

KANT ON METAPHYSICS AS SCIENCE

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Abstract. My paper focuses on what and how Kant had accomplished with his intended “reform of metaphysics” through “reason’s entering the secure path of science”. In this respect, I will argue that the influence of (*pure*) sciences on Kant’s programme was a major one, and this may be best highlighted if one assumes that he developed his mature theory only in the B edition of his *Critique* (1787), where the influence of the model of *pure* a priori sciences turn to be decisive. This influence, as we already know, is closely related to the “reform of metaphysics” by “reason’s entering the secure path of science”. My claim is upheld also by the historical argument that only in the *Prolegomena* (1783) and in the B edition of the *Critique* Kant explicitly conceived the idea of “metaphysics as science”. Therefore, the necessary steps in dealing with “metaphysics as science” must consider the A *Critique*, the *Prolegomena*, and the B *Critique* in this precise order. Assuming this order, my approach will involve three parts: in the first I will investigate the idea of the reform of metaphysics from the A *Critique*, in the second I will take into account “reason’s entering the secure path of science” (in the *Prolegomena* and the B *Critique*), i.e., philosophy as science (the discipline within the B *Critique*); finally, I will argue that understanding Kant’s “idea of philosophy as science” can best be achieved by focusing on the role and place that *pure* sciences have in the transcendental philosophy of the B *Critique*, where its structure and content are themed and projected within the methodological frame of the “experiment of pure reason”.

Keywords: Kant; transcendental philosophy; “experiment of pure reason”; metaphysics as science; reform.

Kant considered his transcendental philosophy to be quite ahead of his time, that is, the 18th century thinking, as proved by the way his contemporaries¹ “understood”

¹ We only mention here the melodrama around the *Göttingen Review*, originally published anonymously until the author revealed his identity after Kant’s summons; this review was known at the time as the *Garve-Feder Review*. Such a “misunderstanding” of Kant’s *Critique* was related to a more general and extended “misunderstanding” that lasts even nowadays: the attempt to understand exactly what Kant wanted to say in his *Critique*. From this point of view, it was even more difficult to assume an adequate “understanding” then, when Kant’s standpoint, although it had some “sources” in the worldview of the time, in its core was an absolute novelty.

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the first edition of his *Critique* (1781)². Thus, the Kantian maxim that the only chance of metaphysics requires its transformation into science could not be anything but of high influence starting with the 19th century.

As it is the case with most of the philosophers who have significantly influenced the course of Western philosophy, in Kant's case we also have an exponential multiplication of approaches on his transcendental theory that, in my interpretation, reached its maturity in the B edition of the *Critique* (1787). The core of his theoretical programme is reconsidered and rebuilt today from multiple perspectives, including disciplinary ones. Therefore, even if we may agree that there are some sort of "official interpretations" or "standard positions", nonetheless they are far from being able to advocate that "with Kant, things are like this and they can only be like this"; on the other hand, nowadays even the "non-traditional" interpretations must take into account, as much as possible, both what Kant himself argued and what the current dominant and disciplinary interpretations of the *Critique* can propose.

Thus, things should be the same when we take a look at the meaning and significance of the "reform of metaphysics" that Kant proposed and how was interpreted his presumed intention when he claimed "How much more difficult, naturally, must it be for reason to enter upon the secure path of a science"³. In that respect, accounting for "Kant's deed" cannot be detached from the *interpretation* of what Kant himself is believed to have intended and accomplished in this matter (even if this task itself is probably an endless one).

Among the dominant interpretations nowadays, some are based on how Kant's "idea of philosophy as science" influenced the second half of the 19th century and the beginning of the 20th century in the works of philosophers such as E. Husserl, J. St. Mill, A. Comte or F. Brentano, while others such as those from logical semantics, cognitive semantics, philosophy of mind, etc. are based on interpretive models of this idea.

