proper foundation, and *Begriff der negativen Größen* proposes that this jump could be grounded in analogy, but only approximately and plausibly. At this stage of analysis, my interpretation is that Kant struggles with the question of metaphysics' validity as a science and finds in analogy a possible solution to be further investigated. Analogy, however, is not naturally grounded on a set of metaphysical assumptions and shared physical laws as it was in the first part of his precritical production. It is rather a general attempt to apply what works in one context in another, more problematic context. As I will discuss, the difficulty of finding definitions in metaphysics, introduced by Kant in *Untersuchung*, will become, in Träume, a recognition of the impossibility of generating constitutive statements, especially through analogy. Such development, I maintain, will be the crucial turning point for Kant to realize that the discourse on metaphysical entities must be shaped according to the criterion of utility instead of validity.

3. Träume

3.1 A Curious Book

Träume eines Geistersehers, erläutert durch Träume der Metaphysik is often seen as Kant's "most curious" book (Kuehn, 2001, p. 170) for two reasons: the content – it is an attempt at discussing the existence of ghosts and a critique of Emanuel Swedenborg – and the style, frequently more colloquial and poetic if compared to his previous works. As Kuehn notes, the plan to write *Träume* was in Kant's mind for a long time before its actual publication (1766). What prompted the writing of this book was his growing interest in Swedenborg, whose stories of spirit seeing were becoming quite popular in Königsberg around 1762 (Kuehn, 2001, p.

171).[128] This mystic claimed to be able to see spirits, predict events, and have miraculous visions. In Kant's circles, Swedenborg's stories were gradually gaining attention because they seemed true, especially after Swedenborg (apparently) described an event in Stockholm, 50 miles away.

Kant's growing interest in the topic was naturally aroused by this man's alleged connection with a world of immaterial spirits, hence a non-physical world. Recalling the introduction of this section, 1762 is a crucial year in Kant's philosophical development because the question of the validity of propositions on metaphysical objects became the center of almost every one of his works. The occasion to write a response to Swedenborg's ideas, which in the meantime were published in several works during the 1760s, came only later, and difficulties in the publication process led *Träume* to appear only in 1766.

Although the motivation for this work might seem irrelevant to the purpose of my investigation, a thorough analysis reveals that all the problems at stake in this phase of Kant's production are directly addressed in *Träume*. As I show below, the problem of predication is at the center of the work, in which the occasion to talk about ghosts is translated into an attempt to predicate something about souls. Rational souls are the non-physical object that substitutes God in this work, and they encounter precisely the same problems that Kant encountered in his previous attempts to construct judgments about the divine. Moreover (and this represents the pivotal gain of *Träume*), a first solution to the problem of predication is indicated by Kant in the use of analogical reasoning. Kant's recognition of the fallibility of analogies, however, signals his mature view on the relation between scientific validity and metaphysical validity.

3.2 Souls, Thinkability, and Possibility

Kant divides *Träume* into two parts: the first is theoretical, whereas the second is historical. In this analysis, I will focus primarily on the first, which contains Kant's theory of souls and the use of analogies. I will briefly touch on the second part, offering some comments on Kant's final answer to Swedenborg and the conclusions.

Kant starts his inquiry by discussing one of those concepts that lie at the starting point of any metaphysical inquiry: the concept of the soul. Unlike mathematics, where the philosopher starts with definitions, the concept of the soul is far from being clearly defined and

[128] Kant also demonstrates his interest in a letter to Charlotte von Knobloch, written in August 1763. In this letter, Kant shows his philosophical attitude towards mysticism, writing that his interpretation of ghost stories will depend on sound reason and on a skeptical perspective. See 10:43–48.

remains obscure to most. He writes: “I do not, therefore, know whether spirits exist or not. And, what is more, I do not even know ehat the word *spirit* means.” (“Ich weiß also nicht, ob es Geister gebe, ja was noch mehr ist, ich weiß nicht einmal, was das Wort Geist bedeute.” *Träume*, 2:320, 4–5).

According to the method he developed in his previous works, the attempt to acquire some cognition concerning souls must start with an analysis of this obscure idea. Another step of the method, as discussed before, is the identification of an indemonstrable proposition that should help the philosopher at the start of the argument. Kant does not directly mention the indemonstrable proposition that grounds his argument here. However, it is safe to assume that, in this context, the indemonstrable starting point is the same that he mentioned in *Untersuchung*: “all bodies must consist of simple substances.” (“ein jeder Körper aus einfachen Substanzen bestehen müsse.” *Untersuchung*, 2:286, 27–28). A brief reflection on the popular idea of souls yields the conclusion that they must be simple substances (2:319–320), so metaphysical research can begin with the following initial assumptions: souls are simple substances, and every body is composed of simple substances.

Kant’s next argumentative step is to distinguish between what is material and what is immaterial, arguing that material bodies have the force of impenetrability, whereas immaterial bodies must lack it. If souls are simple substances and must occupy the space of a body (they are always part of a body), this means that they must be penetrable; otherwise, there would be no room for the material simple substances composing the physical body. He writes: “Simple beings of this kind are called immaterial beings, and if they are possessed of reason, they are called spirits.” (“Einfache Wesen von dieser Art werden immaterielle Wesen und, wenn sie Vernunft haben, Geister genannt werden.” *Träume*, 2:321, 22–24).

To give a first comment on the procedure at stake, we can already identify one crucial problem highlighted in previous works. Even by accepting the initial positing of the indemonstrable proposition as a result of the analysis of the obscure metaphysical concept of soul (which comes from the everyday use of the word in society), it is difficult to accept that the acquired definition of soul comes from a purely logical (Kant says “rational.” *Begriff der negativen Größen*, 2:286, 4–7), perspective.

Moreover, describing souls by means of terms such as “penetrability” or “immaterial” is possible only by comparison and negation of sensible experience, which usually regards simple substances that are “impenetrable” and “material”. The predication of these words in connection to the non-physical object soul is possible only by comparison with what is physical and, at the same time, by applying the human ideas of penetrable/impenetrable and

material/immaterial to an unknown object. This process is essentially analogical, as Kant soon realizes:

> All matter offers a resistance in the space which it occupies; it is, for that reason, called impenetrable. That this occurs is something which experience teaches us; and it is by abstraction from this experience that the general concept of matter is generated within us. But, although the resistance which something exercises in the space which it occupies is thus recognised to be sure, it is not for that reason understood. For, like everything else which operates in opposition to an activity, this resistance is a true force. The direction of that force is opposed to the direction indicated by the guidelines of the approach. For this reason, this force is a force of repulsion, and must be attributed to matter, and therefore to the elements of matter, as well. Now, every rational being will readily admit that the human understanding has reached its limit here. It is experience alone which enables us to perceive that those things which exist in the world, and which we call material, possess such a force; but experience does not ever enable us to understand the possibility of such a force. Now, suppose that I posited the existence of substances which were of a different kind: they are present in space but they possess forces which differ from the motive force of which the effect is impenetrability. If I supposed that such substances existed, it would be altogether impossible for me to think of them *in concreto* as displaying activity, unless it bore analogy with my empirical representations. And, in so far as I have denied them the property of filling the space in which they operate, I would have deprived myself of a concept by means of which the things which present themselves to my senses are otherwise thinkable for me; and the inevitable result must, therefore, be a kind of unthinkability. But this cannot be regarded as a known impossibility for the simple reason that the opposite will, in respect of its possibility, likewise remain incomprehensible, even though its actuality presents itself to the senses.[129]

[129] "Alle Materie widersteht in dem Raume ihrer Gegenwart und heißt darum undurchdringlich. Dass dieses geschehe, lehrt die Erfahrung, und die Abstraktion von dieser Erfahrung bringt in uns auch den allgemeinen Begriff der Materie hervor. Dieser Widerstand aber, den Etwas in dem Raume seiner Gegenwart leistet, ist auf solche Weise wohl erkannt, allein darum nicht begriffen. Denn es ist derselbe, so wie alles, was einer Tätigkeit entgegenwirkt, eine wahre Kraft, und da ihre Richtung derjenigen entgegensteht, wonach die fortgezogenen Linien der Annäherung zielen, so ist sie eine Kraft der Zurückstoßung, welche der Materie und folglich auch ihren Elementen muss beigelegt werden. Nun wird sich ein jeder Vernünftige bald bescheiden, dass hier die menschliche Hinsicht zu Ende sei. Denn nur durch die Erfahrung kann man innewerden, dass Dinge der Welt, welche wir materiell nennen, eine solche Kraft haben, niemals aber die Möglichkeit derselben begreifen. Wenn ich nun Substanzen anderer Art setze, die mit andern Kräften im Raume gegenwärtig sind, als mit jener treibenden Kraft, deren Folge die Undurchdringlichkeit ist, so kann ich freilich eine Tätigkeit derselben, welche keine Analogie mit meinen Erfahrungsvorstellungen hat, gar nicht in concreto denken, und indem ich ihnen die Eigenschaft nehme, den Raum, in dem sie wirken, zu erfüllen, so steht mir ein Begriff ab, wodurch mir sonst die Dinge denklich sind, welche in meine Sinne fallen, und es muss daraus notwendig eine Art von Undenklichkeit entspringen. Allein diese kann darum nicht als eine erkannte Unmöglichkeit angesehen werden, eben darum weil das Gegenteil seiner Möglichkeit nach gleichfalls unangesehen bleiben wird, obzwar dessen Wirklichkeit in die Sinne fällt." *Träume*, 2:322–323.

Crucially, Kant recognizes that human understanding reaches its limits in formulating definitions of material bodies. When the attempt is made to predicate something about immaterial, and therefore metaphysical, entities, this is possible only in an inherently limited way through analogy. If there is no analogy between the soul and some material counterpart, there is no hope of predicating something about it.

Kant introduces two crucial ideas concerning this analogical necessity: unthinkability and possibility. If there were no translation of the human predicates into the metaphysical context through analogy, these concepts would remain unthinkable. Ultimately, these concepts are thinkable only through a comparison with material counterparts. However, the analogical process is still unable to provide a valid argumentation, since it extends beyond phenomena, matter, and the realm of what is comprehensible by the sciences. Hence, this thinkability of the soul detaches itself from the ideas of valid or invalid, since it would not make sense to think of an analogical predication as valid or not. Simply put, there is no instrument to gauge the validity of metaphysical and analogical propositions.

The lack of such an instrument does not render it impossible to formulate these predicaments. According to Kant, precisely because the human mind lacks a strategy to gauge what is valid or invalid in metaphysics, the concepts of possibility or impossibility do not apply to these propositions. He writes: "We may, accordingly, accept the possibility of immaterial beings without any fear that we shall be refuted, though there is no hope either of our ever being able to establish their possibility by means of rational argument."[130]

Contextualizing metaphysical propositions within the validity-invalidity spectrum is more dangerous than discussing their possibility. Analogical predication does not reach validity, and what is not valid is necessarily invalid in logical/mathematical terms. What is possible, however, remains detached from black-and-white categorizations, allowing greater freedom to draw successive conclusions. In other words, the question of the validity of metaphysical propositions becomes secondary because the focus must be shifted to their thinkability and possibility. It is not wrong to conceive them as possible, since the absence of a validation is accompanied by the absence of falsification.

Kant's shift from validity to possibility has foundational implications for how he conceives the method of metaphysics and its aim. To clarify this passage, it is worth discussing in detail the example of analogical predication presented in *Träume* and Kant's final comments on the utility of metaphysics.

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[130] "Man kann demnach die Möglichkeit immaterieller Wesen annehmen ohne Besorgnis widerlegt zu werden, wiewohl auch ohne Hoffnung, diese Möglichkeit durch Vernunftgründe beweisen zu können." *Träume*, 2:323, 10–12.

3.3 The Definition of Analogy

My aim is now to reconstruct the structure of Kant's analogical argument concerning simple immaterial substances. I introduced the first steps of the argument in the previous paragraph, when I highlighted the initial analysis of the concept of soul and the position of the indemonstrable proposition concerning simple substances. Kant presents his next argumentative step with a more detailed argument (which directly involves analogy) when he compares simple material substances with simple immaterial substances. These two elements have now become the two subjects of analogical reasoning. He writes:

> For, to appeal to analogy for help: even the simple elements of bodies must of necessity each of them fill a little space in the body, which is a proportionate part of that body's whole extension, for points are not parts of space at all but limits of space. Since this filling of space occurs by means of an active force (of repulsion) and therefore only indicates a sphere of greater activity but not a multiplicity of the constituent parts of the operative subject, the filling of space does not contradict the simple nature of such a subject. Admittedly, this possibility cannot be rendered more distinct, but then that is never possible with the fundamental relations of causes and effects. In exactly the same way, there is at any rate no demonstrable contradiction confronting me, even though the thing itself remains unintelligible, if I assert that a spirit-substance, though simple, nonetheless occupies a space (that is to say, is capable of being immediately active in it) without filling it (that is to say, without offering any resistance in that space to material substances).[131]

In this paragraph, Kant identifies some characteristics of immaterial bodies, or souls, through an analogy with material bodies. The obtained knowledge on souls is that they are capable of occupying a space without filling it (*einnehmen* without *erfüllen*). His argument starts by assuming that the predicates material/immaterial, penetrable/impenetrable, and many others are also applicable to immaterial substances. This is because simple material substances and simple immaterial substances share the property of being simple and of being substances (the positive

[131] "Denn um die Analogie zu hülfe zu rufen, so müssen notwendig selbst die einfachen Elemente der Körper ein jegliches ein Räumchen in dem Körper erfüllen, der ein proportionierter Theil seiner ganzen Ausdehnung ist, weil Punkte gar nicht Theile, sondern Grenzen des Raumes sind. Da diese Erfüllung des Raumes vermittelst einer wirksamen Kraft (der Zurückstoßung) geschieht und also nur einen Umfang der größeren Tätigkeit, nicht aber eine Vielheit der Bestandteile des wirksamen Subjekts anzeigt, so widerstreitet sie gar nicht der einfachen Natur desselben, obgleich freilich die Möglichkeit hievon nicht weiter kann deutlich gemacht werden, welches niemals bei den ersten Verhältnissen der Ursachen und Wirkungen angeht. Ebenso wird mir zum wenigsten keine erweisliche Unmöglichkeit entgegen stehen, obschon die Sache selbst unbegreiflich bleibt, wenn ich behaupte: dass eine geistige Substanz, ob sie gleich einfach ist, dennoch einen Raum einnehme (d.i. in ihm unmittelbar tätig sein könne), ohne ihn zu erfüllen (d.i. materiellen Substanzen darin Widerstand zu leisten)." *Träume*, 2:323, 19–34.

part of the analogy). The negative part of the analogy is the material/immaterial difference. Assuming these similarities, Kant thinks that it is safe to assume that further predicates of the material simple substances could be applicable (positive analogy) or non-applicable (negative analogy) to the realm of simple immaterial substances. Hence, although predicates concerning material substances are certain because they come from experience, he concludes that the predicate "occupying a space" and that of "non-filling a space" apply also to souls. This is because the analogy allows the use of material predicates in a non-material context. Simply put, Kant attempts to predicate something of a metaphysical entity, basing this attempt on the conviction that an analogical application of human/material terms is also applicable to non-human/immaterial entities. As stated before, the possibility of this operation is enough for the functioning of Kant's argument, regardless of discourse on its validity (at least at this stage).

Hence, Kant's conception of analogy in *Träume* is that of a method that allows predication in metaphysics by drawing on what is valid in the physical world and applying it to non-physical entities. This application is not arbitrary, since it depends on initial similarities between the physical object and the metaphysical one (being simple and a substance in this case). To simplify the picture, the analogical method can be seen as a translation of the unknown into a known language, regardless of the validity lost in this translation. In this regard, Kant writes:

> This heterogeneity between spirit-representations and those which belong to the bodily life of man need not, however, be regarded as an impediment serious enough to prevent all possibility of our becoming aware, from time to time, even during this present life, of the influences which emanate from the spirit-world. For these influences can enter the personal consciousness of man, not, it is true, directly, but, nonetheless, in such a fashion that they, in accordance with the law of association of ideas, excite those images which are related to them, and awaken representations which bear an analogy with our senses. They are not, it is true, the spirit-concept itself, but they are symbols of it.[132]

The problem of predication acquires linguistic relevance insofar as it allows translating unknown entities into known symbols. Kant's metaphysical method, developed through *Beweisgrund* and *Untersuchung*, culminates in a symbolic knowledge of metaphysical entities.

[132] "Diese Ungleichartigkeit der geistigen Vorstellungen und derer, die zum leiblichen Leben des Menschen gehören, darf indessen nicht als eine so große Hinderung angesehen werden, daß sie alle Möglichkeit aufheben, sich bisweilen der Einflüsse von Seiten der Geisterwelt sogar in diesem Leben benutzt zu werden. Denn sie können in das persönliche Bewußtsein des Menschen zwar nicht unmittelbar, aber doch so übergehen, daß sie nach dem Gesetz der vergesellschafteten Begriffe diejenigen Bilder rege machen, die mit ihnen verwandt sind, und analogische Vorstellungen unserer Sinne erwecken, die wohl nicht der geistige Begriff selber, aber doch deren Symbolen sind." *Träume*, 2:338–339.

What was believed to be a completely valid predication becomes, now, symbolic cognition, limited by the capabilities of human understanding. Kant can now provide both an answer to Swedenborg and some final considerations on the nature of metaphysics as a science.

3.4 The Limits of Metaphysics

Needless to say, Swedenborg's spiritic visions are a fake hallucination of an arrogant and optimistic metaphysician. Although Kant allows the analogical predication of some characteristics of metaphysical entities (such as the property of filling a space without occupying it), this does not mean that such propositions define the metaphysical entity at stake. Definitions, as previously noted, are most of the time unreachable in metaphysics. Reaching the essence of things is beyond human understanding, and Swedenborg wrongly tried to overcome these limitations. Kant writes:

> Now, I admit that all the stories concerning the apparition of departed souls or about the influences exercised by spirits, and all the theories relating to the supposed nature of spirit-beings and of their connection with us, only have a significant weight when placed in the scale-pan of hope; on the other hand, when placed in the scale-pan of speculation, such things seem to weigh no more than empty air. If the answer to the question we are considering did not harmonise with an inclination which was already pronounced, what rational being, do you suppose, would remain undecided as to which of the following possibilities was the greater: that a type of being exists which has nothing in common with anything which the senses teach him, or that certain experiences, not uncommon in a number of cases, are to be attributed to self-deception and one's own invention?[133]

Having considered this as a sufficient answer to his opponent, Kant moves to some final considerations concerning metaphysics, its method, and its aim in the second part of the treatise (the historical one):

[133] "Nun gestehe ich, dass alle Erzählungen vom Erscheinen abgeschiedener Seelen oder von Geistereinflüssen und alle Theorien von der mutmaßlichen Natur geistiger Wesen und ihrer Verknüpfung mit uns nur in der Schale der Hoffnung merklich wiegen; dagegen in der der Spekulation aus lauter Luft zu bestehen scheinen. Wenn die Ausmittelung der aufgegebenen Frage nicht mit einer vorher schon entschiedenen Meinung in Sympathie stände, welcher vernünftige würde wohl unschlüssig sein, ob er mehr Möglichkeit darin finden sollte, eine Art Wesen anzunehmen, die mit allem, was ihm die Sinne lehren, gar nichts Ähnliches haben, als einige angebliche Erfahrungen dem Selbstbetruge und der Erdichtung beizumessen, die in mehreren Fällen nicht ungewöhnlich sind." *Träume*, 2:350, 2–12.