Thus, my own perspective on what Kant had accomplished with his intended "reform of metaphysics" through "reason's entering the secure path of science" combines or intersects, somehow, two interpretive perspectives: that of the *Critique* as epistemology, as an inquiry into the nature and limits of our knowledge, and that of the *Critique* as philosophy of (exact) science, that claims that Kant's *Critique* was intended to provide a future for metaphysics inclusively but not only by learning the "lesson" of addressing Kant's contemporary sciences (Hermann Cohen's standpoint). As a general perspective though, my position is close to the one that argues that the theoretical programme of the *Critique* is a fundamental theory both in sciences and philosophy, a framework theory or a "theory of possibility", that aims at an objectively *a priori* relation to objects *in general*, where the exact sciences are solely *possible* variants of par-

² I will use the standard notation of the A/B *Critique of Pure Reason* in the translation of P. Guyer and A. Wood (Cambridge, Cambridge University Press, 1998).

³ *Critique*, B X.

ticular sciences, whose possibility must be found in the way of determining the framework theory itself (Gottfried Höffe⁴ and Ilie Pârnu⁵).

What I want to underline now is that the influence of (*pure*) sciences on Kant's programme was a major one, and this may be best highlighted if we remember that he developed his mature theory only in the B edition of his *Critique* (1787), where the influence of the model of *pure a priori* sciences is decisive. This influence, as we know, is closely related to the "reform of metaphysics" by "reason's entering the secure path of science". My claim above is also upheld by the historical argument, less known even in Kantian exegesis, that only in the *Prolegomena*⁶ (1783) – the work between the two editions of the *Critique*, that Kant explicitly conceived primarily as mere "preparatory exercises" meant to explain the „whole plan" of his transcendental philosophy – and in the B edition of the *Critique* the idea of "metaphysics as science"⁷ is present; previously the critical project was only spinning around the idea of "reform" and Kant's *unfruitful* fascination regarding exact sciences.

Therefore, the necessary steps in dealing with "metaphysics as science" must consider the A edition, the *Prolegomena*, and the B edition of the *Critique* in *this precise order*. Assuming this order, my approach will involve three parts: in the first I will investigate the idea of the reform of metaphysics from the A *Critique*, in the second I will take into account "reason's entering the secure path of science" (in the *Prolegomena* and the B *Critique*), i.e., philosophy *as science* (the *discipline* within the B *Critique*); finally, I will argue that understanding Kant's "idea of philosophy as science" can best be achieved by focusing on the role and place that *pure* sciences have in the transcendental philosophy of the B *Critique*, where its structure and content are themed and projected within the methodological frame of the "experiment of pure reason" that contains both the *synthetic* and the *analytic* method (I will address these methods later on for further clarifications).

PART I. THE CONTEXT OF THE IDEA OF THE "REFORM OF METAPHYSICS" AND OF THE "IDEA OF PHILOSOPHY AS SCIENCE"

Let us now see what do "the reform of metaphysics", through "reason entering the secure path of science", respectively "the idea of philosophy as science" mean and

⁴ „Architetonik und Geschichte der reinen Vernunft", in Georg Mohr and Marcus Willaschek (rds.) *Immanuel Kant: Kritik der reinen Vernunft*, Verlag, 1998.

⁵ I. Pârnu, *Posibilitatea experienței. O reconstructivă teoretică a Criticii rațiunii pure* [The possibility of experience. A Theoretical Reconstruction of the *Critique of Pure Reason*], Bucharest, Politea-SNSPA Publishing House, 2004.

⁶ I will use the standard notation of the *Prolegomena* in Gary Hatfield's translation and revised edition, 2004, Cambridge, Cambridge University Press.

⁷ I mention here Tillman Pinder with „Kants Begriff der transzendentalen Erkenntnis Zur Interpretation der Definition des Begriffs «transzendental» in der Einleitung zur Kritik der reinen Vernunft (A 11 f./B 25)", *Kant Studien. Volume 77, Issue 1-4*, pp. 1–40; and Konstantin Pollok with „Einleitung" of *Prolegomena*, Hamburg, Felix Meiner Verlag, 2001.

presuppose for Kant. In *A Critique*, the answer is related mainly to the first part of the question and is based on the need for metaphysics to undergo a transformation in the context that Kant himself outlined: the idea of reforming metaphysics by reason entering the secure path of science is closely related to the “unsatisfactory situation of the traditional metaphysics”, as Kant saw it then, and also to his fascination with the model of certainty provided by the exact sciences.

Let’s us systematically address now why and *how* Kant approached the “reform of metaphysics” and its successor, the “idea of philosophy as science” *in the critical period after the A Critique*. A simple answer to this question addresses only the first part, that the need to reform metaphysics by reason entering the secure path of science is closely related to the “unsatisfactory situation of traditional metaphysics”; the real problem arises when we try to learn how Kant accomplished this task. Related to the last part of the problem, I will try to show that “the results” of the *Prolegomena*, which dealt especially with the possibility of *pure* sciences, were introduced into the new form of the *Critique* as a *necessary* step to support the mature theory here⁸; and this was realized in the form of the *Critique* as “experiment of pure reason” that is thematized and projected in the B “Preface”.

In this first part, after some considerations on the context of this issue in the pre-critical period, I will follow the development within the *A Critique* of later Kant’s account on “metaphysics as science”; then, focusing on the *Prolegomena* and the B *Critique*, I will try to provide a coherent answer to the questions above in the second and third part of my paper.

Unlike the “idea of philosophy as science”, the idea of the “reform of metaphysics” goes a long way back to the onset of the “critical period” (with his *Dissertation*, 1770). Considered one of the fundamental problems of the later transcendental philosophy (“if/how metaphysics is *in general* possible”), the “nominal” discussion about the “reform of metaphysics” is present, therefore, not only in the *Dissertation* and in the “Prefaces” of the two editions of the *Critique*, in the *Prolegomena* or in the “Introduction” to the B *Critique*, but since Kant’s early works, where he is concerned with the

⁸ I mention here Gary Hatfield’s paper based on the lecture given at the IX Kant Congress. In his text (*The Prolegomena and the Critiques of Pure Reason*, Herausgegeben von Volker G., R.P. Horstmann and R. Schumacher, Akten des IX. Internationalen Kant-Kongresses, Band I, 2001, pp. 185–208), Hatfield points out the little attention paid to the *Prolegomena* from the perspective of the B *Critique*, as he senses the importance of Kant’s work from 1786 for the theory of B, but he is not able to indicate where and how Kant benefited from the “results” of the *Prolegomena*. Moreover, Hatfield’s research focuses on the relationship between the *Prolegomena* and the B *Critique* from the perspective of Hume’s presence in these two works, trying to reject the view of the Anglo-American exegesis according to which the only reading of Kant’s *Critique* should be that of a response to skepticism. Related to this last question, Hatfield believes that the theory of the *Critique* did not have such an answer as its main goal, Kant’s approach being a much broader one, concerning the generality of the problem of the possibility of a priori synthetic knowledge, and only subsequently certain conclusions can be drawn on the relationship between transcendental philosophy and skepticism, therefore indirectly and under more or less solid interpretations (Hatfield mentions here in particular the Anglo-American literature which takes seriously the rejection of skepticism – in particularly Hume’s) as a target of the critical theory. On this point I agree with Hatfield, but this theme is not the subject of this paper.

“correction” of the path of metaphysics, on the one hand, and with the method and model of the exact sciences, on the other. Thus, in his first work⁹ written in 1746 (but only published in 1749), Kant claims that it would be a “treatise on method”.

E. Cassirer also underlines¹⁰ that, although it does not represent the later critical ideas, this work allows us to observe, at a retrospective look, the path of criticism that he had already taken even in the *motto* that Kant chose from Seneca: *Nihil magis praestandum est quam ne pecorum ritu sequamur antecedentium dregem pergentes, non qua eundum est, sed qua itur*¹¹. I also wish to mention here the work published in 1766 (*Träume eines Geistersehers, einstlich durch Träume der Metaphysik*), where the general idea related to this topic (the need to thoroughly define the very boundaries of reason before any claim on what and how much we can know – one of the subsequent methodological principles of the *Critique*) was addressed in metaphorical terms: “Metaphysics is a science of the limits of human reason. A small country always has a longer frontier; it is hence, in general, more important for it to be thoroughly acquainted with its possessions, and to secure its power over them, than blindly launching on campaigns of conquest.”¹² However, even these sprouts of criticism do not meet the solution of the later transcendental idealism (after Kant’s “awakening from the dogmatic sleep”, involuntarily provoked by Hume), but express his early concern with the contemporary issues regarding the status of the truth claims of metaphysics. We also can glimpse in these works the idea that later on underlies the *Critique*, namely the need to put the reason itself under a critical exam in order to secure his claims within the corresponding boundaries.