> Since I now find myself at the conclusion of the theory of spirits, I venture to add one more remark: this reflection, if properly used by the reader, will bring the whole of our philosophical understanding of such beings to completion. From now on it will be possible, perhaps, to have all sorts of opinions about but no longer knowledge of such beings.[134]

The struggle of metaphysics is between knowledge and opinion. If knowledge is understood as the obtainment of a valid theory about souls, then such knowledge will never be obtained. As stated long before by Kant (*Untersuchung, Vorrede)*, metaphysics should not be concerned with definitions, because metaphysics cannot reach the same degree of validity as mathematical propositions. What metaphysics can reach is the predication of some possible judgments concerning metaphysical entities (for example, a soul is a simple immaterial substance that fills a space without occupying it). However, these judgments remain opinion.

According to Kant, such an inherent limitation of metaphysics does not signify that this discipline is ultimately useless. On the contrary, metaphysics becomes a discipline of the limits of human understanding. He expresses this view in many points in *Träume*:

> But the situation is quite different when it comes to the philosophical theory of spirit-beings. The theory can be completed, albeit in the negative sense of the term, by securely establishing the limits of our understanding and by convincing us that the various different appearances of life in nature, and the laws governing them, constitute the whole of that which it is granted us to know. But the principle of this life, in other words, the spirit-nature which we do not know but only suppose, can never be positively thought, for, in the entire range of our sensations, there are no data for such positive thought.[135]

Moreover, Kant specifies that this limiting function of metaphysics is indeed a positive advantage:

> The second advantage of metaphysics is more consonant with the nature of the human understanding. It consists both in knowing whether the task has been determined by reference to what one can know, and in knowing what relation the question has to the empirical concepts,

[134] "Da ich mich jetzt beim Schlusse der Theorie von geistern befinde, so unterstehe ich mir noch zu sagen: daß diese Betrachtung, wenn sie von dem Leser gehörig genutzt wird, alle philosophische Einsicht von dergleichen Wesen vollende, und daß man davon vielleicht künftighin noch allerlei meinen, niemals aber mehr wissen könne." *Träume*, 2:351, 19–23.

[135] "Allein mit dem philosophischen Lehrbegriff von geistigen Wesen ist es ganz anders bewandt. Er kann vollendet sein, aber im negativen Verstande, indem er nämlich die Grenzen unserer Einsicht mit Sicherheit festsetzt und uns überzeugt: daß die verschiedenen Erscheinungen des Lebens in der Natur und deren Gesetzte alles sein, was uns zu erkennen vergönnt ist, das Principium dieses Lebens aber, d.i. die geistige Natur, welche man nicht kennt, sondern vermutet, niemals positiv könne gedacht werden, weil keine data hiezu in unseren gesamten Empfindungen anzutreffen seien (…)." *Träume*, 2:251, 30–37.

> upon which all our judgements must at all times be based. To that extent metaphysics is a science of the limits of human reason.[136]

On the one hand, metaphysics attains some knowledge of non-physical objects through analogy; on the other hand, this knowledge is inherently limited, allowing the formulation of possible judgments that will never encounter validation or falsification. The problem of predication, to which *Träume* offers an analogical solution, ultimately highlights the inadequacy of metaphysics to provide scientific knowledge.

The absence of scientificity in the classical sense throws a decisive blow against metaphysics, which becomes scientific only insofar as it is intended as a science of the limits of the understanding. Let us recall Kant's definition of metaphysics at the beginning of *Untersuchung* (2:283, 13–14) as the science of the first principles of cognition. In that case, metaphysics reaches its aim when it limits cognition to physics. However, a science of the principles of cognition should be able to account for those areas that go beyond the limits of human knowledge, a conclusion that Kant draws at the end of *Träume*.

Nonetheless, it remains possible to predicate something about metaphysical entities through the analogical method. The negative limitation is, in Kant, always accompanied by a positive attempt at metaphysical-symbolic predication. As my analysis will show, this positive attempt to make use of metaphysics despite its evident limitations will remain central to Kant's preoccupations in the last precritical years. The first step to understanding why is the analysis of the last precritical work: *De mundi sensibilis atque intelligibilis forma et princiipis*.

Before moving forward, however, it is worth placing Kant's developments on the theory of analogy in the history of this concept that I discussed in the first section of this work. The results of *Träume* suggest a double tendency in Kant. On the one hand, metaphysics reaches its limits when it encounters the first principles of empirical cognition (the cognition of material objects). On the other hand, a symbolic knowledge of metaphysical objects is still possible, although problematic in terms of validity. This limitation suggests Kant's position alongside those authors who believed analogy to be inclined towards equivocity between the analogates, as Aquinas, Galileo, and Bacon would argue. Already in *Träume*, Kant becomes aware that knowledge of immaterial entities through analogies is only regulative in kind. In other words, the language employed to describe metaphysical entities must remain symbolic, and once again,

[136] "Der andere Vorteil ist der Natur des menschlichen Verstandes mehr angemessen und besteht darin: einzusehen, ob die Aufgabe aus demjenigen, was man wissen kann, auch bestimmt sei und welches Verhältnis die Frage zu den Erfahrungsbegriffen habe, darauf sich alle unseren Urteilen jederzeit stützen müssen. Insofern ist die Metaphysik eine Wissenschaft von den Grenzen der menschlichen Vernunft." *Träume*, 2.367–368.

the problem of the validity of analogical predication becomes central. What validity can analogies have if they remain instrumental and limited tools to describe the metaphysical? Recovering the British authors of the first section, is a heuristic metaphysics enough for Kant?

4. De mundi sensibilis atque intelligibilis forma et principis

4.1 The Limit between Two Worlds

Many commentators describe Kant's 1770 *De mundi sensibilis* as his most critical work before the *Kritik der reinen Vernunft* (*KrV*). Wundt (1924), De Vleeschauwer (1939), Baum (1994), and Agostini (2014), for example, note how the third section of this work substantially anticipates the role of time and space in the *KrV* as subjective conditions for the representation of phenomena. Guyer and Wood (2002), moreover, highlight the central role of the *Dissertation* in Kant's path towards defining the method of metaphysics; a path that began with *Untersuchung*, as I have discussed.[137]

There is no doubt that the chronological vicinity of *De mundi sensibilis* with the silent years before the *KrV* positions it as one of the densest and most revealing works of the precritical period. Besides the famous third section, I will devote particular attention to the second and fifth ones, which crucially bring Kant's use of analogies to their most complete formulation of the precritical period. Before my analysis, let us begin by introducing the chronological framework and the general project behind Kant's last Latin work.

Kant composed this dissertation in accordance with the traditional requisite of a celebratory disputation for the appointment of a new professor at the university. After twelve years from his first application for the chair of logic and metaphysics, Kant obtained such a position thanks to a persuasive letter written to the Prussian minister of culture (10: 90–2) and forwarded also to Friedrich II, the king of Prussia (10: 92–3). Hence, before beginning this new chapter of his academic career, Kant publicly defended his *De mundi sensibilis* on the 24th of August 1770.

[137] "Although written in haste, the *Inaugural Dissertation* was nonetheless the culmination of almost a decade of reflection on the method of metaphysics. The first work in which Kant expressly addresses himself to this problem was the *Inquiry* (1764), which had been completed by the end of 1762." Guyer & Wood (2002, p. LXXII). On Kant's anticipation of the transcendental aesthetics section in the *KrV*, Agostini comments: "La tesi forse più nota della *Dissertatio*, avanzata nella *sectio III*, è che spazio e tempo non sono qualcosa di oggettivo, bensì costituiscono delle condizioni soggettive della mente umana di coordinazione dei fenomeni esterni e, rispettivamente, interni. Su questo punto, la *Dissertatio* apre, per il lato della sensibilità, alla rivoluzione copernicana della *KrV*, come i maggiori studiosi del pensiero kantiano hanno sempre rilevato, su questo punto unanimi; e difatti la *sectio III* dell'opera del '70 confluirà a blocchi interi, come noto, nell'Estetica trascendentale." Agostini (2014, p. 197). See also Sala (1978), Carson (2004), Switzer (2014), Nuzzo (2015).

Although Kant composed this work in a few months (he was officially installed in May and had to prepare for the public disputation before August), it still provides important insights into his philosophical development in the second half of the precritical period. *De mundi sensibilis* collects a wide range of ideas into a single treatise, grouping them under a title that suggests an attempt to discuss the differences between the sensible and the intelligible worlds.

De mundi sensibilis atque intelligibilis forma et principis is Kant's attempt at describing the form and principles of the sensible and the intelligible world in five sections. *Sectio I* introduces the general problem at stake: §1 serves as an introduction to the concept of world, which is common to both the empirical and intellectual dimensions. There is, according to Kant, a sensible and an intelligible world, and each contains substances of different kinds. They nonetheless share some common concepts, which must be defined beforehand. Hence, §2 defines *Materia*, *Forma*, and *Universitas*.

Sectio II focuses on distinguishing the nature of the two worlds. What is most striking about this section is Kant's methodology: rather than proposing a distinction between two different kinds of substances that make up the two worlds, Kant shifts the focus to a preliminary analysis of the human cognitive faculties. Such a gnoseological shift proves essential in defining the aim and character of *De mundi sensibilis*. Rather than starting from metaphysical assumptions or occult descriptions of metaphysical concepts, Kant grounds the distinction between the two worlds in human cognition. The distinction between an intelligible and a sensible world, as I will later clarify in detail, is nothing more than a result of the inherent and preliminary structure of our cognition, which classifies substances according to the two main faculties of sensitivity and understanding. It is worth mentioning at this stage that such priority given to human cognition crucially inverts the classical metaphysical scheme to analyze the world and, once again, anticipates the Copernican revolution of the *KrV*: the knowing subject is the starting point of any cognition (physical or metaphysical), and the requisites and limitations of this subject determine the status and validity of such cognition.

Sectio III and *Sectio IV* attempt to find the principles governing the two worlds; an attempt that provides the limitations and conditions for cognition to work on both levels. The sensible world is perceived only through the subjective conditions of time (§14) and space (§15). In contrast, the intelligible world depends on both the presence of a divine being (§21, a being which Kant calls "noumenal perfection" in §9 of *Sectio II*) and the principle of the physical influx (in Kant's formulation, §22). While the nature of the sensible world is more easily understandable, given our scientific comprehension of it through time and space, the

intelligible world escapes these sensible conditions and, therefore, remains more obscure to human cognition.

Sectio V concludes the work by warning those who venture into the wrongful application of intellectual cognition in the field of sensible cognition. The contamination between the two kinds of cognition, which are relative to wholly different worlds and, despite having the same *locus* in the human being, refer to completely different objects, must be avoided at all costs. To understand this in more detail, it is worth quoting from §24:

> Every method employed by metaphysics, in dealing with what is sensitive and what belongs to the understanding, amounts, in particular, to this prescription: great care must be taken lest the principles which are native to sensitive cognition transgress their limits, and affect what belongs to the understanding. For the predicate in any judgement which is asserted by the understanding, is the condition, in the absence of which, it is maintained, the subject cannot be thought; the predicate is, thus, a principle of cognising. If the predicate is a sensitive concept it will only be the condition of a possible sensitive cognition; and thus it will, in particular, harmonise with the subject of a judgement, the concept of which is likewise sensitive. But if the predicate were to be applied to a concept of the understanding, **such a judgement would only be valid from the point of view of subjective laws**. Hence, the predicate may not be predicated and stated objectively of a concept itself of the understanding; it may be predicated only as the condition, in the absence of which the sensitive cognition of the given concept cannot occur. But since the **illusions of the understanding**, produced by the covert misuse of a sensitive concept, which is employed as if it were a characteristic mark deriving from the understanding, can be called (by analogy with the accepted meaning of the term) a fallacy of subreption, the confusion of what belongs to the understanding with what is sensitive will be the metaphysical fallacy of subreption (an intellectualized phenomenon, if the barbarous expression may be pardoned). Accordingly, I shall call such a hybrid axiom, which tries to pass off what is sensitive as if it necessarily belonged to a concept of the understanding, a subreptic axiom. And from these spurious axioms, indeed, there have arisen principles which deceive the understanding and which have disastrously **permeated the whole of metaphysics**. I am, however, of the opinion that this is a question into which we must go more deeply if we are to have a readily available and clearly cognisable criterion for these judgements, a touchstone, so to speak, by which we may distinguish them from genuine judgements. At the same time, should they perchance seem to be firmly rooted in the understanding, we shall also require a certain art of assaying, by means

> of which we shall be able fairly to calculate how much may belong to what is sensitive, and how much to what belongs to the understanding.[138]

In this passage, Kant describes the metaphysical fallacy of subreption as a confused formulation of judgments. If a predicate is formulated in the context of the sensible world, and, therefore, is of a sensible kind, its application to an intellectual subject would be fallacious, since its sensible nature marks it as a condition only of the sensible world (and of sensible subjects). A judgment which mixes sensible predicates with intellectual subjects (or *vice versa*) is, therefore, a fallacious judgment, namely a subreptic axiom. Of these, there exist three different kinds, which Kant analyzes in the last paragraphs of the work (§§ 26–30).

As a general rule to avoid confusion, Kant states this:

> If of any concept of the understanding whatsoever there is predicated generally anything which belongs to the relations of SPACE AND TIME, it must not be asserted objectively; it only denotes the condition, in the absence of which a given concept would not be sensitively cognisable. That an axiom of this kind would be spurious and, if not actually false, at least rashly and hazardously asserted, is clear from the fact that, since the subject of the judgement is conceived by the understanding it belongs to the object, whereas the predicate, since it contains determinations of space and time, belongs only to the conditions of sensitive human cognition. This cognition, since it does not necessarily attach to every cognition of the same object, cannot be asserted universally of a given concept of the understanding.[139]

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[138] "Omnis metaphysicae circa sensitiva atque intellectualia me thodus ad hoc potissimum praeceptum redit: sollicite caven dum esse, ne principia sensitivae cognitionis domestica terminos suos migrent ac intellectualia afficiant. Nam quia praedicatum in quolibet iudicio, intellectualiter enuntiato, est condicio, absque qua subiectum cogitabile non esse asseritur, adeoque praedi catum sit cognoscendi principium: si est conceptus sensitivus, non erit nisi condicio sensitivae cognitionis possibilis, adeoque apprime quadrabit in subiectum iudicii, cuius conceptus itidem est | sensitivus. At si admoveatur conceptui intellectuali, iudi cium tale nonnisi secundum leges subiectivas erit validum, hinc de notione intellectuali ipsa non praedicandum et obiective ef ferendum, sed tantum ut condicio, absque qua sensitivae cogni tioni conceptus dati locus non est*. Quoniam autem praestigiae intellectus, per subornationem conceptus sensitivi, tanquam no tae intellectualis, dici potest (secundum analogiam significatus recepti) vitium subreptionis, erit permutatio intellectualium et sensitivorum vitium subreptionis metaphysicum (phaenomenon intellectuatum, si barbarae voci venia est), adeoque axioma tale hybridum, quod sensitiva pro necessario adhaerentibus con ceptui intellectuali venditat, mihi vocatur axioma subrepticium. Et ex hisce quidem axiomatibus spuriis prodierunt principia fallendi intellectus per omnem metaphysicam pessime grassata. Ut autem habeamus, quod in promptu sit et luculenter cogno scibile, horum iudiciorum criterium et veluti Lydium lapidem, quo illa dignoscamus a genuinis, simulque, si forsan firmiter adhaerere intellectui videantur, artem quandam docimasticam, cuius ope, quantum pertineat ad sensitiva, quantum ad intellec tualia, aequa fieri possit aestimatio, altius in hanc quaestionem descendendum esse puto." *De mundi sensibilis*, §24, 2: 411–412.

[139] "si de conceptu quocunque intellectuali generaliter quicquam praedicatur, quod pertinet ad respectus SPATII ATQUE TEMPORIS: obiective non est enuntiandum et non denotat nisi con dicionem, sine qua conceptus datus | sensitive cognoscibilis non est. Quod eiusmodi axioma sit spurium et, si non falsum, saltim temere et precario assertum, inde liquet: quia, cum subiectum iudicii intellectualiter concipiatur, pertinet ad obiectum, prae dicatum autem, cum determinationes spatii ac temporis con tineat, pertinet tantum ad condiciones sensitivae cognitionis humanae, quae, quia non cuilibet cognitioni eiusdem obiecti necessario adhaeret, de dato conceptu intellectuali universali ter enuntiari non potest." *De mundi sensibilis*, §25, 2: 412–413.

Kant distinguishes between objective and subjective validity in judgments. The application of sensible predicates to intellectual subjects cannot yield objective validity, so human cognition is limited to sensible judgments. To go even further, Kant suggests that these spurious axioms are problematic not so much because they are false, but because, to be verified or falsified, they would require a process beyond the limits of the human understanding. Kant writes:

> For we rightly assume that whatever cannot be cognised by any intuition at all is simply not thinkable, and is, thus, impossible. But since we cannot, by any effort of the mind, nor even by invention, attain any other intuition than that which occurs in accordance with the form of space and time, it comes about that we treat as impossible every intuition whatsoever which is not bound by these laws (leaving aside a pure intuition of the understanding which is exempt from the laws of the senses, such as that which is divine and which Plato calls an idea).[140]

This passage brings back to the picture the topic of unthinkability and impossibility in the cognition of intelligible objects, something which I discussed in the paragraphs dedicated to *Träume* while explaining Kant's ideas on the cognition of souls. There, I remarked that Kant supported a certain unthinkability of metaphysical entities, which, however, does not imply impossibility to know. Similarly, Kant recovers the same idea here by stating that pure intellectual intuition is not objectively impossible, but is subjectively impossible, which is a synonym for unthinkable.

The division between subjective and objective validity, which Kant introduces in *Sectio V*, clearly connects to the discussion concerning the regulative or constitutive validity of judgments that I discussed throughout this work. While sensible judgments are never problematic in this sense, since they are never subreptic, those judgments of mixed nature, namely those that involve both worlds in one single expression, become problematic in terms of subjective or objective validity since there is no way whatsoever to gauge what lies beyond the limits of our sensible cognition, namely, beyond the conditions of space and time.

Hence, the question concerning analogical knowledge appears to have already been answered. Analogical reasoning in metaphysics fits the description of subreptic axioms perfectly: it is a kind of cognition that generates knowledge through spurious predicates. An example was given in *Träume*, where Kant attempted to formulate a judgment about an

[140] "Recte enim sup ponimus: quicquid ullo plane intuitu cognosci non potest, pror sus non esse cogitabile, adeoque impossibile. Quoniam autem alium intuitum, praeter eum, qui fit secundum formam spatii ac temporis, nullo mentis conatu ne fingendo quidem assequi pos sumus, accidit, ut omnem omnino intuitum, qui hisce legibus adstrictus non est, pro impossibili habeamus (intuitum purum intellectualem et legibus sensuum exemptum, qualis est divi nus, quem Plato vocat ideam, praetereuntes)." *De mundi sensibilis*, §25, 2: 413, 9–16.

intellectual subject, namely the soul, with sensible predicates, such as filling or not filling a space. Metaphysics, in this sense, is a discipline that remains limited by the nature of the human understanding, which does not allow predication in a constitutive sense of the subjects of this discipline. To understand this limitation further, let us now turn to *Sectio II* in more detail. Here, analogy plays a pivotal role in an indirect form: a symbolic knowledge of the divine takes the place of a regulative kind of predication, which implies the use of experiential concepts in the realm of divine predication (as Baumgarten did).

4.2 The Structure of Human Cognition

Kant starts *Sectio II* by differentiating between sensibility (*sensualitas*) and intelligence (*intelligentia*). The difference between these two faculties determines how humans cognize things, thereby allowing a distinction between sensible and intellectual things, as the title suggests.[141] Hence, the two faculties are defined as follows:

> *Sensibility* is the receptivity of a subject in virtue of which it is possible for the subject's own representative state to be affected in a definite way by the presence of some object. *Intelligence* (rationality) is the *faculty* of a subject in virtue of which it has the power to represent things which cannot by their own quality come before the senses of that subject. The object of sensibility is the sensible; that which contains nothing but what is to be cognised through the intelligence is intelligible. In the schools of the ancients, the former was called a *phenomenon* and the latter a *noumenon*. Cognition, in so far as it is subject to the laws of sensibility, is *sensitive*, and, in so far as it is subject to the laws of intelligence, it is *intellectual* or rational.[142]

In §4, Kant further specifies that those things which are subject to the laws of sensibility are representations of things as they appear to us after the filters of time and space have been applied. In contrast, intellectual things are representations of things as they are (noumena). Sensible objects, therefore, are cognized only after space and time (stable and innate laws of the human mind, as *Sectio III* would clarify) have grouped sensible data into a representational whole (cfr. §4, 2: 392, 7–11).

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[141] "De sensibilium atque intelligibilum discrimine generatim." *De mundi sensibilis*, *Sectio II*, 2: 392, 11.

[142] "Sensualitas est receptivitas subiecti, per quam possibile est, ut status ipsius repraesentativus obiecti alicuius praesentia cer to modo afficiatur. Intelligentia (rationalitas) est facultas subie cti, per quam, quae in sensus ipsius per qualitatem suam incur rere non possunt, repraesentare valet. Obiectum sensualitatis est sensibile; quod autem nihil continet, nisi per intelligentiam cognoscendum, est intelligibile. Prius scholis veterum phae nomenon, posterius noumenon audiebat. Cognitio, quatenus subiecta est legibus sensualitatis, est sensitiva, intelligentiae, est intellectualis s. rationalis." *De mundi sensibilis*, §3, 2: 392, 13–21. It is worth noting here that, throughout the text, Kant uses other expressions as synonyms of intelligence: "rationality", "understanding", and "superior faculty of the soul." In this work, all of them will be treated as having the same significance.

After the distinction between sensibility and intelligence, Kant proceeds to analyze the intellectual faculty, dividing it into its two different uses:

> By the first of these uses, the concepts themselves, whether of things or relations, are given, and this is the REAL USE. By the second use, the concepts, no matter whence they are given, are merely subordinated to each other, the lower, namely, to the higher (common characteristic marks), and compared with one another in accordance with the principle of contradiction, and this use is called the LOGICAL USE. Now, the logical use of the understanding is common to all the sciences, but not so the real use.[143]

The difference between these two uses of the understanding is in their activity or passivity towards concepts: the understanding is real in its use when it actively creates new concepts by combining existing concepts, whereas the understanding is logical in its use when it passively organizes existing concepts into different groups. It is important to note that while the logical use of understanding, according to Kant, is useful in all sciences indiscriminately, the real use, as I will discuss, is not so easily applicable in all disciplines (as in the case of metaphysics, for example). In this sense, the logical use also operates in the domain of sensible cognition insofar as it organizes its concepts. Hence, together with the laws of space and time, the logical use of the understanding provides a condition and determines the formulation of sensible knowledge.

Kant dedicates the following paragraphs to explaining the real use of the understanding. In §6, he explains the nature of the concepts formulated by this use of the understanding: they are entirely detached from sensibility, and the very nature of the understanding constructs them. He calls these concepts pure ideas ("*ideas puras*," *De mundi sensibilis*, §6, 2: 394, 27). In §7, Kant places the concepts of the understanding inside the domain of metaphysics: while sensible concepts are related to geometry, metaphysics is where the understanding operates. Moral philosophy, similarly, is a science dominated by the pure understanding.

§8 focuses even more on the nature of metaphysics as a discipline. In *Untersuchung*, as I have discussed, Kant defined metaphysics as the philosophy of the first principles of our cognition (2:283, 13–14, see 1.3.4). Here, this discipline finds a deeper specification, becoming "the philosophy which contains the *first principles* of the use of the *pure understanding* (…)." ("Philosophia autem *prima* continens *principia* usus *intellectus puri* est METAPHYSICA." *De*

[143] "quorum priori dantur conceptus ipsi vel rerum vel respectuum, qui est USUS REALIS; posteriori autem undecunque dati sibi tantum subordinantur, inferiores nempe superioribus (notis commu nibus) et conferuntur inter se secundum princ. contrad., qui USUS dicitur LOGICUS. Est autem usus intellectus logicus omnibus scientiis communis, realis non item." *De mundi sensibilis*, §5, 2. 393, 18–23.

mundi sensibilis, §8, 2: 395, 16). However, as Kant states, the object of *De mundi sensibilis* is not to discuss the first principles of cognition, but rather to propose a propaedeutic science which could teach the distinction between sensible and intellectual cognition, thus avoiding the subreptic fallacies described above. In order to understand the difference between these two cognitions, Kant mentions the concepts that are met in metaphysics and formulated by the pure understanding. These are "possibility, existence, necessity, substance, cause *etc*." ("Huius generis sunt possibilitas, existential, necessitas, substantia, causa etc." *De mundi sensibilis*, §8, 2: 395, 23–24). What is particularly relevant is how, according to Kant, these concepts are formulated:

> Since, then, empirical principles are not found in metaphysics, the concepts met with in metaphysics are not to be sought in the senses but in the very nature of the pure understanding, and that not as *innate* concepts but as concepts abstracted from the laws inherent in the mind (by attending to its actions on the occasion of an experience), and therefore as *acquired* concepts.[144]

Although these concepts are not found in the senses, they still retain a particular relationship to them, since they result from the actions of the mind on the occasion of an experience. Kant does not give much of an explanation of this formulation of concepts; the mind, when it works on experience, generates some concepts that do not derive from experience itself, but only from the mind's connection to it. Hence, the concepts of cause and effect are not inherently present in nature but are simply the mind's interpretative key of experience. This idea is strikingly close to what Kant will later say about the categories in the *KrV*. These concepts, among others, contribute to the creation of further intellectual concepts, which Kant discusses in §9. Since this paragraph is crucial to my argument, it is worth quoting it in its entirety:

> The concepts of the understanding have, in particular, two ends. The first is elenctic, in virtue of which they have a negative use, where, namely, they keep what is sensitively conceived distinct from noumena, and, although they do not advance science by the breadth of a fingernail, they nonetheless preserve it from the contagion of errors. The second end is dogmatic, and in accordance with it the general principles of the pure understanding, such as are displayed in ontology or in rational psychology, lead to some paradigm, which can only be conceived by the

[144] "Cum itaque in metaphysica non reperiantur principia empirica, conceptus in ipsa obvii non quaerendi sunt in sensibus, sed in ipsa natura intellectus puri, non tanquam conceptus connati, sed e legibus menti insitis (attendendo ad eius actiones occasione experien tiae) abstracti, adeoque acquisiti." *De mundi sensibilis*, §8, 2: 395, 19–23.

> pure understanding and which is a common measure for all other things in so far as they are realities. This paradigm is NOUMENAL PERFECTION. This, however, is perfection either in the theoretical sense or in the practical sense. In the former sense, it is the Supreme Being, GOD; in the latter sense, it is MORAL PERFECTION. Moral philosophy, therefore, in so far as it furnishes the first principles of judgement, is only cognised by the pure understanding and itself belongs to pure philosophy. Epicurus, who reduced its criteria to the sense of pleasure or pain, is very rightly blamed, together with certain moderns, who have followed him to a certain extent from afar, such as Shaftesbury and his supporters. In any genus of things, the quantity of which is variable, the maximum is the common measure and principle of cognising. The maximum of perfection is nowadays called the ideal, while for Plato it was called the idea (as in the case of his idea of the state). It is the principle of all things which are contained under the general concept of some perfection, in as much as the lesser degree, it is held, can only be determined by limiting the maximum. But, although God, as the ideal of perfection, is the principle of cognising, He is also, at the same time, in so far as He really exists, the principle of the coming into being of all perfection whatsoever.[145]

This paragraph introduces the problem of predication inside *De mundi sensibilis*. If the concepts of the understanding are used in a logical way, they pose no cognitive problem, since they simply organize knowledge. Even if the concepts of the understanding are used in a real sense but with an elenctic end, namely as tools to differentiate what is sensitive from what is intellectual, they generate no issues and, instead, they prove helpful to preserve metaphysics from the contagion of errors (namely subreptic axioms). When the real use of the understanding reaches its dogmatic end, however, the problem of predication returns to the fore. This is because the dogmatic end of the concepts of the understanding, according to Kant, leads to the paradigm of noumenal perfection, which, in its theoretical sense, is God (the maximum of perfection). In other words, concepts that are generated by the mind lead to the divinity. Although it is not explicit what Kant means by "lead", this is still a process in which human

[145] "Intellectualium duplex potissimum finis est: prior elencticus, per quem negative prosunt, quando nempe sensitive concepta arcent a noumenis, et, quanquam scientiam non provehant la tum unguem, tamen eandem ab errorum contagio immunem praestant. Posterior est dogmaticus, secundum quem principia generalia intellectus puri, qualia exhibet ontologia, aut psycho logia rationalis, exeunt in exemplar aliquod, | nonnisi intel lectu puro concipiendum et omnium aliorum quoad realitates mensuram communem, quod est PERFECTIO NOUMENON. Haec autem est vel in sensu theoretico, vel practico talis. In priori est ens summum, DEUS, in posteriori sensu PERFECTIO MORALIS. Philosophia igitur moralis, quatenus principia diiudicandi prima suppeditat, non cognoscitur nisi per intellectum purum et per tinet ipsa ad philosophiam puram, quique ipsius criteria ad sen sum voluptatis aut taedii protraxit, summo iure reprehenditur Epicurus, una cum neotericis quibusdam, ipsum e longinquo quadamtenus secutis, uti Shaftesbury et asseclae. In quolibet autem genere eorum, quorum quantitas est variabilis, maximum est mensura communis et principium cognoscendi. Maximum perfectionis vocatur nunc temporis Ideale, Platoni Idea (que madmodum ipsius idea reipublicae), et omnium, sub generali perfectionis alicuius notione contentorum, est principium, qua tenus minores gradus nonnisi limitando maximum determinari posse censentur; Deus autem, cum ut Ideale perfectionis sit principium cognoscendi, ut realiter exsistens simul est omnis omnino perfectionis principium fiendi." *De mundi sensibilis*, §9, 2: 395–396.

concepts are used to infer something about the nature of the divine. Noumenal perfection is a paradigm, a perfect ideal of theoretical and moral perfection which comes from the dogmatic use of the concepts of the understanding. Hence, a discourse about the divine is formulated through a non-divine language. Furthermore, this discourse is of a symbolic kind, as Kant states in §10: "There is (for man) no *intuition* of what belongs to the understanding, but only a *symbolic cognition*, and thinking is only possible for us by means of universal concepts in the abstract, not by means of a singular concept in the concrete." (*De mundi sensibilis*, §10, 2:396, 19–21).

If God, in the form of noumenal perfection, belongs to the intelligible world, then the only way to cognize this metaphysical entity is through the concepts of the understanding. Hence, possibility, existence, necessity, substance, and cause are some of the predicates that could be applied to the subject God in a hypothetical judgment. I maintain that, according to Kant, the application of the concepts of the understanding to the divine can occur only through an analogical procedure, yielding a limited, symbolic language for predication of the divine.

Given that this procedure happens in the realm of the intelligible world, the logical operations of mathematics are not valid, so the degree of certainty coming from the operations of time and space cannot save the metaphysician. Instead, in the metaphysics of the concepts of the understanding applied to the divine, there is no space for a logical thinkability, a scientific predicability, or a constitutive statement about the characteristics of the divine. Everything that is symbolically known about intellectual objects cannot reach the degree of certainty of mathematics, thus reiterating the answer to the Berlin Academy that Kant proposed with his *Untersuchung*. Hence, intellectual concepts such as "cause" could be applied to the divine only in the form of an analogical predication through symbols.

§§11–12, the concluding words of *Sectio II*, do not clarify the nature of this analogic-symbolic predication; accordingly, it is worth reconstructing it at this point to properly understand the nature of Kant's indirect analogical operation. Let us take, for example, the intellectual concept of cause. This is a concept that originates in the mind while observing the interaction between sensible things, particularly when one thing is the cause of another, which in turn is the effect. This pure concept of the understanding can be used in its dogmatic sense, namely, to produce the paradigm of noumenal perfection connected to the concept of cause. If, in the case of two non-intellectual objects A and B, the concept of cause relates them as to A being the cause of B, then the question becomes: what is the causal nature of God to another object C? If the philosopher applies the concept of cause in this analogical relationship (in

proportional terms: “A” / “B” = “God” / “C”) God ends up being the divine cause, namely the primordial cause for all the effects in both worlds (intellectual and sensible).

Hence, an analogical predication of God as the divine cause of all reality is formulated. The cognition which derives from this predication, however, is purely symbolical: it gives a regulative description of the subject-analogate, but it does not describe the nature of this subject constitutively. This is because, as Kant frequently repeats in *Sectio II*, sensible cognition is of the mathematical kind and can reach a certain validity. However, intellectual cognition escapes the safe shores of logical validity. Especially in the case of the real use of the understanding (in its dogmatic end), the formulation of new knowledge involves a purely intellectual predication of the divine. The validity of such predicative statements, however, could never be proved since it lies outside the boundaries of space and time. In other words, validity is to be conceived as a term that does not apply to what is unthinkable, but still not impossible.[146]

4.3 Kant’s Regulative Predication

De mundi sensibilis, particularly in its *Sectio II*, provides a final chapter in the long development of Kant’s reformulation of metaphysics. Until 1763, the definition of the method of metaphysics and its limits were not at the core of Kant’s precritical production. *Naturgeschichte* does not address the nature of this discipline, as it is limited to the formulation of a cosmological theory of physical bodies. In *De igne*, a treatise on the nature of fire as a physical phenomenon, there is never any relevant mention of metaphysics. *Nova dilucidatio* is the first work to introduce the problem of the method of metaphysics in Kant’s oeuvre, arguing that this discipline needed to be reformed. This reform, however, implied a simple redefinition of the first principle of metaphysics (the principle of identity) and the addition of two new principles of succession and coexistence. *Beweisgrund* essentially developed on the basis of this reformulation of metaphysics, adding a more structured ontological argument for the existence of God to what was sketched in *Nova dilucidatio*.

It is, however, with the works of the second part of his precritical production that Kant really starts to question the nature of metaphysics systematically. *Untersuchung* provides the first methodological analysis of this discipline, comparing it with mathematics. The result of

[146] Kant’s application of the principles of the understanding to the divine closely resembles an operation which can be found also in Baumgarten, thus showing Kant’s indebtedness to this author and, at the same time, the common tendency, among metaphysicians of these times, to apply concepts deriving from the understanding to metaphysical beings that escape the limitations of time and space. In particular, Baumgarten employs this analogical structure in part III of his Metaphysics (2014), where he discusses the nature of both finite spirits and the infinite spirit (beginning of part IV) in relation to the description of the human mind’s characteristics. See also Chance & Pasternack (2019).

this comparison is a new awareness of the limits of metaphysics and its core principles. *Träume* attempts to overcome the limits found in *Untersuchung*. His discussion of the nature of souls places particular trust in the possibility of formulating valid metaphysical predicates, arguing that analogies help formulate predicates concerning souls. With the first principles well established in *Untersuchung* and the operational work of *Träume* already carried out, Kant created a proper ground to finalize his thoughts on metaphysics in *De mundi sensibilis*. In his 1770 dissertation, metaphysics is first and foremost the science of the limits of the human understanding, which aims first at defining the first principles of intellectual cognition and, second, at formulating symbolic cognition of metaphysical objects. Hence, at the end of the precritical project, metaphysics results as a regulative discipline, which does not work according to the rules of validity of other sciences.

The realization of this definition for metaphysics was a long process that involved the parallel evolution of Kant's use of analogies. In the first part of his precritical production, Kant employed analogies in contexts in which physical bodies were central to his theories. Both in *Naturgeschichte* and in *De igne*, analogies are tools that allow a certain probabilistic validity to the theories generated by the scientist. According to Kant, evidence (Buffon's calculations in *Naturgeschichte*, for example) and the support of the analogy of nature suggest that analogical inferences are closely related to inductive inferences and, therefore, can acquire a multivalent degree of validity. Hence, in the case of physical bodies, and before 1763, analogies still retain the possibility of appealing to validity in the formulation of their arguments.

The game changed after 1763, when the need to reformulate metaphysics with a proper analysis of its method and limitations led to the emergence of the classical problem of predication in metaphysics. *Untersuchung* and *Träume* attempt to answer the question of whether it is possible to retain a discourse about the validity of a predicament even when the subject is non-physical, such as the soul. Following this path, *De mundi sensibilis* represents a further step in this direction, in which metaphysical predication concerns the divine (noumenal perfection in its theoretical sense).