With respect to his predecessors, Kant refers later on to Locke’s attempt to develop a “physiology of the human intellect”. Kant emphasizes that this attempt had the same fate as the previous ones in metaphysics because the legitimacy of the reason’s claims of knowledge was not supposed to exceed the common vulgar [empirical] experience from which it was derived. Here we have Kant’s distinction between an “empirical physiology” and a “transcendental philosophy”: Locke failed because his genealogy was falsely attributed to metaphysics according to its absolutist claims, and thus arrived at the same previous situation – “wormy dogmatism”. We see below how Kant characterized the state of metaphysics at the time of finalizing the first version (*Critique A*) of his project to reform and transform metaphysics into science, only accomplished in the B *Critique*:

Human reason has the peculiar fate in one species of its cognitions that it is burdened with questions which it cannot dismiss, since they are given to it as problems by the

⁹ With the complet title: *Gedanken von der wahren Schätzung der lebendigen Kräfte und Bewertungen der Bebeise, deren sich Herr von Leibniz und andere Mechaniker in dieser Streitsache bedienen haben nebst einigen prähende Betrachtungen, welche die Kraft der Körper überhaupt betreffen*.

¹⁰ E. Cassirer, *Kant’s Life and Works* [1918], translated by James Haden, New Haven and London, Yale University Press, 1981, pp. 31–32.

¹¹ [“There is naught more important than that we should not follow like sheep the herd that has gone before, going not where we should but where the herd goes”], *ibidem*, note 34.

¹² Imm. Kant, *Dreams of a spirit-seer elucidated by dreams of metaphysics*, in *Immanuel Kant – Theoretical Philosophy, 1755–1770* (2:368), translated and edited by David Walford and Ralf Meerbote, Cambridge, Cambridge University Press, 1992.

nature of reason itself, but which it also cannot answer, since they transcend every capacity of human reason.¹³

Kant considers that the „unacceptable situation of metaphysics” is partially due to the fact that reason, by natural inclination, asks questions that go beyond the control provided by experience, that do not take into account the boundaries of knowledge nor the principles that may be responsible for certain strictly delimited realms, according to the competence of the faculty exercised. The German philosopher explains also why metaphysics is a „battlefield of endless controversies” as follows:

Reason falls into this perplexity through no fault of its own. It begins from principles whose use is unavoidable in the course of experience and at the same time sufficiently warranted by it. With these principles it rises (as its nature also requires) ever higher, to more remote conditions. But since it becomes aware in this way that its business must always remain incomplete because the questions never cease, reason sees itself necessitated to take refuge in principles that overstep all possible use in experience, and yet seem so unsuspecting that even ordinary common sense agrees with them. But it thereby falls into obscurity and contradictions, from which it can indeed surmise that it must somewhere be proceeding on the ground of hidden errors; but it cannot discover them, for the principles on which it is proceeding, since they surpass the bounds of all experience, no longer recognize any touchstone of experience. The battlefield of these endless controversies is called *metaphysics*.¹⁴

In metaphysics, everything takes place in the realm of *pure* reason, where, in the absence of any empirical evidence, the question on the legitimacy of the metaphysical claims of knowledge required a fundamental revision. The principles that grounded traditional metaphysics could no longer provide a valid framework.

Kant’s solution to reform metaphysics (in the A “Preface”) consists in submitting the reason to the critique of pure reason. Therefore, Kant showed that, in order to fix the problem, it is necessary to properly establish the boundaries of reason in relation to object, and to achieve this it is necessary that reason focuses on itself, and explores its own possibilities, boundaries and limits (the need to put reason to the test of the *Critique*); from here it was only a step away from the reconfiguration of our faculties that are involved in the process of reporting to objects: sensibility, intellect and reason. In Kant’s words, the reform

... demands that reason should take on anew the most difficult of all its tasks, namely, that of self-knowledge, and to institute a court of justice, by which reason may secure its rightful claims while dismissing all its groundless pretensions, and this not by mere decrees but according to its own eternal and unchangeable laws; and this court is none other than the critique of pure reason itself.