The final answer, however, is essentially negative. Metaphysical predication is possible, but only in a symbolic sense, through analogy, and without constitutive ends. Hence, the path of analogy in Kant's precritical works acquires a double nature. While in the first part of Kant's precritical production, physical analogies provide a certain validity to the theories thereby formulated, in the second part, analogies became metaphysical and, consequently, lost their inductive power.

Metaphysical analogies in the precritical Kant become essentially regulative, following the tradition of philosophers who formulated different doctrines of analogy, with a common sympathy for their equivocity rather than their univocity. On the one hand, according to Kant, analogical predication concerning physical (invisible) bodies acquired a certain univocal perspective, since the generated knowledge pertains to the same context (both analogates are physical bodies), and it is thus possible to discuss the validity of the quasi-inductive inference. On the other hand, metaphysical predication through analogies is inherently limited and regulative, since there can be no possible discourse concerning the validity of applying a human predicate or concept (as the concepts of the pure understanding) to the divine. The human understanding is, therefore, limited to an equivocal, symbolical, and regulative knowledge of God.

Conclusion

In this conclusive section, my aim is to employ the results obtained in the previous sections to argue that the distinction between the regulative and constitutive status of a type of cognition (specifically, that which derives from the transcendental ideas in the *Kritik der reinen Vernunft*) is already anticipated in Kant's precritical doctrines. More precisely, I contend that the results achieved by Kant in *De mundi sensibilis*, which contains important philosophical considerations concerning the problem of the predication of the noumenon and the notion of analogy, anticipate the transcendental dialectic, thereby reinforcing the thesis of a strong continuity between the precritical and critical periods of Kant's philosophical production.

Before proceeding, it is necessary to clarify that my aim is not to offer a detailed analysis of the occurrences of analogy in the *KrV*, a task that would require a separate dissertation. In both the 1781 work and the 1787 revised edition there are numerous instances of analogy; it is sufficient to recall the section entirely devoted to the Analogies of Experience (A176/B218 – A218/B265), where analogies are treated as a priori principles of cognition, rather than as a method of analogical predication. It is not my intention to engage with this issue directly. Instead, I shall focus on those sections of the *KrV* that clearly take up the theme of the predication of the noumenon and that are indebted to the culminating arguments of the second precritical period, namely those presented in *De mundi sensibilis*. I argue that the transcendental ideas of the transcendental dialectic in fact represent the development of the 1770 concept of noumenal perfection, leading Kant, in 1781, to articulate a critical and mature solution to the problem of the predication of the noumenon and to reintroduce the theme of analogy as a regulative method of predication.

To substantiate this claim, it is necessary to clarify the role of the transcendental ideas in the *KrV*, a role that in turn depends entirely on the account of the faculty of reason Kant sets out in 1781. I shall therefore begin by delineating the main features of Kant's definition of the faculty of reason.

Already in the opening pages of the transcendental dialectic, Kant reiterates the tripartite division of the kinds of cognition within his system, assigning reason the highest level: "All our cognition starts from the sense, goes from there to the understanding, and ends with reason,

beyond which there is nothing higher to be found in us to work on the matter of intuition and bring it under the highest unity of thinking."[147]

It is immediately apparent that, for Kant, the pursuit of unity constitutes a fundamental element of reason. The nature of this unity becomes clear through the subsequent characterizations of the faculty of reason. It is first divided into two sub-faculties, corresponding to its logical and transcendental functions. According to the former, reason is simply a logical faculty that abstracts from all cognitive content and organizes knowledge without producing anything new (A299/B355). In the latter sense, reason is a faculty that generates something novel. Regarding that which is newly created, Kant states: "In the first part of our transcendental logic we defined the understanding as the faculty of rules; here we will distinguish reason from understanding by calling reason the faculty of principles."[148] Moreover, Kant writes:

> If the understanding may be a faculty of unity of appearances by means of rules, then reason is the faculty of the unity of the rules of understanding under principles. Thus it never applies directly to experience or to any object, but instead applies to the understanding, in order to give unity a priori through concepts to the understanding's manifold cognitions, which may be called "the unity of reason," and is of an altogether different kind than any unity that can be achieved by the understanding.[149]

The creative aspect of reason, therefore, comes into play when it generates concepts on the basis of the intellect's rules. A fundamental issue concerning reason, which emerges from these lines, is the complete absence of any elements derived from experience: reason operates solely upon the intellect, thereby detaching itself from experience.

In its endeavour to attain the a priori unity of the intellect's rules, reason thus produces concepts. The philosopher designates these concepts as follows:

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[147] "Alle unsere Erkenntnis hebt von den Sinnen an, geht von da zum Verstande, und endigt bei der Vernunft, über welche nichts höheres in uns angetroffen wird, den Stoff der Anschauung zu bearbeiten und unter die höchste Einheit des Denkens zu bringen." *KrV*, A298/B355.

[148] "Wie erklärten, im ersten Teile unserer transzendentalen Logik, den Verstand durch das Vermögen der Regeln; hier unterscheiden wir die Vernunft von demselben dadurch, daß wir sie das Vermögen der Prinzipien nennen wollen." *KrV*, A299/B356.

[149] "Der Verstand mag ein Vermögen der Einheit der Erscheinungen vermittelst der Regeln sein, so ist die Vernunft das Vermögen der Einheit der Verstandesregeln unter Prinzipien. Sie geht also niemals zunächst auf Erfahrung, oder auf irgend einen Gegenstand, sondern auf den Verstand, um den mannigfaltigen Erkenntnissen desselben Einheit a priori durch Begriffe zu geben, welche Vernunfteinheit heißen mag, und von ganz anderer Art ist, als sie von dem Verstande geleistet werden kann." *KrV*, A302/B359.

> The form of judgments (transformed into a concept of the synthesis of intuitions) brought forth categories that direct all use of the understanding in experience. In the same way, we can expect that the form of the syllogisms, if applied to the synthetic unity of intuitions under the authority of the categories, will contain the origin of special concepts *a priori* that we may call pure concepts of reason or transcendental ideas, and they will determine the use of the understanding according to principles in the whole of an entire experience.[150]

Before understanding precisely what the transcendental ideas are, it is necessary to observe that their formulation is, for Kant, absolutely necessary and natural. Throughout the *KrV*, Kant repeatedly devotes several lines to noting that the work of reason, whether correct or fallacious, is entirely natural and inevitable. Already in the introduction to the transcendental dialectic, where Kant discusses the illusory nature of the transcendental ideas, he also highlights their ineluctable character:

> (…) in our reason (considered subjectively as a human faculty of cognition) there lie fundamental rules and maxims for its use, which look entirely like objective principles, and through them it comes about that the subjective necessity of a certain connection of our concepts on behalf of the understanding is taken for an objective necessity, the determination of things in themselves. This is an illusion that cannot be avoided at all, just as little as we can avoid it that the sea appears higher in the middle than at the shores (…).[151]

When Kant refers here to maxims or fundamental rules of the use of reason, he is alluding to the transcendental ideas, subsequently describing them as generators of inevitable illusions. Likewise, in defining the transcendental ideas, Kant underscores their necessity:

> By the idea of a necessary concept of reason, I understand one to which no congruent object can be given in the senses. Thus the pure concepts of reason we have just examined are

[150] "Die Form der Urteile (in einen Begriff von der Synthesis der Anschauungen verwandelt) brachte Kategorien hervor, welche allen Verstandesgebrauch in der Erfahrung leiten. Eben so können wir erwarten, daß die Form der Vernunftschlüsse, wenn man sie auf die synthetische Einheit der Anschauungen, nach Maßgebung der Kategorien, anwendet, den Ursprung besonderer Begriffe a priori enthalten werde, welche wir reine Vernunftbegriffe, oder transzendentale Ideen nennen können, und die den Verstandesgebrauch im Ganzen der gesamten Erfahrung nach Prinzipien bestimmen werden." *KrV*, A321/B378.

[151] "Die Ursache hievon ist diese, dass in unserer Vernunft (subjectiv als ein menschliches Erkenntnissvermögen betrachtet) Grundregeln und Maximen ihres Gebrauchs liegen, welche gänzlich das Ansehen objectiver Grundsätze haben, und wodurch es geschieht, dass die subjective Nothwendigkeit einer gewissen Verknüpfung unserer Begriffe, zu Gunsten des Verstandes, für eine objective Nothwendigkeit der Bestimmung der Dinge an sich selbst gehalten wird. Eine Illusion, die gar nicht zu vermeiden ist, so wenig als wir es vermeiden können, dass uns das Meer in der Mitte nicht höher scheine, wie an dem Ufer." *KrV*, A297/B353.

> transcendental ideas. They are concepts of pure reason; for they consider all experiential cognition as determined through an absolute totality of conditions. They are not arbitrarily invented, but given as problems by the nature of reason itself, and hence they relate necessarily to the entire use of the understanding.[152]

Having thus noted the necessary character of the transcendental ideas, we have already begun to delineate their features, which we shall now examine in greater depth. To understand what the transcendental ideas are, it is helpful to grasp the process through which reason generates them. Kant writes that, in its operation, reason seeks "to find the unconditioned for conditioned cognitions of the understanding, with which its unity will be completed."[153] For Kant, to impart unity to the intellect by means of concepts is to generate concepts of reason (the transcendental ideas) which represent the unconditioned in the series of conditions linked to the intellect's concepts (namely, the categories). The relation between conditions and the unconditioned is clarified by Kant in the second and third sections of the first book of the transcendental dialectic, which I shall summarize here in the following key points for the sake of expository clarity:[154]

A. The regression of reason in the series of conditions is a movement guided by a formal principle: for any given conditioned, reason demands the totality of conditions and conceives it as unified in an unconditioned, that is, in an idea of reason.
B. The process begins as follows: the intellect apprehends an object or state of affairs (for example, a natural event) as conditioned, that is, as dependent upon other determinations (causes, parts, grounds, logical presuppositions).
C. Reason demands the unconditioned for the series of determinations that condition the natural event in question. This faculty thus commands the intellect to perform a regress (*Rückgang*) in the series of conditions: from a proximate condition one proceeds to a more remote one, and so forth, without legitimately positing an empirically absolute

[152] "Ich verstehe unter der Idee einen nothwendigen Vernunftbegriff, dem kein congruirender Gegenstand in den Sinnen gegeben werden kann. Also sind unsere jetzt erwogenen reinen Vernunftbegriffe transscendentale Ideen. Sie sind Begriffe der reinen Vernunft; denn sie betrachten alles Erfahrungserkenntniss als bestimmt durch eine absolute Totalität der Bedingungen. Sie sind nicht willkürlich erdichtet, sondern durch die Natur der Vernunft selbst aufgegeben, und beziehen sich daher nothwendiger Weise auf den ganzen Verstandesgebrauch." *KrV*, A327/B383.
[153] "so sieht man wohl, der eigenthümliche Grundsatz der Vernunft überhaupt (im logischen Gebrauche) sei: zu die bedingten Erkenntnisse des Verstandes das Unbedingte zu finden, womit die Einheit desselben vollendet wird." *KrV*, A307/B364.
[154] For a full reconstruction, see *KrV* A321/B377 – A332/BB389.

terminus. This regress is potentially infinite in experience; yet, by the nature of reason, it must be conceived as regulated by an idea of completeness (the totality of conditions).

D. If the conditioned is given, reason is necessarily led to regard the totality of conditions, and thus the unconditioned, as likewise given. The representation of this totality as no longer itself conditioned is the concept of the unconditioned (*das Unbedingte*).

E. Each type of categorical relation (subject-accident, cause-effect, whole-parts, etc.) enables reason to construct a series of conditions and thereby to form a corresponding concept of the total unconditioned. In this way the concepts of soul, world, and God originate. These concepts are the ideas of reason: concepts of the totality of conditions for a given conditioned, which transcend all possible experience and yet express reason's systematic tendency.

Having thus defined the human faculty of reason, we are now in a position to understand what the transcendental ideas are. The tendency of reason towards the unconditioned, necessary for attaining unity in the rules of the intellect, leads it to the totality of the series of conditions pertaining to a given conditioned. In this way there arises an idea of an unconditioned that is wholly detached from empirical reality but necessary for reason in order to organize a series of conditions under a single concept. The systematization effected by reason is the creative and positive character we introduced at the outset of this section, since it results in the generation of ideas of reason.

Before turning to the significance of the ideas of reason in connection with the results obtained in the third section of this work, it is appropriate to comment on their regulative character. Kant repeatedly reminds us throughout the text that the creation of concepts exempt from reference to experience is fallacious and misleading. Nevertheless, these ideal concepts retain a proper utility in their regulative capacity. In this regard, several quotations prove particularly useful. A first quotation occurs when Kant refers to Plato in an attempt to arrive at a correct definition of ideas:

> Plato noted very well that our power of cognition feels a higher synthetic unity in order to read them as experience and a synthetic unity that outstrips itself cognizes an object that experience

> can never be congruent, but that nonetheless have their reality and are by no means merely figments of the brain.[155]

Still referring to Plato, and in particular to the Platonic ideal of the Republic, Kant then writes:

> Even though this may never come to pass, the idea of this maximum is wholly correct when it is set forth as an archetype in order to bring the legislative constitution of human beings ever nearer to the greatest possible perfection. For whatever might be the highest degree of attainable arrangement, nothing of the sort would be necessary at all.[156]

These words already betray Kant's tendency to ascribe an archetypal guiding value to ideas in general. Yet the transcendental ideas acquire the status of a true canon when Kant writes:

> Although we have to say of the transcendental concepts of reason: they are only ideas, we will by no means regard them as superfluous and nugatory. For even if no object can be determined by them, if in an indirect and unnoticed way they still, in a fundamental and unselfish way, serve the understanding as a canon for its extended and more profound insight through which it, in this cognition, will be guided better and further. It is from concepts of nature that we pass to the practical ideas and ourselves generate support for the moral ideas and connection with the speculative cognitions of reason.[157]

When Kant states that the transcendental ideas can serve as a canon for the proper guidance of the intellect, he in fact means that their use can be regulative and thus extremely useful for human cognition. The absence of a constitutive dimension in this type of idea (stemming from their nature, repeatedly characterized as illusory) does not deprive them of their regulative

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[155] "Plato bemerkte sehr wohl, daß unsere Erkenntnißkraft eine weit höhere Bedürfnis fühle, als Erkenntniß aus bloßen Erscheinungen nach synthetischer Einheit zu buchstabiren, um sie als Erfahrung zu lesen, und daß eine synthetische Einheit, die sich selbst überschreitet, eine solche Erfahrung geben als Erkenntniß ausweiche, die viel Erfahrung geben als ihre Realität haben und keineswegs blosse Hirngespinnste sind." *KrV*, A314/B371.
[156] "Ob nun gleich das letztere niemals zu Stande kommen mag, so ist die Idee doch ganz richtig, welche dieses Maximum zum Urbilde aufstellt, um nach demselben die gesetzliche Verfassung der Menschen der möglich grössten Vollkommenheit immer näher zu bringen." *KrV*, A317/B374.
[157] "Ob wir nun gleich von den tranzscendentalen Vernunftbegriffen sagen müssen: sie sind nur Ideen, so werden wir sie doch keineswegs für überflüssig und nichtig anzusehen haben. Denn wenn schon dadurch kein Object bestimmt werden kann, so können sie doch im Grunde und unbemerkt dem Verstände zum Kanon seines ausgebreiteten und einhelligen Gebrauchs dienen, dadurch er zwar keinen Gegenstand mehr erkennt, als er nach seinen Begriffen erkennen würde, aber doch in dieser Erkenntniss besser und weiter geleitet wird. Zu geschweigen, dass sie vielleicht von den Naturbegriffen zu den praktischen einen Uebergang möglich machen und den moralischen Ideen selbst auf solche Art Haltung und Zusammenhang mit den speculativen Erkenntnissen der Vernunft verschaffen können." *KrV*, A329/B384.

utility, which may ultimately lead towards the direction of human morality. To complete this line of reasoning, Kant then writes in the appendix to the transcendental dialectic that:

> I assert: transcendental ideas are never of constitutive use, so that concepts of certain objects would thereby be given, and in case one so understands them, they are merely sophistical (dialectical) concepts. On the contrary, however, they have an excellent and indispensably necessary regulative use, namely that of directing the understanding to a certain goal respecting which the lines of direction of all its rules converge at one point, which, although it is only an idea (*focus immaginarius*) – i.e., a point from which the concepts of the understanding do not really proceed, since it lies entirely outside the bounds of possible experience – nonetheless still serves to obtain for these concepts the freatest unity alongside the greatest extension.[158]

These words prove illuminating with regard to the predicative issue of the noumenon and the themes addressed in the previous sections of this study. It suffices to consider the impossibility, according to Kant, for the transcendental ideas to determine any object whatsoever. Determination is in fact a detailed, one might say constitutive, description of the object in question. Being non-sensible, and thus metaphysical, in nature, the transcendental ideas cannot be determined by means of intellectual concepts. This renders the question of the predication of the noumenon central to the transcendental dialectic in a manner similar to that in the 1770 *De mundi sensibilis*.

It is appropriate here to note a series of important similarities between the doctrines of *De mundi sensibilis* (and Kant's ideas on the predication of the noumenon in the second half of the precritical period more generally) and the chapters of the *KrV* concerning the transcendental ideas.

First, we observed at the beginning of the present section how reason is a faculty divided into a purely logical-organizational part and a positive, creative part. This division fully mirrors the complex categorization of the intellect's functions in 1770. In section III of this study, we saw that the intellect, in the conception of *De mundi sensibilis*, is divided into a logical use and a real use. Moreover, in its real use, the intellect has a dogmatic end that results in the creation

[158] "Ich behaupte demnach: die tranzscendentalen Ideen sind niemals von constitutivem Gebrauche, so dass dadurch Begriffe gewisser Gegenstände gegeben würden, und in dem Falle, dass man die so versteht, sind es bloss vernünftelnde (dialektische) Begriffe. Dagegen aber haben sie einen vortrefflichen und unentbehrlichnothwendigen regulativen Gebrauch, nämlich den Verstand zu einem gewissen Ziele zu richten, in Aussicht auf welches die Richtungslinien aller seinen Regeln in einen Punkt zusammenlaufen, der, ob er zwar nur eine Idee (*focus immaginarius*), d.i. ein Punkt ist, aus welchem die Verstandesbegriffe wirklich nicht ausgehen, indem er ganz ausserhalb den Grenzen möglicher Erfahrung liegt, dennoch dazu dient, ihnen die grösste Einheit neben der grössten Ausbreitung zu verschaffen." *KrV*, A644/B672.

of concepts. One such concept is precisely noumenal perfection. Analogously, the creative function of reason generates transcendental ideas.

To continue with the argumentative similarities between *De mundi sensibilis* and the *KrV*, we may also cite the reference to Plato in the attempt to define what an idea is. In this sense, both §9 of *De mundi sensibilis* and the passages quoted from the *KrV* indicate an endeavour to define the Platonic idea in its character as an ideal archetype as a possible paradigm for clarifying the nature of noumenal perfection (1770) and transcendental ideas (1781).

It is also possible to refer to the *Träume* in order to support the present thesis. When we discussed the purpose of analogical discourse in 1766, we repeatedly noted how Kant was aware of the limitations of such predication. Nevertheless, he never ceased to believe that analogical hypotheses could play a directive role, thereby anticipating, in effect, the notion of canon introduced in this section. Metaphysics as a doctrine of the limits of the intellect, defined as such already in 1766 (see section III, 3.4), is also regulative metaphysics when it engages in analogical predication of the soul. Likewise, the transcendental idea of the soul is a useful but non-constitutive regulative concept.

Finally, it is also in the critical process of regress to the unconditioned that one recognizes the mode of analogical predication seen in *De mundi sensibilis*. Just as the principles of the intellect are employed analogically in order to create (albeit only symbolically) the concept of noumenal perfection, so too does reason take the principles of the intellect and use them in an unconditioned manner, detaching them from their original domain in order to employ them analogically for the purpose of creating concepts of reason, namely the transcendental ideas. In this way there arise thoroughly metaphysical concepts that find no correspondence in empirical reality, are of a regulative character, and, precisely for this reason, aspire only to an analogical description of "soul", "world", and "God", thereby providing direction to the intellect's inquiries through an analogical determination of the transcendental ideas.

At this point, we are in a position to discern the evident continuity between the precritical and critical periods in Kant's philosophical production. More specifically, we have focused here on the theme of the predication of the noumenon, analogy, and the formulation of analogical constructs such as "noumenal perfection" or "God" in order to attain a regulative cognition of these metaphysical principles. It is precisely in the ineluctable necessity of these regulative principles (noumenal perfection or transcendental ideas) that we see a profound connection between the results of the entirety of the second part of Kant's precritical production and the transcendental dialectic. I therefore contend that the distinction between constitutive

and regulative cognition produced by human faculties originated in the precritical period and was subsequently employed within the *KrV*.

The central importance of the theme of analogy in this evolution of Kantian philosophy has made it possible to discern a solution to the problem of predication in metaphysics. The development of the use of analogy in the precritical period (from a metaphysical principle of the unity of nature to an instrument for attaining regulative cognition of the metaphysical) is fully taken up again in the 1781 work, where a conception of the idea and of regress to the unconditioned is reprised that evidently harks back to the analogical endeavour of 1770. Even in the *KrV*, Kant suggests that it is possible to perform a regress of conditions in order to describe a noumenal object by means of laws of the intellect employed analogically; that is, in a context in which they would not be applicable by nature (and thus giving rise to illusions). In this sense, reason becomes the faculty of the unity of the intellect's rules when it generates transcendental ideas that evade any constitutive discourse in order to acquire an analogical, plausible, and regulative character.

Kurzfassung

Einleitung

In der transzendentalen Dialektik der *KrV* führt Kant anhand der transzendentalen Ideen die Unterscheidung zwischen konstitutiver und regulativer Erkenntnis in seine Philosophie ein. Die konstitutive Erkenntnis beschreibt die Natur und Existenz des gesuchten Gegenstandes und erweitert damit auch die Bestimmung des Menschen. Die regulative Erkenntnis hingegen besteht aus Sätzen heurischen Charakters, die keinen ontologischen Anspruch erheben, sondern lediglich dazu dienen, ein bestimmtes Erkenntnisfeld zu orientieren und zu leiten.

Ziel dieser Arbeit ist es zu zeigen, dass die Unterscheidung zwischen regulativer und konstitutiver Erkenntnis bereits in Kants vorkritischer Philosophie, also im zwischen 1747 und 1770 liegenden Projekt, eingeführt und vorweggenommen wird. Um diese These zu begründen, werde ich zwei Themenkomplexe analysieren, die eng mit der Konzeption regulativer Erkenntnis verbunden sind: die Auffassung der Analogie in der Philosophiegeschichte und das Problem der Prädikation im Rahmen der Metaphysik.

Die Arbeit wird gemäß den eingeführten Hauptthemen in drei Abschnitte gegliedert: Der erste Abschnitt rekonstruiert in knapper Form die Geschichte des Begriffs der Analogie in der abendländischen Philosophie bis zu Kant. Der zweite Abschnitt beginnt mit der Analyse von Kants vorkritischen Schriften und konzentriert sich auf diejenigen Arbeiten aus den Jahren 1747 bis 1763, die vorwiegend einen kosmologischen und naturwissenschaftlichen Charakter haben. Der dritte und letzte Abschnitt untersucht die verbleibenden Schriften, führt die Behandlung des Prädikationsproblems im vorkritischen Kant ein und analysiert die Antwort des Philosophen, der die neue Einsicht in den regulativen Charakter der Metaphysik als Lösung dieses Problems einsetzt.

Abschnitt I – Geschichte der Analogie

1.

Die Geschichte der Analogie in der antiken Philosophie beginnt bei den Pythagoreern. Autoren wie Archytas von Tarent (428–347 v. Chr.) sind die ersten, die Analogie als Proportionsverhältnis in der klassischen Form A/B = C/D erwähnen. Dieser Typ von Proportionalität war jedoch noch eng mit mathematischen und geometrischen Problemen verbunden. Ähnliche Vorkommen finden sich auch bei Eudoxos von Knidos (408–355 v. Chr.).

Die Formulierung des Eudoxos wird nach der Sekundärliteratur später im fünften Buch der Elemente des Euklid wiederaufgenommen.

Der Begriff der Analogie wird dann bei Platon in einer grundlegend anderen Weise verwendet. Während Pythagoreer und Vorsokratiker ihre Anstrengungen auf physikalische Problemstellungen konzentrierten und Analogie daher häufig in Bereichen wie der Mathematik eingesetzt wird, führt die Einführung metaphysischer Problemfelder bei Platon dazu, dass Analogie auf einer anderen Ebene und mit einer anderen Bedeutung verwendet wird.

Die Bedeutung der Analogie wird bei Platon eng mit derjenigen des Mythos verknüpft und damit mit einer sprachlichen Weise, einen Begriff in ähnlicher und verständlicherer Form auszudrücken. Der Mythos ist bei Platon eine Analogie der Wirklichkeit, durch die philosophische Begriffe und komplexe Theorien mittels leichter zugänglicher Darstellungsformen beschrieben werden. Bei Platon wird die Analogie zu einem hilfreichen Mittel, um auch solchen Begriffen einen ersten Sinn zu geben, die ihrem Wesen nach für den menschlichen Intellekt unzugänglich sind. Ein Beispiel ist der Begriff des Guten, der durch die Analogie der Sonne verstanden werden kann, der jedoch ohne die dialektische Arbeit des Philosophen schwerlich in seiner Ganzheit erfasst wird.

Analogie wird so zu einem Instrument, um eine Beschreibung dessen zu versuchen, was nicht unmittelbar sichtbar und verständlich ist, sondern vom Philosophen durch fortschreitende Forschung erst erschlossen werden muss.

Eine weitere Entwicklung in der Geschichte der Analogie in der Antike findet sich bei Aristoteles, der diesen Begriff systematisch in seine Einteilung der Disziplinen einordnet. Bei Aristoteles erhält Analogie je nach Kontext verschiedene Bedeutungen. In den *Analytica posteriora* und in der *Historia animalium* bringt Aristoteles Beispiele für Analogien, die in einem physischen Sinn verwendet werden. In diesen Fällen dient Analogie dazu, neue Gattungen zu klassifizieren. Diese Gattungen werden anhand von Ähnlichkeiten zwischen verschiedenen Arten gebildet. So können etwa die Knochen eines Vogels als analog zur Fischgräte eines Fisches betrachtet werden, wodurch eine Analogie und eine ähnliche Klassifikation für diese beiden Arten entsteht. Hier zeigt sich das proportionale Verhältnis, das bereits von den vorsokratischen Autoren eingeführt worden war. Ein weiteres Beispiel verdeutlicht dies: Die Federn (A) stehen zu einem Vogel (B), wie die Schuppen (C) zu einem Fisch (D).

Ein weiteres Beispiel stammt aus der Poetik, wo das klassische Beispiel des Bechers des Dionysos und des Schildes des Ares als Symbole der beiden Gottheiten angeführt wird. Der Becher erfüllt in Bezug auf Dionysos dieselbe Funktion, die der Schild in Bezug auf Ares

erfüllt. Beide sind Symbole, und das Verhältnis ist analoger Art; dennoch besteht hier keinerlei Beziehung zwischen Becher und Schild selbst, sie stehen nur insofern in Beziehung, als sie eine bestimmte Funktion für die anderen Glieder der Proportion haben. Das analoge Proportionsverhältnis kann also auch dann gebildet werden, wenn die Glieder Paare sind, die durch dieselbe Relation verknüpft sind und nicht durch ein bestimmtes gemeinsames Merkmal.

Neben diesen Analogien behandelt Aristoteles die Frage auch aus metaphysischer Perspektive. Die erste Verwendung der Analogie in der Metaphysik findet sich in dem Versuch, die Begriffe von Potenz und Akt zu erläutern. Diese Begriffe sind eindeutig metaphysischen Ursprungs, können aber angemessen verstanden werden, wenn auf ähnliche Fälle Bezug genommen wird. So ist der Begriff der Potenz analog der Fähigkeit eines Baumeisters, ein Haus zu bauen, während der Begriff des Aktes dem fertig gebauten Haus analog ist. Das analoge Verhältnis liegt hier vor allem in der Beziehung zwischen baubarem Haus und gebautem Haus: Potenz und Akt bilden ein Begriffspaar, das in dem Moment verständlich wird, in dem die Beziehung zwischen baubarem Haus und gebautem Haus begriffen wird. Dieses Argument greift Themen auf, die bereits bei Platon angelegt waren, und stützt sich zugleich auf eine relationale Proportionalität, wie sie in den vorangegangenen Beispielen sichtbar wurde.

Aristoteles führt darüber hinaus die Attributionsanalogie ein, die in der Geschichte als *analogia entis* bekannt geworden ist. Es handelt sich um eine Weise, den Begriff „*ens*“ zu prädizieren. Dieser Begriff kann von verschiedenen Kategorien ausgesagt werden, da er einen unterschiedlichen ontologischen Status besitzt, nämlich den eines Transzendentalen. Sein wird daher auf verschiedenen kategorialen Ebenen in analoger Weise prädiziert. Diese Prädikation des Seins ist jedoch in einem Fall primär und im anderen sekundär.

Das beste Beispiel zum Verständnis dieses Sachverhalts ist der Begriff „Gesundheit“. „Gesund“ kann eine Diät sein, aber auch ein Hund kann gesund sein. Dass eine Diät gesund ist, wird nur sekundär und indirekt prädiziert, denn die Diät ist nur insofern gesund, als sie auf jemanden angewandt wird. In ähnlicher Weise ist es Aristoteles zufolge möglich, Sein von allen Kategorien auszusagen, jedoch nur indirekt, da Sein eigentlich nur der Kategorie der Substanz zukommt.

Diese Theorie hat in der späteren Philosophie schwierige Fragen nach dem Status der so gebildeten Analogie aufgeworfen. Für Aristoteles wird „Sein“ in den verschiedenen Kategorien weder äquivok noch univok ausgesagt. Die Analogie bildet einen Mittelweg zwischen Univokation und Äquivokation und löst so das Problem der Prädikation des Seins. Diese Mittellösung wird in der mittelalterlichen Philosophie jedoch problematisiert werden, weil dann das Problem der Prädikation des Göttlichen in die Diskussion eingeführt wird.

2.

Die Analogie in der mittelalterlichen Philosophie nimmt ihren Ausgang von der durch Aristoteles eingeführten Idee der *analogia entis*. Für mittelalterliche Philosophen wie Thomas von Aquin und Duns Scotus wird die analoge Prädikation von etwas, das das Göttliche betrifft, problematisch. Dies liegt daran, dass unklar ist, ob die Zuschreibung von Prädikaten, die von menschlichen Wesen und in menschlicher Sprache formuliert werden, glaubwürdig sein kann, um über das Göttliche zu sprechen. Besonders Thomas von Aquin ist kritisch gegenüber der Möglichkeit, Urteile über das Göttliche zu formulieren, die den Anspruch erheben, die Merkmale Gottes korrekt zu beschreiben.

Bevor die Auseinandersetzung zwischen Thomas und Scotus im Einzelnen erörtert wird, ist es nützlich daran zu erinnern, dass Severinus Boethius die Problematik der *analogia entis* im westlichen philosophischen Panorama der Zeit faktisch wieder eingeführt hat. Seine Arbeiten liefern einen Kommentar zu den aristotelischen Lehren, der es den lateinischen Autoren ermöglicht, eine modifizierte Version der Texte des griechischen Meisters kennenzulernen. Dies führt auch dazu, dass der Begriff der *analogia entis*, der von Aristoteles nie wirklich verwendet wurde, von den mittelalterlichen Philosophen gebraucht wird.

Thomas von Aquin nimmt die aristotelische Konzeption der attributiven Analogie vollständig auf, das heißt einer Analogie, die es erlaubt, das Prädikat „*ens*“ einem unterschiedlichen kategorialen Kontext zuzuschreiben. Diese Art von Argumentation wird dann verwendet, um Prädikate zu formulieren, die sich auf das Göttliche beziehen. Wenn Gott an der Spitze der Schöpfung steht, kann der Begriff Sein vom Göttlichen in analoger Weise prädiziert werden. Er kann nicht univok prädiziert werden, da Gott und Geschöpfe sich auf zwei verschiedenen Seinsebenen befinden, aber auch nicht äquivok, da Gott und die Geschöpfe dennoch durch eine Ähnlichkeit in den verschiedenen Graden der Existenz verbunden sind.

Thomas entwickelt seine Lehren im *De veritate* weiter, einem Text, in dem er das Problem direkt behandelt. Hier schlägt Thomas erneut einen Gebrauch der Analogie als Technik vor, um etwas vom Göttlichen weder vollständig univok noch vollständig äquivok prädizieren zu können. Er erkennt jedoch auch an, dass die Art von Sprache, die verwendet wird, um göttliche Eigenschaften auszudrücken, als absolut einschränkend betrachtet werden muss, da es eine zu große Anmaßung sein könnte, das Göttliche mit menschlichen Begriffen zu beschreiben. Um diese Probleme auch religiöser Natur zu vermeiden, warnt Thomas davor, zu sehr an die partielle Univozität der Analogie zu glauben, und neigt daher dazu, sie als ein Instrument zu verwenden, das stärker zur Seite der Äquivozität tendiert.

Nahezu gegenteiliger Auffassung ist hingegen Duns Scotus, der sowohl die von Aristoteles vorgeschlagene proportionale Auffassung der Analogie als auch die übermäßige Vorsicht des Thomas scharf kritisiert. Für Scotus ist die Prädikation des Seins von Gott und den Geschöpfen eine Operation, die ohne jede ontologische Schwierigkeit vollzogen werden kann. Der Status von Gott und den Geschöpfen mitsamt all ihren Unterschieden wird nicht durch die Tatsache in Frage gestellt, dass der Begriff „*ens*“ von beiden ausgesagt werden kann. Duns Scotus glaubt, dass Sein univok von den beiden verschiedenen Subjekten (Gott und die Geschöpfe) prädiziert werden kann, jedoch mit dem Bewusstsein, dass es unterschiedliche Grade der Prädizierbarkeit gibt. Sein wird in eigentlicherer Weise von Gott prädiziert und dann sekundär von den Geschöpfen, die zwar sind, aber nur auf partizipative Weise.

Um das mittelalterliche Panorama abzuschließen, sind einige Worte Thomas de Vio zu widmen. Dieser Autor systematisiert die Lehre des Thomas von Aquin und ist zugleich empfänglich für die Kritiken des Scotus. Aus diesem Grund stellt er sich als maximaler Endpunkt der Geschichte der Analogie bis zum Mittelalter dar, indem er sämtliche Lehren präzise rekonstruiert und zeigt, wie sehr das aristotelische Denken noch immer im Zentrum der philosophischen Diskussionen über Analogie steht.

Das Problem der Analogie wird also zum Problem des Status der göttlichen Prädikation. Während bei Aristoteles die Gültigkeit der analogen Prädikation nicht direkt problematisiert wurde, ist dieses Problem im Mittelalter wesentlich, da man versucht, etwas vom Göttlichen auszusagen. Die *analogia entis* muss daher geklärt werden: Kann sie etwas vom Göttlichen in konstitutiver Weise prädizieren und somit wahre Erkenntnis über Gott liefern, oder ist sie nur ein sprachliches Instrument und muss sich auf eine regulative Bedeutung für die menschlichen Forschungen beschränken?

3.

Wir beginnen die Moderne, indem wir die Gewichtung hin zu einer instrumentellen und regulativen Antwort auf das Problem der Analogie verschieben. Bei modernen Autoren und Wissenschaftlern wie Bacon und Galileo zeigt sich eine Nutzung der Analogie als Strategie zur Erweiterung menschlichen Wissens, die keine eigentliche wissenschaftliche Rolle hat (die Analogie hat nicht dieselbe Fähigkeit wie mathematische Demonstrationen, zu neuen Wahrheiten zu gelangen), sondern sich darauf beschränkt, dem Wissenschaftler heuristisch mögliche Forschungswege anzudeuten. Dies ist möglich dank einer grundlegenden metaphysischen Überzeugung, nämlich dass die Natur in ihrer Konstitution geordnet und kohärent ist. Typisch moderne Ideen wie die Konzeption der *great chain of being* (Lovejoy)

oder die Analogie der Natur bilden die Grundlage für die Argumentationen von Autoren, die versuchen, ihre analogischen Ideen auf metaphysische Voraussetzungen zu stützen.

In der Moderne variieren die Meinungen der maßgeblichen Autoren tiefgreifend. Bacon und Galileo gehören zu den Skeptischsten bezüglich der Möglichkeit, dass analogische Argumentationen wahres Wissen liefern. Stattdessen neigen sie dazu, die Analogie als nützliches Instrument für die Schaffung wissenschaftlicher Modelle zu betrachten, also als Mittel, die Darstellung komplexer Ideen zu erleichtern, insbesondere für ein nicht gelehrtes Publikum.