Yet by this I do not understand a critique of books and systems, but a critique of the faculty of reason in general, in respect of all the cognitions after which reason might strive independently of all experience, and hence the decision about the

¹³ Imm. Kant, *Critique* (A VII).

¹⁴ *Ibidem*.

possibility or impossibility of a metaphysics in general, and the determination of its sources, as well as its extent and boundaries, all, however, *from principles*.¹⁵

With respect to the conclusion in the A *Critique* my comment here is that „from principles” emphasizes the *synthetic* character (from “top to bottom”, the *synthetic* method, not the mere logical one) of the way to determine the categories in the A *Critique*; and, in order to solve the problem of metaphysics, Kant proceeded to legitimize all the claims of reason before the *Critique*’s “court of reason”. Thus, as a result mainly of the deduction of the concepts of space and time and of the categories, the boundaries of each faculty of reason were established, avoiding its conflict with itself.

In order to understand what I upheld above regarding the method of the A *Critique*, I will address here the particular way in which Kant considers the *analytical* and *synthetic* methods by referring first to a fragment from paragraph 4 of the *Prolegomena*. Unlike the directional meaning in logic, Kant refers to these methods as follows:

In the *Critique of Pure Reason* I worked on this question [*Is metaphysics possible at all?*] *synthetically*, namely by inquiring within pure reason itself, and seeking to determine within this source both the elements and the laws of its pure use, according to principles. This work is difficult and requires a resolute reader to think himself little by little into a system that takes no foundation as give except reason itself, and that therefore tries to develop cognition out of its original seeds without relying on any fact whatever. *Prolegomena* should by contrast be preparatory exercises; they ought more to indicate what needs to be done in order to bring a science into existence if possible, than to present the science itself. They must therefore rely on something already known to be dependable, from which we can go forward with confidence and ascend to the sources, which are not yet known, and whose discovery not only will explain what is known already, but will also exhibit an area with many cognitions that all arise from these same sources. The methodological procedure of *Prolegomena*, and especially of those that are to prepare for a future metaphysics, will therefore be *analytic*.¹⁶

In spite of the fragments above that refer to *synthetic* method as the way of theoretical construction “from principles”, at least at first side, the puzzled problem of the two methods is getting more difficult if we consider what Kant argues in B *Critique*; for referring to the general method of the *Critique*, Kant doesn’t talk here about the *synthetic* one, but the “*Analytic of Concepts*” of the *Transcendental Analytic*, the first book of the *Transcendental Logic* of the B *Critique*. The “*Analytic of concepts*” procedure is, in fact, the very *synthetic* procedure of the deduction of the categories within the A *Critique*, the same that Kant referred to in the previous fragment (from the *Prolegomena*) as the *synthetic* way in which he works on the question *Is metaphysics possible at all?* Here is the fragment:

I understand by an analytic of concepts not their analysis [*zergliedern*], or the usual procedure of philosophical investigations, that of analyzing the content of concepts

¹⁵ Imm. Kant, *Critique* (A XII).

¹⁶ Imm. Kant, *Prolegomena* [4:275].

that present themselves and bringing them to distinctness, but rather the much less frequently attempted analysis [*Zergliederung*] of the faculty of understanding itself, in order to research the possibility of a priori concepts by seeking them only in the understanding as their birthplace and analyzing its pure use in general; for this is the proper business of a transcendental philosophy; the rest is the logical treatment of concepts in philosophy in general. We will therefore pursue the pure concepts into their first seeds and predispositions in the human understanding, where they lie ready, until with the opportunity of experience they are finally developed and exhibited in their clarity by the very same understanding, liberated from the empirical conditions attaching to them.¹⁷

The perfect semantic congruence between the two *procedures* (the *synthetic* one and that of the “Analytic of concepts”) is now clear and become clearer as being upheld by the necessity of distinguishing the transcendental logic from the mere logic. Kant makes the distinction between “the logical treatment of concepts in philosophy in general” (*zergliedern*) and the “analytic” (of concepts) *procedure* (*Zergliederung*)¹⁸, where the last one is, in fact, the *synthetic* method. As I argued above, the “analytic” term is used here in couple with “concepts” and previously [B 89] with “Transcendental” in order to designate the Analytical part (the first book) of the *Transcendental Logic* as distinct from the Dialectic part (the second book).