Die Versuche Descartes hingegen haben ein größeres philosophisches Gewicht. Für Descartes sind Analogien nicht nur nützliche Instrumente zur Darstellung von Ideen durch Modelle, sondern sie ermöglichen auch einen Diskurs über nicht wissenschaftlich beobachtbare Entitäten. Dieser Diskurs ist jedoch von demselben Skeptizismus begleitet, der zuvor auch Thomas von Aquin charakterisiert hat. Der analogische Diskurs kann für Descartes keine direkte und vollständige Erklärung der Naturphänomene erreichen, die wir noch nicht verstehen, sondern kann vielmehr ein nützliches heuristisches Instrument sein, um den Diskurs über diese problematischen Entitäten zu beginnen. Im Speziellen bringt Descartes die Diskussion über die Analogie auf die zuvor gesehenen Gleise zurück: Sobald man versucht, etwas über metaphysische Entitäten auszusagen, ist der Status dieser Prädikation problematisch. Kann die Analogie eine Lösung in der Mitte zwischen Univokität und Äquivokität bleiben? Oder muss sie Partei ergreifen, wenn der Typ des erzeugten Wissens bewertet wird?

In diesem Kontext kommt ein weiterer besonders einflussreicher englischer Wissenschaftler hinzu: Isaac Newton. Newton zitiert explizit die Analogie der Natur in seinen Principia. Die Analogie der Natur ist eine typisch metaphysische Idee vieler britischer Autoren der Epoche, die an die Einheit und Kohärenz der göttlichen Schöpfung glauben. Die Natur ist kontinuierlich und kohärent, und es ist kein Zufall, dass so viele Phänomene durch gemeinsame Gesetze erklärt werden können. Gott hat nach diesen Autoren die Natur so strukturiert, dass sie geordnet ist und durch eine mathematische Sprache verstanden werden kann.

Der Prozess der Mathematisierung der Natur, typisch für westliche moderne Philosophen, führt dazu, dass die Analogie sich zur Seite der Univokität verschiebt: Viele Denker glauben, dass ihre analogischen Theorien aufgrund der grundlegenden Einheit der Natur als plausibel, wenn nicht sogar vollständig wahr, betrachtet werden können. Diese Theorien betreffen jedoch immer nicht beobachtbare Objekte, die dennoch eine physische Konstitution haben. Das Problem des metaphysischen oder göttlichen Seins kommt noch nicht ins Spiel.

Wir müssen daher den Blick auf Autoren richten, die sich vom englischen Empirismus lösen und sich dem Deutschland Kants immer näherkommen.

4.

In dieser Sektion werden die Theorien zum Begriff der Analogie bei den deutschen Autoren, die zeitgenössisch mit Kant oder unmittelbar vor ihm stehen, analysiert. Die erste Referenzgruppe, um die Einflüsse der Geschichte der Analogie auf den vorkritischen Kant zu verstehen, ist die des deutschen Aristotelismus und der transzendentalen Philosophie vor Kant.

Alsted, Scheibler und Scharf sind drei entscheidende Namen, die von Norbert Hinske (1968) identifiziert wurden und als Brücke zwischen dem mittelalterlichen Erbe des Aristotelismus und dem Protestantismus in Deutschland fungieren. Für diese Autoren ist Metaphysik im Wesentlichen ein Synonym für die Philosophie der Transzendentalien, wodurch sie das Konzept des *ens* in den Mittelpunkt ihrer Abhandlungen stellen. Das Problem der Transzendentalien bei diesen Autoren entspricht im Wesentlichen dem Problem der Analogie als plausibler Argumentation für den Übergang von einer direkten zu einer indirekten Prädikation. Das häufig von diesen Autoren angeführte Beispiel ist der Begriff „Gesundheit", der bereits zuvor begegnet ist. Sein wird primär von einem ontologischen Substrat prädiziert, sekundär hingegen von anderen Entitäten, die analog damit verbunden sind. Es bleibt jedoch fraglich, auf welche Weise Sein vom Göttlichen prädiziert werden kann.

Aepinus führt das Problem der Transzendentalien in der Geschichte der modernen Philosophie fort und beeinflusst Autoren, die zeitgenössisch mit Kant sind, wie Darjes, Lambert und Tetens. Das Problem, wie der Begriff des Seins vom Göttlichen prädiziert werden soll, ist daher stets präsent in den philosophischen Diskussionen um Kant, insbesondere innerhalb der deutschen protestantischen Tradition, die das intellektuelle Panorama vor dem Erscheinen von Christian Wolff dominierte.

Mit Wolff und seinen Nachfolgern eröffnet sich eine historische Phase der Philosophie in Königsberg, die vom Rationalismus und dem Versuch der Mathematisierung der Philosophie geprägt ist. Damit eröffnet sich das fundamentale Thema des Status der Metaphysik als Disziplin, die wissenschaftlich werden muss, wenn sie respektiert werden soll. In diesem Kontext spielt auch das Problem der Analogie eine Rolle, insbesondere im Zusammenhang mit dem Problem der Transzendentalien als bevorzugter Weg vieler Philosophen, etwas vom Göttlichen auszusagen.

Die für unsere Zwecke relevanteste Nutzung der Analogie bei Wolff findet sich im Bereich des Gottesbeweises. Wolff verwendet ein analogisches Argument, um von der Existenz

der menschlichen Seele auf die Existenz Gottes zu schließen. Das Argument basiert auf der Existenz der menschlichen Seele, die als unmittelbar evident für den Philosophen gilt. Die Seele als Existierendes muss die Ursache ihrer Existenz in etwas außerhalb von sich finden. Indem er in der Ordnung der Ursachen aufsteigt, gelangt Wolff zu einer letzten Ursache, die Ursache ihrer eigenen Existenz sein muss und zugleich mit dem Begriff Gottes zusammenfällt. Gott scheint damit auf derselben ontologischen Ebene wie die Geschöpfe platziert zu sein. Wolff sagt zwar nicht ausdrücklich, dass Geschöpfe und Gott in dieser ontologischen Prioritätsstufe gleich wichtig sind. Es gibt stets einen unterschiedlichen Grad der Partizipation am Begriff des Seins bei Gott und den Geschöpfen, doch dies ändert nichts daran, dass Wolff sich auf die Seite derer stellt, die stärker an die Univozität der Prädikation von Gott und Geschöpfen glauben. Die analogische Prädikation des Seinsbegriffs tendiert bei Wolff daher stärker zur Univozität und greift eine scotistische Lehre wieder auf.

Es ist angebracht, eine kurze Liste weiterer Autoren zu nennen, die zeitgenössisch mit Kant sind und das damalige Debattenumfeld um die Analogie beeinflussten. Der Erste ist Martin Knutzen, Kants Lehrer an der Universität und Autor, durch den Kant die oben erwähnten englischen kosmologischen und metaphysischen Theorien kennenlernte. Angesichts des Ruhms der Astronomen in Königsberg ist Knutzen höchstwahrscheinlich verantwortlich für vieles von Kants kosmologischem Wissen, das er mit hoher Wahrscheinlichkeit auf diese Weise mit Newtons Texten in Berührung brachte. Die newtonsche Analogie der Natur ist somit sicherlich durch diesen Lehrer mit Kant in Kontakt gekommen.

Ebenfalls zu nennen ist die *Ars combinatoria* von Joachim Darjes. Die *Ars combinatoria* ist der Versuch *par excellence*, die Metaphysik zu mathematisieren, indem sie das philosophische Projekt von Wolff fortsetzt und ursprünglich von Leibniz stammt (der seinerseits eine Abhandlung über die *Ars combinatoria* verfasst hatte). Diese Lehre geht von der Voraussetzung aus, dass die Metaphysik eine Methodik ähnlich der Mathematik haben kann. Die Mathematik ist für diese Autoren eine Kunst der Kombination von Symbolen, die Größen ausdrücken. Die Ergebnisse erweitern wiederum das menschliche Wissen durch die Gewissheit der Operationen mit den genannten Symbolen. Die *Ars combinatoria* in der Metaphysik hat denselben Zweck: das menschliche Wissen durch die Kombination künstlicher Symbole zu erweitern. Diese Symbole entsprechen den Wörtern und werden verwendet, um Urteile zu bilden, deren Subjekte metaphysische Entitäten sind. Es handelt sich im Kern um einen Übergang der Symbolkombination vom physikalischen und quantitativen Kontext zum metaphysischen und qualitativen. Tommasi (2008) bemerkt, dass diese Kunst von einer Art proportionaler Analogie in ihrem Kern geprägt ist. In diesem Sinne muss die Beziehung

zwischen den verwendeten Zeichen zur Konstruktion der philosophischen Gleichung analog zur Beziehung zwischen den von diesen Zeichen Bedeuteten sein.

Wir fahren dann mit Baumgarten und Meier fort, Denkern, die jeweils den Referenzpunkt in Metaphysik und Logik für die Vorlesungen darstellen, die Kant an der Universität halten wird. Aus ihren Handbüchern geht eine Idee der Analogie hervor, die auf der Möglichkeit beruht, analog einen Attribut von Gott zu prädizieren, sobald der Philosoph eine Ähnlichkeit zwischen notwendigem und kontingentem Sein bemerkt. Bei Baumgarten kann, wenn die metaphysische Entität nicht in ihrer Gesamtheit erkennbar ist, ein analogischer Diskurs formuliert werden, um sich zumindest auf diese Entität als Forschungsobjekt zu beziehen. Meier trägt dazu bei, indem er in seinen Werken die aristotelische Proportionalität wiedergibt.

Wir schließen die Liste der Zeitgenossen Kants mit dem Verweis auf August Crusius ab, einen prominenten Pietisten und Philosophen, der häufig in Kants Werken zitiert wird. Crusius diskutiert die Natur der Induktion als besonderen Fall eines analogischen Arguments. Das Argument von Crusius ist probabilistisch: Analogische Inferenzen, die auf Ähnlichkeiten zwischen Analogaten basieren, sind umso stärker, je größer die zwischen den beiden gefundenen Ähnlichkeiten sind. Das Vertrauen darauf, dass diese Ähnlichkeiten nicht zufällig sind (wobei auch die Vorstellung einer Uniformität der Natur aufgegriffen wird), verrät die Auffassung von Crusius, dass es eine gewisse Univozität in der Weise gibt, in der die Ähnlichkeiten gruppiert werden. Wenn die analogische Prädikation keine Falsifikation erfährt, sondern nur weitere Ähnlichkeiten und Beweise ihrer Wahrhaftigkeit, dann ist es gerechtfertigt, ihr zu vertrauen, als ob es sich um eine konstitutive Gültigkeit handelte, die tatsächlich den Wissenshorizont des Menschen erweitern kann.

Mit dieser historischen Rekonstruktion des Analogiebegriffs schließt die erste Sektion der Arbeit ab. In dieser Sektion wurde die Bedeutung der Forschungen zur Gültigkeit der Analogie als methodologisch für die Prädikation metaphysischer Entitäten hervorgehoben. Besonders wenn es darum geht, Urteile über das Göttliche zu formulieren, muss der Status der Analogie in Frage gestellt werden. Das Problem ist somit das der Prädikation in der Metaphysik, das manchmal auf korrekten Grundlagen zu beruhen scheint und zu einer tatsächlichen Erweiterung des menschlichen Wissens hin zu einer Wahrheit führen kann, für andere Autoren jedoch begrenzt und lediglich instrumentell-heuristisch ist. Kant reiht sich in einen historisch-philosophischen Kontext ein, in dem dieses Problem stets mit dem Status der Metaphysik als wissenschaftliche Disziplin verbunden ist, und er wird das Problem der Prädikation durch Analogie bereits in seinen vorkritischen Arbeiten angehen, die wir nun analysieren werden.

Abschnitt II – Analogie bei Kant (1747 – 1763)

1.

Wir beginnen die Analyse der vorkritischen Arbeiten Kants mit einer Voraussetzung: Nicht alle Arbeiten, die zwischen 1747 und 1770 verfasst wurden, werden analysiert, da nicht alle einen nützlichen Beitrag zur Geschichte des Analogiebegriffs in der abendländischen Philosophie leisten. Vorrang werden vor allem jene Arbeiten erhalten, in denen der Begriff „Analogie“ oder Ähnliches direkt im Text erscheint. Anschließend werden auch Fälle besprochen, in denen Analogie indirekt verwendet wird, das heißt, in denen der Begriff nicht direkt vorkommt, die Argumentation jedoch Themen aus der Geschichte der Analogie wieder aufgreift. Dies wird beispielsweise der Fall sein mit dem Problem der Prädikation, das ab 1763 behandelt wird.

Wir beginnen nun mit der *Naturgeschichte*, dem 1755 von Kant veröffentlichten Text. Dieser Text liefert eine kosmologische Theorie, die fest auf den Gesetzen der Anziehung und Abstoßung aus Newtons Principia basiert. Kant versucht, die Kenntnis der Struktur des Kosmos mit analogischen Argumentationen zu erweitern, die das von Newton Beobachtete auf Systeme ausdehnen, die auch weit vom menschlichen Auge entfernt sind, und postuliert sogar die Existenz eines Zentrums des Universums, das als Fixstern fungiert, sowie Eigenschaften außerirdischer Entitäten.

Eine der relevantesten Weisen, in denen Analogie in diesem Text verwendet wird, habe ich durch den Verweis auf eine russische Matrjoschka-Puppe definiert: Nach Kant wiederholt sich die Grundstruktur des Sonnensystems im gesamten Universum nach einem festen Schema. Fixsterne stehen im Zentrum kleiner Systeme, sind aber selbst peripher in einem größeren System, das ein noch größeres Himmelskörper im Zentrum hat, und so fort bis zum Zentrum des Universums.

Diese Theorie basiert auf dem, was wir zuvor als Analogie der Natur bezeichnet haben. Kant ist überzeugt, dass die Gesetze der Natur in allen ihren Teilen konstant und gleich sind. Darüber hinaus glaubt Kant, dass die letzten Bestandteile, aus denen das Universum besteht, im Wesentlichen in allen seinen Teilen dieselben sind. Diese Überzeugungen können als Frucht englischer Tendenzen betrachtet werden, die Natur als harmonisches Ganzes zu sehen, gemäß dem klassischen Motto *natura non facit saltus*. Wenn also Anziehung und Abstoßung Gesetze sind, die die Struktur unseres Sonnensystems gebildet haben, ist es gerechtfertigt anzunehmen, dass dieselben Gesetze auch im übrigen Raum auf gleiche Weise wirken. Diese analoge

Funktion wiederholt sich dann in verschiedenen Größenordnungen und Entfernungen und verleiht dem Universum eine Struktur, die sehr an eine Matrjoschka erinnert.

Ein weiteres interessantes Element bezüglich der Analogien in der *Naturgeschichte* ist die Glaubwürdigkeit dieser analogischen Argumentationen. Kant zweifelt nie an der Wahrhaftigkeit seiner Argumente bezüglich des Zentrums des Universums, der Nebel, der Saturnringe und vieler anderer Phänomene, die er nach seiner Methode beschreibt. Umso mehr werden seine Argumente durch einige wissenschaftliche Evidenzen gestützt, die im Traktat vorkommen. Ich beziehe mich speziell auf einige Berechnungen des französischen Physikers Buffon, die Kant verwendet, um zu zeigen, wie seine Theorien oft Bestätigung durch Experimente finden.

In diesem Fall zeigt Kant, dass er an eine probabilistische Gültigkeit der auf Analogie basierenden Argumentationen glaubt: Je mehr indirekte empirische Bestätigungen oder Signale der Bestätigung aus der Natur und den Experimenten kommen, desto wahrscheinlicher ist es, dass die analogisch gebildete Theorie wahr ist. Diese Art des Argumentierens ähnelt sehr dem induktiven Argumentationsstil, den einige seiner Zeitgenossen entwickelt hatten (Crusius), nimmt aber zweifellos seine Wurzeln bei den newtonischen englischen Physikern.

Das analogische Argumentieren in der *Naturgeschichte* geht so tief, dass es die Existenz außerirdischer Entitäten postuliert. Dies liegt daran, dass Kant glaubt, dass die Art von Körper und Geist, über die Lebewesen verfügen, von der Entfernung ihres Planeten von der Sonne bestimmt wird. Das bedeutet, dass etwaige Wesen auf anderen Planeten Merkmale haben müssen, die proportional zu diesem Gesetz sind, das wiederum analog im gesamten Universum wirkt und ebenso Menschen wie Außerirdische bestimmt. Die Bewohner der weiter entfernten Planeten werden daher ätherischere Körper und größere Intelligenz haben, während die der sonnennäheren Planeten unglaublich einfache Kreaturen sein werden, die von Materialität beherrscht sind.

Die Lehre über den Gebrauch der Analogie, die uns dieser Traktat hinterlässt, ist wichtig. Zunächst ist zu bemerken, dass Kant nie von metaphysischen Entitäten wie Gott oder der Seele spricht. Kant konzentriert sich immer auf eine Realität, die physisch ist, auch wenn sie nicht sichtbar und experimentierbar ist. Seine Argumente sind nicht rein logisch, da es nicht um mathematische Ausdrücke geht, sondern analogisch, weil er versucht, die Anwendung eines Gesetzes auf den Rest des Universums auszudehnen, basierend auf einer grundlegenden metaphysischen Überzeugung bezüglich der Uniformität der Natur. Darüber hinaus glaubt Kant wirklich an die Möglichkeit, gültiges Wissen durch diese Analogien der Natur zu liefern, was

eine gewisse Univozität im Denken des Philosophen verrät, jedoch eine Univozität, die sich noch nicht dem Problem der Prädikation in der Metaphysik zuwendet.

2.

Wir setzen die Übersicht über die vorkritischen Werke fort und analysieren kurz das *De igne*, das vor den lateinischen Dissertationen Kants und im Jahr 1755 veröffentlicht wurde. Dieser Traktat zielt darauf ab, einige Zweifel bezüglich des Ursprungs und der Natur des Feuerphänomens kurz zu beantworten, ein Thema, das unter den Chemikern der Epoche populär war. Kants Wille, an der Debatte teilzunehmen, zeigt zweifellos sein Interesse an den unterschiedlichsten wissenschaftlichen Fragen und seinen Eklektizismus.