PART II. THE *PROLEGOMENA* AND THE B *CRITIQUE* ON “REASON ENTERING THE SECURE PATH OF SCIENCE”

I have shown that up to and including *A Critique*, Kant dealt with the reform of metaphysics in the sense that he considered and emphasized the insurmountable shortcomings of dogmatic metaphysics and the need to legitimize all the claims of reason before the “court of reason”. Given that the elaboration of the *synthetic a priori* knowledge is to be found outside metaphysics (in *pure* physics and in *pure* mathematics), Kant realized not only that investigating the model of the certainty of knowledge in these sciences can provide “proof” for the validity of his idea of the deduction of the categories in A, but that, in the light of its results, it was also *necessary*.

The alternative construction of the *Critique* mentioned above was therefore built in the *Prolegomena* according to the *analytical* method, and represents a different way to reach „the same results” of *A Critique*: this way considers first of all the analytical method as the general method of the *Prolegomena* that assumes a path that starts from the certain “results” of the exact sciences with certain features (i.e., *synthetic a priori*), and moves to the investigation of their possibility that should lead, by rational generali-

¹⁷ Imm. Kant, *Critique*, (A 66/B 91).

¹⁸ As we shall see, this concept is related to and will be part of the transcendental projected procedure of the experiment of pure reason in the B “Preface”; regarding “the source” of the complex procedures of the *Critique*, we shall see later that these two methods refer not to the general deductive procedure of logic but to the meaning of Newton’s mathematical method.

zation¹⁹, to the determination of the conditions of possibility *in general* for any theoretical reporting to the object. Of course, the resulting structure of possibility is none other than that of the *pure a priori* forms, that of the categories, and of the pure intuitions as in the A edition, which underlie our entire possible experience knowledge and synthetic *a priori* knowledge. In this way, Kant sought to justify the validity of the *a priori forms* by this process that he considered necessary for his approach in the *Prolegomena*. Kant's final step was to take the results and the method of the *Prolegomena* and to integrate them in the structure and in the content of the theory of the *Critique* (B) conceived as "experiment of pure reason".

Briefly, in the language of the *Prolegomena*, there is the way to reach this concordance that will be of decisive importance for the B edition. In order to do that, here Kant asks the general question: *How is cognition from pure reason possible?*²⁰ Based on the distinction between synthetic and analytical judgments, this question leads the reform of metaphysics to solve the general problem of pure reason summarized in two other questions: *how is pure mathematics possible?* and *how is pure physics possible?* These questions are based on the fact that we do have this kind of synthetic *a priori* judgements that are to be found in the dogmatic metaphysics only as antinomies, but we also have such knowledge in the *pure* part of sciences. Thereby, the general question of the *Prolegomena* becomes in the B *Critique*: *How are synthetic judgments a priori possible?* Answer: through synthetic *a priori* judgments from pure mathematics and pure physics. Kant claimed that the future metaphysician must prove with certainty the possibility of these judgments not only in sciences, although they are obvious there, but within metaphysics itself – that, prior to the *Critique*, had the form of antinomies. Thus, investigating how sciences that contain these types of judgments are possible, we must check and see whether their result may provide a clue for the possibility of metaphysics itself.

The problem appears now under the main transcendental questions of the *Prolegomena*'s parts I and II (that appear in the same form in B *Critique*): *How is pure mathematics possible? How is pure physics possible?* *Pure* mathematics is based on a *a priori* construction of objects in pure intuition; it does not apply to the *thing in itself* but it relates to objects as *phenomena*; only through construction in pure intuition its judgments can be universal and objective; otherwise, if they were derived from experience, they would be only contingent. What makes *pure* mathematics itself possible are the *a priori* categorical structure and the *pure a priori* intuitions of space and time as forms of sensibility. *Pure* physics does not contain anything empirical, but presupposes mathematics applied to *phenomena* and purely discursive principles (obtained from concepts). *Pure* physics is also possible through the same *a priori* categorical structure and through *pure a priori* intuitions. Here I quote from the *Prolegomena*:

Now we are nevertheless actually in possession of a pure natural science, which, *a priori* and with all of the necessity required for apodictic propositions, propounds

¹⁹ See note 32.