Obwohl der fragliche Text wissenschaftlich nicht für Originalität bekannt ist, erweist er sich als nützlich für eine Übersicht über den Gebrauch der Analogie im vorkritischen Kant. In dieser Arbeit gibt es zwei Fälle, in denen Kant den Begriff direkt verwendet. In beiden Fällen, die sich auf Dampf und Äther beziehen, gibt Kant Beweis dafür, ein analogisches Verfahren zu nutzen, um das wissenschaftliche Wissen über bestimmte Phänomene zu erweitern. Wir analysieren den Fall des Äthers: Einige völlig ähnliche Phänomene des Feuers und des Lichts werden vom Philosophen untersucht. Obwohl diese Phänomene unterschiedlichen Kontexten zuzuordnen sind, bemerkt Kant zahlreiche Ähnlichkeiten zwischen den Eigenschaften des Lichts und denen des Feuers. Die wachsende Menge an Ähnlichkeiten wird von Kant als gültige Motivation genommen, um eine weitere Ähnlichkeit anzunehmen, da die Natur aufgrund ihrer Uniformität diese Art von Operation unterstützt. Diese weitere Ähnlichkeit besteht darin, dass die Substanz, die das Licht zusammensetzt, zweifellos identisch mit der sein kann, die das Feuer zusammensetzt: der Äther. Auf diese Weise prädiziert Kant etwas vom Feuer durch ein Verhältnis der Ähnlichkeit und Proportion zum Licht und erweitert so das menschliche Wissen in einem Kontext, in dem die damaligen verfügbaren Instrumente noch keine Gewissheit über die Natur des Feuers garantieren konnten.

Dasselbe Argument wird später bezüglich der Natur des Dampfs wiederholt. Relevant ist, dass *De igne* in diesem Fall das kantische Denken zur Analogie nicht wesentlich vorantreibt. Auch hier verwendet Kant die Analogie als wissenschaftliches Instrument, um den Geltungsbereich bestehender Theorien zu erweitern. Es handelt sich um eine ähnliche Methode wie in der Naturgeschichte, da sie es ermöglicht, etwas über nicht sichtbare Entitäten auszusagen (diesmal sehr kleine), die jedoch immer noch physischer Natur sind und nicht metaphysisch.

3.

Die Diskussion über metaphysische Entitäten beginnt mit einem der ersten Werke, das 1763 veröffentlicht wurde: *Beweisgrund*. Vor dessen Analyse ist es jedoch angebracht, ein weiteres Kant-Werk kurz zu behandeln, in dem das Problem der Existenz Gottes kurz angesprochen wird: *Nova dilucidatio*. In diesem Werk von 1755 befasst sich Kant kurz mit dem Thema des Gottesbeweises. Es ist das erste Mal, dass Kant über eine metaphysische Entität schreibt, und in diesem Stadium seines philosophischen Projekts scheint das Problem der Prädikation noch nicht auf. Die Metaphysik ist in der *Nova dilucidatio* eine funktionierende Wissenschaft, bei der jedoch eine Reihe von grundlegenden Problemen bezüglich ihrer Prinzipien geklärt werden muss. Nach deren Klärung besteht kein Zweifel an der Möglichkeit, die Existenz Gottes durch eine vollständig logische und a priori Argumentation zu prädizieren.

Ein ähnliches Argument wird 1763 auch in *Beweisgrund* eingeführt. Dieses Werk widmet sich vollständig der Suche nach dem einzig wahren und möglichen Beweis für die Existenz Gottes. Das Ergebnis von Kants Untersuchungen lässt zwei mögliche Beweise, die im langen Text analysierten Kritikpunkte überstehen: den ontologischen a priori Beweis und den kosmologischen Beweis der reformierten physikalischen Theologie (wenn auch nur teilweise als wirklicher Beweis qualifiziert).

Zwischen diesen beiden Beweisen kann jedoch nur einer als Sieger hervorgehen. Der kosmologische stützt sich auf zuvor behandelte Argumente: Da die Natur einheitlich und wunderbar organisiert ist, besteht kein Zweifel daran, dass sie zumindest anfangs von Gott so geordnet wurde. Wenn Kant diesen Beweis reformieren will, tut er dies, indem er eine kleine Anmerkung zur Natur des göttlichen Eingreifens hinzufügt: Dieses Eingreifen ist anfänglich und partiell, aber nicht in jedem Moment des Ablaufs der Naturvorgänge gegenwärtig. Die Natur hat eine eigene Freiheit und verläuft gemäß ihren eigenen Gesetzen (denen Newtons), doch Gott muss ihr Prinzip gewesen sein.

Obwohl dieser Beweis laut Kant den größten Respekt aller Philosophen hervorrufen sollte, ist klar, dass er nicht die Strenge einer mathematischen Beweisführung erreicht, die erforderlich ist, um einen soliden Gottesbeweis zu erbringen. Aus diesem Grund wird der kosmologische Beweis zwar respektiert, aber verworfen und stattdessen das ontologisch basierte a priori Argument favorisiert.

Es ist an dieser Stelle nicht sinnvoll, die Natur dieses Arguments näher zu erörtern. Wichtig ist die Erkenntnis, dass das kosmologische Argument, basierend auf der Analogie der Natur, in dieser Phase von Kants vorkritischer Produktion als ungeeignet und unzuverlässig angesehen wird, um etwas über Gott zu prädizieren. Die Einschränkung dieses Arguments wird

durch völliges Vertrauen in die Fähigkeiten der Metaphysik ersetzt, einen a priori Beweis für die Existenz Gottes zu erbringen. Dieser Beweis zeigt somit, dass Kant in diesem Zeitraum das Problem der göttlichen Prädikation noch nicht wahrgenommen hat und sich vielmehr fast vollständig auf rationalistische Theorien seiner Zeit in Bezug auf metaphysische Entitäten stützt.

Dieser Abschnitt endet mit der Erkenntnis, dass Kants Denken das Problem der Prädikation in der Metaphysik noch nicht erreicht hat. Sein Denken bleibt konstitutiv und vertrauend in die Fähigkeiten der Analogie, solange ihr Wirkungsfeld auf Physik und Kosmologie beschränkt bleibt. Die Ergebnisse seiner Theorien in der Naturgeschichte sind daher vollkommen glaubwürdig und können als valide Theorien betrachtet werden, solange sie nicht widerlegt werden. Ebenso verhalten sich seine analogischen Vermutungen im *De igne*. Wenn jedoch das analogische Argumentieren auf die Notwendigkeit trifft, die Existenz Gottes zu beweisen, wird es dadurch eingeschränkt, dass es nicht die mathematische Strenge eines a priori Arguments erreicht und muss deshalb zugunsten rationalistischer, aber dennoch konstitutiver Argumente aufgegeben werden (die Prädikation des Göttlichen über logische a priori Argumente zu begründen vermögen). Das Problem der Prädikation wird noch nicht thematisiert, da der Status der Metaphysik als Wissenschaft noch nicht in Frage gestellt wurde. Dies wird im Anschluss an die folgende Phase von Kants vorkritischer Produktion der Fall sein, Thema des nächsten Abschnitts dieser Arbeit.

Abschnitt III – Analogie bei Kant (1763 – 1770)

1.

Wir beginnen diesen letzten Abschnitt mit einer Ausführungspräzisierung. In den Sammlungen von Kants vorkritischen Werken ist häufig die Reihenfolge, in der Beweisgrund, Untersuchung und Begriff der negativen Größen behandelt werden, irreführend. Wie Kants Korrespondenz belegt, wurden die Werke in der hier angegebenen Reihenfolge geschrieben, während die Sammlungen häufig das Veröffentlichungsjahr als Referenz nehmen und somit die Positionen von *Untersuchung* und *Begriff der negativen Größen* vertauschen. Dieser Fehler könnte eine korrekte Interpretation des vorkritischen Projekts verhindern, das an Linearität gewinnt, wenn man die Werke entsprechend der Schreibreihenfolge und nicht der Veröffentlichung interpretiert. Mit diesem Bewusstsein gehen wir nun an die Analyse der Werke der zweiten Hälfte von Kants vorkritischer Periode, in der das Problem des Status der Metaphysik als

wissenschaftliche Disziplin und folglich das Problem der Prädikation in der Metaphysik zunehmend in den Vordergrund tritt.

Das erste Werk, das behandelt wird, ist *Untersuchung*. Kant schrieb dieses Werk im Dezember 1762, kurz nach dem Abschluss von *Beweisgrund*, als Antwort auf eine Frage der Berliner Akademie der Wissenschaften. Gefragt wurde, ob die Metaphysik die gleiche Gültigkeit wie mathematische Beweise erlangen könne und wie sich dies auf die Entwicklung der Moral und anderer nicht-mathematischer Disziplinen auswirke. Die Frage kam in einem perfekten historischen Moment, da der Status der Metaphysik als Disziplin zunehmend durch das Aufkommen der exakten Wissenschaften, die in ganz Europa von Intellektuellen als bevorzugte Methode der Wahrheitsfindung betrachtet wurden, infrage gestellt wurde. Exaktheit und Gewissheit sind Merkmale der Mathematik und Geometrie, die viele Philosophen auch den philosophischen Disziplinen zugestehen wollten, die sich daher in Methodik und Zielsetzung den exakten Wissenschaften annäherten. Andere Denker hatten hingegen noch Schwierigkeiten, die Metaphysik als Disziplin anzuerkennen, die der Mathematik zu nahe käme. Unter letzteren befand sich auch Kant, der begann, seine Position bezüglich des Verhältnisses dieser Disziplinen durch einen langen und präzisen Methoden- und Zielvergleich darzulegen.

Der erste untersuchte Punkt in Untersuchung betrifft die Art und Weise, wie Gewissheit in Metaphysik und Mathematik erreicht wird. Das Ergebnis ist, dass die beiden Disziplinen sich wesentlich darin unterscheiden, wie sie zu ihren Resultaten gelangen. Während die Mathematik von willkürlichen Definitionen ausgeht und mit bereits konstruierten, kombinierbaren Begriffen arbeitet, um sichere Ergebnisse zu erzielen, folgt die Metaphysik einem komplexeren Prozess. In der Metaphysik beginnt man mit einem unscharf gegebenen Begriff, der außerhalb der willkürlichen Konstruktion des Forschers existiert. Die Definition dieses Begriffs muss außerdem durch einen Analyseprozess gefunden werden. Kants Beispiel ist der Begriff der Zeit: Jeder hat eine mehr oder weniger klare Vorstellung davon, was Zeit ist, aber eine Definition zu finden ist eine komplexe Operation, die auch heute noch nicht ohne Schwierigkeiten ist.

Zudem verwenden Mathematik und Metaphysik unterschiedliche Sprachen. In der Mathematik werden numerische Symbole verwendet, die nicht die Dinge selbst sind, die sie bezeichnen. Diese Symbole werden in arithmetischen Operationen benutzt, deren Ergebnisse am Ende zur Gewinnung nützlicher Resultate übersetzt werden. In der Metaphysik hingegen sind die verwendeten Symbole Worte, und diese Symbole können weder konkrete Beziehungen zu den Dingen selbst haben noch die Beziehung zwischen verschiedenen philosophischen Gedanken anzeigen. Kant fasst diesen Unterschied zusammen, indem er sagt, dass die Sprachen der Mathematik und Metaphysik jeweils konkret und abstrakt sind.

Ein weiterer zentraler Unterschied zwischen den beiden Disziplinen betrifft den Umgang mit nicht beweisbaren Propositionen. In der Mathematik sind diese sehr selten, da die Mathematik willkürlich ihre Definitionen und Prinzipien schafft. In der Metaphysik, in der das nicht der Fall ist, wächst die Zahl der unerklärlichen Propositionen und Konzepte exponentiell. Die undurchsichtige Natur vieler Konzepte erlaubt es dem Metaphysiker nicht, zu einer Definition zu gelangen. Genau in diesem Schwierigkeitsgrad sieht Kant die größte Belastung der Metaphysik: Sie ist stets gezwungen, sich in einem düsteren Kontext zu bewegen, in dem vieles schwer verständlich ist.

Der letzte zentrale Unterschied für Kant betrifft den Status der Forschungsobjekte der beiden Disziplinen. Während es in der Mathematik stets um Größen und Quantitäten geht, handelt es sich in der Metaphysik um reale, qualitativ charakterisierte und schwer definierbare Objekte. Aus diesem Grund sind metaphysische Entdeckungen in der Philosophiegeschichte meist von kurzer Lebensdauer und werden oft durch neue ersetzt, während mathematische Entdeckungen fast immer ewig bestehen.

Nachdem Kant die Unterschiede zwischen den Disziplinen dargelegt hat, stellt er eine entscheidende Frage: Welche Gültigkeit können metaphysische Propositionen besitzen? Er beginnt mit einer vorläufigen Definition der Metaphysik als Philosophie der grundlegenden Prinzipien menschlicher Erkenntnis. Im Versuch, diese Grundprinzipien zu finden, behauptet Kant, dass nichts schädlicher sei als die Nachahmung der mathematischen Methode, die wegen der zuvor genannten Unterschiede zwischen den Disziplinen nicht kopiert werden könne.

Die Metaphysik müsse entsprechend ihrer eigenen Methode einigen präzisen Regeln folgen. Erstens solle man vermeiden, Definitionen zu Beginn der Forschung festzulegen, da Definitionen Gegenstand der Untersuchung seien. Zweitens solle man jene Prinzipien suchen, die unmittelbar evident sind, und diese an den Anfang jeder Untersuchung stellen. Die Forschung beginne also mit einigen ersten, nicht beweisbaren Urteilen, denen weitere typische Eigenschaften des Forschungsobjekts hinzugefügt werden. Es ergibt sich somit ein Arbeitsbegriff der Metaphysik, der nicht unmittelbar sicher, aber plausibel und geeignet ist, den Forschungsprozess aufrechtzuerhalten.

An diesem Punkt behandelt Kant direkt das Problem der Gültigkeit dieses Wissens. Er gibt sofort zu (in der dritten Überlegung), dass die Gültigkeit, die in der Metaphysik erreicht wird, äußerst begrenzt und problematisch ist und niemals derselben Art wie in der Mathematik sein wird. Vielmehr kann man in der Metaphysik von einer probabilistischen Gültigkeit sprechen, die mit zunehmender Anzahl von Intuitionen im Verhältnis zur gesuchten Definition wächst. Anders gesagt: Je mehr der Philosoph im dunklen Forschungsgebiet Licht bringt, indem

er der Definition auf Basis von Intuitionen und Urteilen, die auf unbewiesenen ersten Urteilen beruhen, Eigenschaften hinzufügt, desto wahrscheinlicher nähert sich die Definition der Wahrheit.

Kant fügt auch einen Kommentar zur Art der Gewissheit hinzu, die in der Metaphysik erreicht wird. Er ist überzeugt, dass die durch Wahrscheinlichkeiten erreichte Gewissheit in ihrem Ergebnis der der Mathematik ähnlich ist. Obwohl das Verfahren unterschiedlich ist, glaubt Kant, dass das Ergebnis ähnlich ist, da auch die Metaphysik zu einer konstitutiven Gewissheit gelangt. So findet Kant eine Antwort auf die Frage der Berliner Akademie, indem er behauptet, dass es möglich sei, in der Metaphysik Gewissheit zu erlangen, wenn auch in einer völlig anderen Weise als in der Mathematik.

Untersuchung ist ein fundamentales Werk für die Entwicklung von Kants Denken über Analogie. Obwohl Analogien nicht direkt erwähnt werden, sehen wir hier das Auftreten des Problems der Prädikation in der Metaphysik. Kant problematisiert genau, was es bedeutet, Gewissheit zu erlangen und menschliches Wissen in der Metaphysik zu erweitern. Das Ergebnis ist ein Kampf mit einem dunklen und stürmischen Ozean, in dem selbst kleine Fortschritte problematisch sind. Das bedeutet nicht, dass die Möglichkeit, sichere Erkenntnis zu finden, verworfen werden soll: Kant vertraut weiterhin in die Fähigkeiten der Metaphysik, die in diesem Werk trotz ihrer deutlichen Einschränkungen stets eine beachtenswerte Wissenschaft bleibt. Die Grundbotschaft dieses Werks ist somit, dass die Metaphysik endgültig einen binären Gültigkeitstyp aufgeben und stattdessen lernen muss, ihre Urteile so zu begründen, dass sie zumindest probabilistisch gültig sind. Die Metaphysik wird damit zur Wissenschaft des Glaubwürdigen und Wahrscheinlichen, ein Bereich, in dem die Analogie ab dem nächsten analysierten Werk tiefgreifend beitragen kann.

2.

Wir wenden uns nun einem Werk zu, das auf den Erkenntnissen der Untersuchung aufbaut und auch analogische Argumente verwendet, um bestimmte Eigenschaften Gottes zu erforschen. In *Begriff der negativen Größen* versucht Kant, das Konzept negativer Größen in die Philosophie einzuführen. Angesichts der Ergebnisse der Untersuchung scheint es seltsam, dass Kant nun ein mathematisches, also künstlich festgelegtes Konzept in eine Disziplin wie die Metaphysik einführen will, die die Mathematik keinesfalls nachahmen sollte. Kant warnt jedoch davor, seinen Traktat über negative Größen so zu interpretieren: Es handelt sich nicht um eine Nachahmung der Methode, sondern lediglich darum, ein nützliches Konzept aus einer Disziplin

in einer anderen zu verwenden, um zu erklären, wie die Formulierung göttlicher Eigenschaften erfolgen kann.

Kant fährt fort, indem er das Konzept der negativen Größe einführt. Dazu stellt er das Konzept logischer und realer Opposition vor. Die logische Opposition ist die typische des Satzes vom Widerspruch: Eine Sache kann nicht gleichzeitig existieren und nicht existieren. Existenz und Nicht-Existenz sind logisch entgegengesetzte Prädikate. Die reale Opposition ist hingegen anderer Art, da das Vorhandensein beider entgegengesetzter Prädikate kein logisches Problem darstellt. Zum Beispiel stellt die Opposition zweier Bewegungen im Raum kein logisches Problem dar. Der Stoß zweier entgegengesetzter Kräfte in einem Körper im Raum kann existieren, ohne ein logisches Problem zu erzeugen. Wenn diese Kräfte gleich groß, aber entgegengesetzt sind, ergibt das Ergebnis Null. Im Bereich der logischen Opposition kann keine Addition der Gegensätze existieren, die ihre unterschiedliche Natur bewahren.

Der für diesen Fall nützliche Typ der Opposition ist die reale, die Raum für die Vorstellung einer negativen Größe lässt, das heißt einer, die sich einer anderen widersetzt, ohne sie jedoch aufzuheben oder unmöglich zu machen. Die Koexistenz negativer Größen ist möglich.

Die zweite Sektion des Traktats bietet zahlreiche Beispiele, in denen das Konzept negativer Größen in der Philosophie zu finden ist. Die mechanischen Gesetze von Anziehung und Abstoßung sind ein zuvor genanntes Beispiel, zu dem Kant nun verschiedene Fälle aus der Psychologie hinzufügt, darunter Oppositionen in Verhaltensweisen und Emotionen (Lust und Unlust) sowie Laster und Tugend. Wenn Laster und Tugend nach dem Schema realer Opposition konzipiert werden, passt eine graduelle, fast mathematische Auffassung beider in die Moralphilosophie. Dies ist jedoch keine Nachahmung von Methoden, sondern vielmehr eine Hilfestellung durch die Idee negativer Größen.

Kant wendet das Konzept negativer Größen dann auf das Feld der Metaphysik an. Der Versuch zielt darauf ab, einige göttliche Eigenschaften durch das Konzept negativer Größen zu verstehen. Hier räumt Kant die Möglichkeit ein, etwas vom Göttlichen durch ein analogisches Verfahren zu prädizieren. Das Problem entsteht, sobald Kant fragt, ob die Oppositionen negativer Größen auf das Göttliche wörtlich oder nur analogisch angewendet werden können. Dieser Unterschied ist entscheidend, da er das zuvor behandelte Problem der Prädikation wieder aufgreift. Kant erkennt, dass mathematische und menschliche Sprache wahrscheinlich nicht für die Prädikation des Göttlichen geeignet ist. Das Konzept negativer Größen kann daher nur analogisch auf das Göttliche angewendet werden. Dies liegt daran, dass das mathematische

Konzept negativer Größen auf das göttliche Feld angewendet werden soll, also einen Kontext, in dem man nicht sicher sein kann, ob mathematische Gesetze gelten.

Kant entscheidet sich somit für eine analogische Anwendung des Konzepts negativer Größen auf das Göttliche und akzeptiert, dass diese Operation in ihren Ansprüchen auf wahres, konstitutives Wissen über das Göttliche begrenzt sein muss. Kant konstruiert so einen göttlichen Begriff, der mit dem Konzept der Opposition verglichen werden kann. Da Gott keine innere Opposition enthalten kann, da diese sonst seine Eigenschaften aufheben würde, hat Gott keine reale Opposition in sich. Auch wenn dies eine negative Erkenntnis ist, bezieht sie sich dennoch auf eine metaphysische Entität und erzeugt somit begrenztes, analogisches Wissen über Gott.

Das Ergebnis der Analyse dieses Werks ist, dass die menschliche Sprache erneut problematisch bleibt, wenn sie in der Metaphysik verwendet wird, um Prädikate göttlichen Subjekten zuzuweisen. Der prädikative Sprung vom Bereich menschlicher Erkenntnis zu metaphysischen Objekten findet noch keine korrekte Grundlage und bleibt begrenzt und problematisch. Die einzige konzipierbare Gültigkeit ist probabilistisch und approximativ, oft mit Verzicht auf den konstitutiven Charakter der erzeugten Erkenntnis. Die Prozesse der Wissensgewinnung durch Analogie beginnen sich somit auf die Seite der Äquivokität in der Philosophiegeschichte zu stellen, wie sie in Abschnitt I dieses Werks beschrieben wurde.

3.

Wir wenden uns nun einem entscheidenden Werk für die Entwicklung der Analogie-Idee im vorkritischen Kant zu: *Träume*. Kant verfasst dieses Werk mit dem Vorwand, auf einige Theorien über die Geisterwelt zu antworten, die damals in Königsberg populär wurden. Dabei bezieht er sich auf die Arbeiten Swedenborgs, eines Mystikers, der fest davon überzeugt war, mit der Geisterwelt in Kontakt treten zu können. Kant nutzt die Gelegenheit, um die Natur der Seele zu diskutieren. Er glaubt, dass Swedenborg mit „Geistern" hauptsächlich rationale, immaterielle Wesen meint, die in die Definition von Seelen fallen. Neben der Ablehnung von Swedenborgs Argumenten, die er als nutzlose Spekulationen eines Mystikers beschreibt, konzentriert sich Kant darauf, Wissen über rationale immaterielle Wesen zu erlangen und stellt damit das Thema der Prädikation in der Metaphysik in den Mittelpunkt.

Anknüpfend an Untersuchung beginnt Kant mit einer partiellen Definition der Seele, die aus dem allgemeinen Sprachgebrauch übernommen ist: Seelen sind einfache, nicht-materielle Substanzen. Hinzu kommen einige unmittelbar sichere und unbewiesene Prinzipien, die weitere Bestandteile seines Arguments ermöglichen. Kant behauptet insbesondere, dass jeder Körper aus einfachen Substanzen besteht und dass immaterielle Körper nicht die Kraft

der Undurchdringlichkeit besitzen, was bedeutet, dass Seelen einfache, rationale Substanzen sind, die von anderen Körpern durchdrungen werden können.

Bald erkennt Kant jedoch, dass die Anwendung von Begriffen wie „Substanz“, „materiell/immateriell“ und „undurchdringlich/durchdringbar“ auf einem analogischen Argument beruhen muss. Dies liegt daran, dass die aufgezählten Prädikate für materielle Entitäten typisch sind und, da die Seele etwas Immaterielles ist, keine experimentelle Beweisführung die Anwendung dieser Prädikate auf ein metaphysisches Subjekt validieren kann. Das Problem der Gültigkeit der Prädikation in der Metaphysik wird somit wieder zentral. Keine logische Argumentation kann mit Sicherheit behaupten, dass eine Seele immateriell und durchdringbar ist; vielmehr kann nur ein negativer Vergleich (basierend auf Analogien) mit dem ähnlichen materiellen Gegenstück zu Prädikaten über das Metaphysische führen.

Ein Beispiel ist der Vergleich zwischen einfachen materiellen und einfachen immateriellen Substanzen. Durch ein analogiebasiertes Argument kommt Kant zur Annahme, dass eine geistige Substanz Raum einnehmen kann, ähnlich wie einfache materielle Substanzen, ohne ihn jedoch auszufüllen, anders als materielle Substanzen. Trotz des Unterschieds zwischen materiellen und immateriellen Substanzen besteht also eine gewisse Ähnlichkeit in ihrem Verhalten im Raum. Diese Analogie basiert darauf, dass kein Argument diese Hypothese potenziell falsifizieren kann, da es sich um Entitäten handelt, die die Grenzen der Erfahrbarkeit überschreiten.

Kants Auffassung der Analogie in Träume basiert somit auf der Möglichkeit, etwas von einer metaphysischen Entität zu prädizieren, indem vom Gültigen im Fall materieller Entitäten auf das potenziell Gültige für immaterielle Entitäten geschlossen wird. Die Unfalsifizierbarkeit und die Plausibilität dieses Arguments machen es fern von sinnlosen Spekulationen, wodurch die Analogie weiterhin eine probabilistische, aber sicherlich keine konstitutive Glaubwürdigkeit besitzt.

Nicht zufällig enthält Kant in den letzten Abschnitten des Werkes Überlegungen zu den strukturellen Grenzen der Metaphysik. Nach Kant liegt der wichtigste Gewinn dieses Werkes nicht in der Zurückweisung von Swedenborgs Lehren, sondern in der Möglichkeit, die Grenzen menschlichen Wissens mit Gewissheit festzulegen. Die Metaphysik wird damit zur Wissenschaft der Grenzen des Intellekts, da sie hilft zu unterscheiden, was Gegenstand starker Wissenschaften mit binärer Gültigkeit sein kann und was Thema einer problematischen, analogiegestützten metaphysischen Prädikation werden muss.

Dies bedeutet, dass Kant schon 1766 erkennt, dass Wissen über immaterielle und metaphysische Entitäten, das durch analoge Methoden erlangt wird, lediglich regulativer Natur

ist. Anders gesagt bleibt die Sprache, die zur Beschreibung metaphysischer Entitäten verwendet wird, symbolisch und begrenzt, ohne dass eine gültige und wissenschaftliche Übersetzung vom Symbol zum Bezeichneten möglich wäre. Damit nähern wir uns dem letzten vorkritischen Werk Kants, das in dieser Arbeit analysiert wird, mit der Frage, ob dieses Ergebnis — eine metaphysische Wissenschaft, die begrenzt und heuristisch die Grenzen des Intellekts anzeigt — für Kant ausreichend ist.

4.

Kant verfasste *De mundi sensibilis*, um an der traditionellen *Disputatio* teilzunehmen, die jedes Mal veranstaltet wurde, wenn ein neuer Professor an der Universität Königsberg ernannt wurde. Nach vielen Jahren des Wartens erhielt Kant endlich den Lehrstuhl für Logik und Metaphysik in seiner Heimatstadt und konzipierte dieses Werk als schnelle Zusammenfassung seiner Theorien, die er vor seinen Studenten und Rivalen verteidigen wollte.

Die Sekundärliteratur ist sich überwiegend einig, dass dieses Werk den theoretischen Endpunkt bildet, der der Kritischen Philosophie (*KrV*) am nächsten kommt. Dies gilt nicht nur chronologisch, da es direkt vor der elfjährigen Schaffenspause steht, die zur Veröffentlichung des Meisterwerks 1781 führte, sondern auch inhaltlich. Oft wird der Fokus auf die in der dritten Sektion vorgestellten Konzepte von Zeit und Raum gelegt, die im Wesentlichen identisch mit der Transzendentalen Ästhetik in der *KrV* verwendet werden. Was jedoch häufig übersehen wird, ist die Nähe von *De mundi sensibilis* zu den Themen der Transzendentalen Dialektik, insbesondere zur Unterscheidung zwischen regulativem und konstitutivem Erkenntnisstatus.

Das Werk ist in fünf Abschnitte unterteilt, in denen verschiedene Themen behandelt werden. Im ersten Abschnitt führt Kant den Begriff der Welt und einige damit verbundene Begriffe ein. Um die Unterschiede und Merkmale der sinnlichen und der intelligiblen Welt zu analysieren, ist es zunächst notwendig, die Natur dieses Begriffs zu klären und anschließend auf die beiden Fälle spezifisch anzuwenden. Im zweiten Abschnitt ergänzt Kant wichtige Beobachtungen, in denen er die Komponenten des menschlichen Intellekts genau analysiert und die Fähigkeiten in Sensitivität und Intellektualität unterteilt.

In der dritten Sektion beginnt Kant mit der detaillierten Analyse der Prinzipien, die die sinnliche Welt regeln, und identifiziert Zeit und Raum als fundamentale Begriffe, die faktisch die Schaffung von Wissen über die sinnliche Welt ermöglichen. Ganz ähnlich wie in der Transzendentalen Ästhetik werden Zeit und Raum hier als a priori Begriffe und subjektive Prinzipien des menschlichen Intellekts eingeführt, ohne die die Formulierung von Urteilen über die sinnliche Welt unmöglich wäre. Der vierte Abschnitt leistet Ähnliches für die intelligible

Welt, wobei zentrale Prinzipien für das Verständnis der intelligiblen Welt als Ganzes eingeführt werden. Dabei wird besonders betont, dass ein göttliches Wesen notwendig ist, um die logisch mögliche Kette geschaffener Wesen zu gewährleisten.

Der fünfte und letzte Abschnitt des Traktats von 1770 ist eine deutliche Warnung an alle, die behaupten, Prinzipien eines Bereichs zur Erkenntnis des anderen vermischen zu können. Hier analysiert Kant die verschiedenen Arten von falschen Axiomen, die in der Metaphysik häufig entstehen.

In dieser Arbeit konzentrieren wir uns vor allem auf die zweite Sektion, die ein analogiebasiertes Argument enthält, das vieles zusammenfasst, was bislang diskutiert wurde. In der zweiten Sektion von *De mundi sensibilis* teilt Kant die menschliche Erkenntnis in zwei Fähigkeiten ein: eine sensible und eine intellektuelle. Die sensible Fähigkeit ist passiv und entspricht einer gewissen Aufnahmefähigkeit der äußeren Umgebung und Gleichgesinnter. Sie ermöglicht dem Intellekt, Inhalte aus der Außenwelt aufzunehmen, die dann nach bestimmten Prinzipien geordnet werden. Die Organisation dieser Inhalte obliegt der intellektuellen Fähigkeit, die wiederum in zwei unterschiedliche Nutzungen unterteilt wird: die logische und die reale Nutzung.

Die logische Nutzung des Intellekts ist der rein ordnende Teil, der das Material aus den Sinneseindrücken strukturiert, damit diese verständlich werden. Die reale Nutzung hingegen ist der Teil, der neue Begriffe schafft, ohne dass dabei Material von außen einfließt.

Diese reale Nutzung führt zur Schöpfung einiger reiner Begriffe der Metaphysik, wie Möglichkeit, Existenz, Notwendigkeit, Substanz, Ursache und weiterer, die Kant nicht namentlich nennt. Hier antizipiert Kant klar die Kategorien, wie sie in der *KrV* eingeführt werden, allerdings befinden wir uns noch in der vorkritischen Phase, und was wir üblicherweise Kategorien nennen, sind eher als metaphysische Begriffe oder Prinzipien zu verstehen. Diese Begriffe gehören zur Metaphysik und sind Eigentum des Intellekts, der sie auf zwei besondere Arten nutzt: erstens als aufzählende und zweitens als dogmatische Nutzung. Die erstgenannte dient dazu, das sinnlich Gegebene des Noumens festzuhalten. Diese Begriffe erlauben, klar zu definieren, welche Phänomene zur sinnlichen Realität gehören und welche jenseits der Grenzen der Metaphysik liegen, wie es bereits in Träume behandelt wurde. Die dogmatische Nutzung der Begriffe führt zum Thema der Analogie.

Nach Kant können die Begriffe des Intellekts zur Konzeption eines göttlichen Wesens führen, das als noumenische Vollkommenheit bezeichnet wird. Dieses Idealwesen kann theoretisch Gott genannt werden, ethisch aber auch moralische Vollkommenheit. Der Sinn dieser Theorie besteht darin, dass die Verwendung reiner Begriffe des Intellekts ohne sinnliche

Einwirkung zur Formulierung neuer Begriffe führt, die die sinnlichen Grenzen von Raum und Zeit überschreiten. Diese noumenische Gottheit ist somit ein streng metaphysischer Begriff, der durch reines intellektuelles Nachdenken gefunden wird.

Nach meiner Interpretation ist der Prozess, in dem Kant zur Formulierung dieses Begriffs gelangt, analoger Natur. Kant räumt ein, dass die reinen Begriffe des Intellekts zur Prädikation über das Göttliche genutzt werden können. Die Grundlage dieses Arguments liegt darin, dass die intellektuellen Begriffe notwendigerweise, als Bedingung menschlicher Erkenntnis überhaupt, auf alles angewandt werden müssen, was wir erkennen. Auch wenn die Anwendung dieser Begriffe auf Sensibilität unproblematisch ist, könnte die Anwendung auf die noumenische Vollkommenheit problematisch erscheinen. Dennoch behauptet Kant, dass dies die einzige mögliche Art der Formulierung eines Urteils über die noumenische Vollkommenheit ist. Ähnlich wie beim Begriff des „*ens*“ müssen diese Kategorien *ante litteram* analogisch auf das göttliche Konzept angewandt werden. Sie werden also nicht wie im sinnlichen Bereich direkt verwendet, sondern indirekt, wie Aristoteles den Begriff des Seins indirekt auf alle Kategorien außer der Substanz anwandte. So kann Gott zum Begriff der höchsten und unbeschränkten Ursache oder zum Begriff eines Wesens werden, das alle Möglichkeiten in sich einschließt. Die Begriffe Möglichkeit und Ursache werden analog benutzt, um etwas über das Göttliche zu prädizieren, da sie sich auf ihre primäre Verwendung im sinnlichen Bereich beziehen, aber darüber hinausgehen, um Urteile über das Konzept der noumenischen Vollkommenheit zu formulieren.

Im Gegensatz zu Aristoteles trifft *De mundi sensibilis* eindeutig Stellung zum Status dieser Analogieprädikation. Paragraf 10 enthält den Hinweis, dass alle über Gott gewonnenen Erkenntnisse symbolischer Natur sind und nicht intuitiv wahr sein können. Kant meint damit, dass alle Urteile auf Symbolen beruhen, die niemals die Natur des Bezeichneten vollständig ausdrücken können, sondern lediglich nützliche Begriffe zur Problematisierung des Gottesbegriffs und zur Einführung einer instrumentellen Beschreibung darstellen. Diese Beschreibung ist besonders für moralische Theorien nützlich.

Das symbolische Wissen über das Göttliche, das durch Analogie gewonnen wird, ist also äußerst begrenzt und erhebt nicht den Anspruch, konstitutives Wissen über Gott zu sein. Vielmehr kehren wir erneut zur Auffassung der Prädikation in der Metaphysik als heuristisch, begrenzt und diesmal symbolisch zurück, womit regulatives Wissen über das Göttliche entsteht. Die regulative Erkenntnis in der vorkritischen Philosophie wird somit zum symbolischen Wissen über das Göttliche, das sich auf eine mögliche Beschreibung beschränkt und nicht auf eine Erklärung der Merkmale der metaphysischen Entität. In diesem langen Prozess hat Kant

die Grenzen der metaphysischen Wissenschaft klar definiert und erkannt, dass diese nur Zugang zu Wissen über nicht-materielle Entitäten mit regulativem Wert hat und niemals den Geltungsanspruch der Mathematik oder anderer Wissenschaften erreichen kann, deren Entdeckungen validiert werden. In diesem Sinne wird die Unterscheidung zwischen regulativem und konstitutivem Wissen, wie sie in der Transzendentalen Dialektik der *KrV* eingeführt wurde, klar vom vorkritischen Projekt vorweggenommen, das seine vollständige Formulierung findet, wenn es sich direkt mit dem Problem der Analogieprädikation befasst.

Abschluss

In diesem Werk habe ich die Geschichte des Analogiebegriffs analysiert und wie dieser Begriff in Kants vorkritischen Arbeiten verwendet wird, um zu zeigen, dass Kants vorkritische Philosophie die Unterscheidung zwischen regulativer und konstitutiver Erkenntnis vorwegnimmt, wie sie in der *KrV* präsentiert wird. Dies bedeutet, dass Kant bereits 1770 zu einer vollen Bewusstheit der Grenzen der Metaphysik als Wissenschaft gelangt war, die nicht darauf abzielt, konstitutive Erkenntnis des Forschungsobjekts zu erreichen, sondern lediglich mögliche Urteile aus heuristischer Sicht zu formulieren, die also für die Entwicklung der betreffenden Wissenschaft nützlich sind.

Die Stärke von Kants vorkritischer Philosophie liegt darin, dass der Analogiebegriff als Keilstein für die Interpretation des gesamten Projekts dienen kann. Die Art und Weise, wie die Analogie verwendet wird (zunächst als Analogie der Natur und dann schrittweise als Keilstein für das Problem der Prädikation), bestimmt Kants Haltung zur Metaphysik, die von einer Disziplin, die menschliches Wissen bis an die Grenzen des Unbekannten erweitert, allmählich zur Wissenschaft der Grenzen des menschlichen Intellekts wird und, wie ich hinzufüge, zur heuristischen Wissenschaft des Göttlichen durch die Formulierung symbolischer und regulativer Erkenntnis.

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