²⁰ Imm. Kant, *Prolegomena*, &5, [4:276].

laws to which nature is subject. Here I need call to witness only that propaedeutic to the theory of nature which, under the title of universal natural science, precedes all of physics (which is founded on empirical principles). **Therein we find mathematics applied to phenomena** [my emphasis], and also merely discursive principles (from concepts), which make up the philosophical part of pure cognition of nature.²¹

My emphasis here is that *pure* physics does not contain anything empirical, but presupposes *mathematics applied to phenomena* and *purely discursive principles* (obtained from concepts). *Pure* physics is not the Newtonian physics (*physica generalis*)²², but is possible through the same *a priori* categorical structure and through pure *a priori* intuitions.

The elaboration of the problem of metaphysics (*How* is metaphysics possible?) is based on the “evidence” of these sciences: the issue is no longer whether these sciences exist, in the sense of the source of *a priori* synthetic knowledge, because they are already constituted; so the question is no longer whether, but *how* are these sciences and the synthetic *a priori* judgments they contain possible? The answer is: they are possible through the *a priori* possibility provided by the *a priori* forms of our experience (the categories and the *pure a priori* intuitions); the definite construction of the concepts of mathematics is possible by the fact that it takes place in the *pure* intuition of sensibility. Kant’s answer is also linked to “faculties, laws and their cooperation” in relation to object, an answer that clarifies and explains, on the one hand, the situation of the traditional metaphysics, and on the other, the possibility of science and knowledge *in general* to address objects as *phenomena*, not as *things in themselves* (Kant’s absolute novelty).

THE NECESSITY OF THE *PROLEGOMENA*’S DEDUCTION IS FOR METAPHYSICS NOT FOR *PURE* SCIENCES

The necessity of the *Prolegomena*’s deduction of sciences completes the one of the *Critique*’s deductions that responds to the fundamental part of metaphysics, the part where it deals not with the concepts of nature (for which there is always application in experience) but with the *pure* concepts of reason, that are never given by any possible experience. This part of metaphysics is precisely the one that constitutes its essential end, all the rest being solely means to this end, and thus this science (of metaphysics) *needs* such a deduction *for its own interest*. Two capital fragments from *Prolegomena*:

Pure mathematics and pure natural science would not have needed, for the purpose of their own security and certainty, a deduction of the sort that we have hitherto accomplished for them both; for the first is supported by its own evidence, whereas the second, though arising from pure sources of the understanding, is nonetheless supported from experience and thoroughgoing confirmation by it – experience being a witness that natural science cannot fully renounce and dispense with, because, as philosophy, despite all its certainty it can never rival mathematics. Neither science

²¹ Imm. Kant, *Prolegomena* [4:295].

²² Cf. „Preface“ of *Metaphysical foundation of Natural Science*, [498] and also see note 33.

had need of the aforementioned investigation for itself, *but for another science, namely metaphysics*.²³

It can be seen that even if the solution to these problems is intended principally to present the essential content of the *Critique*, still it also possesses something distinctive that is worthy of attention in its own right, namely, the search for the sources of given sciences in reason itself, in order to investigate and to survey for reason, by way of the deed itself, its power to cognize something a priori; whereby these sciences themselves then benefit, if not with respect to their content, nonetheless as regards their proper practice, and, **while bringing light to a higher question regarding their common origin** [my emphasis], they simultaneously provide occasion for a better explanation of their own nature.²⁴

Here it explicitly appears the connection that I set forth above when I was talking about the need to transform metaphysics into science: the *common origin of pure sciences* is nothing but the *pure a priori* structure of the categories and the *pure forms synthetically* obtained (“from principles”) in the A *Critique*. The deduction of these sciences was not necessary for themselves (as they are obvious), but for “a higher question” that I think to be that of the possibility *in general* of any science and of metaphysics itself, grounded on the *pure a priori* structure, that needed confirmation by revealing *the same structure* that also underlies *pure a priori* sciences.

Proceeding “from principles” and completely *a priori* in the first edition of the *Critique*, Kant realized that he needed a construction apart from the *Critique* to verify whether the ground of (*pure*) sciences where *pure a priori* judgments are found is the same *a priori* structure of possibility, the same categories and the same *pure a priori* forms. For this he proceeded in *Prolegomena* to their deduction starting *analytically* from the reality of these judgments and discovering the same *a priori* structures. These results had to be integrated into a new theory, that of the B *Critique*, which would also contain this vein that became necessary with the *Prolegomena*. As I have already said before, the structure of the new theory of the B edition is thematized by Kant in its “Preface” as the “experiment of pure reason”.

PART III. “THE RESULTS” OF THE *PROLEGOMENA* AND THE B *CRITIQUE* – “THE EXPERIMENT OF PURE REASON”

In order to argue for what I have said above on the relation of the *Prolegomena* with the B *Critique*, let us now see exactly how Kant took over the results of the *Prolegomena* in the B edition in order to support and circumscribe the theory in the form of the “experiment of pure reason”²⁵.

²³ Imm. Kant, *Prolegomena* [4 : 327].

²⁴ *Ibidem*, [4 : 280].

²⁵ Related to this topic, I recall here two recent works, in which the authors, although they addressed the issue of the “experiment” of the B edition, considered its connection with Bacon’s „illuminating experi-

The importance of the “results” can be observed in the B Introduction, where Kant proposed a different definition for the transcendental knowledge compared to the one in the A edition of the *Critique*. Here also appears what I mentioned earlier, in the sense that the definition of the transcendental philosophy in B is now related to “the idea of a special science that can be called the *Critique of pure reason*”. In fact, it is about the very understanding of the B *Critique* as science: not in the sense that it is a *proper* science, but in the sense of thinking the *idea* of philosophy (of the *Critique*) as a science.

As T. Pinder observed, Kant fundamentally reformulated the definition of the transcendental knowledge in the B edition. The idea that my study accounts for here may be related to the “results” of the *Prolegomena* in two ways: one is, so to speak, “nominal” in the sense that we follow “Kant’s instructions” when he states in the beginning of paragraph VII of the B Introduction that “from all of this” results the idea of a special science that can be called the “critique of pure reason”. The reference is especially to the passages from V and VI of the Introduction, where one can detect the presence of the “results” of the *Prolegomena* here, in *Critique*. This is achieved by taking over the distinction between *analytic* and *synthetic* judgements and other topics into a mixture of A *Critique*, *Prolegomena* and the perspective of the B *Critique* (passages from I – IV), as well as the questions of the general problem of the *Prolegomena* and the achievement obtained therein in the form of the questions of “the general problem of the [*Critique* of] pure reason”: how are synthetic judgments *a priori* possible? how is pure mathematics possible? how is natural science possible? how is metaphysics as a natural disposition possible? (passages from fragments V and VI of the Introduction).

This strongly suggests that the new definition of the transcendental philosophy (or transcendental knowledge), which is the subject of the “critique of pure reason” in the VII paragraph, is related to the presence of the “results” of the *Prolegomena* (especially) in the V and VI fragments and to the idea of metaphysics as science.

This, I think, is true not only because deductively this is how things seem to be, but especially with respect to the content: the change is due to the fact that, according to the results in the *Prolegomena*, in the B *Critique* Kant no longer defines the transcendental knowledge as dealing with *concepts* about objects (*synthetic* obtained exclusively *a priori* as in A *Critique*²⁶) but with our very *way of knowing*, as it is possible *a priori*. The connection with paragraph V and VI and with the task of the *Prolegomena* is obvious here. The possibility of *a priori* synthetic knowledge was proven in relation to the possibility of *pure* mathematics and *pure* physics in the *Prolegomena* through the answer to the question: How is a synthetic *a priori* knowledge possible?;

ment”, respectively the comparison between Kant’s „experiment of pure reason” with the idea of “exploratory experiments”, as they were treated by J. H. Lambert in his *New Organon* (1764). In none of these approaches the proximity of Kant’s experiment from the B edition with the *Prolegomena* was discussed in the way that I propose here. For further lecture, see Brett Fulkerson-Smith, “On the placement, purpose and essential procedure of the *Experiment of Pure Reason* in the *Critique of Pure Reason*”, in *Society and Politics* Vol. 7, No. 1 (13)/April, 2013, pp. 62–83; and Alberto Vanzo, „Kant on Experiment”, in James Maclaurin (ed.), *Rationis Defensor*, Springer, 2012, pp. 75–96.

²⁶ See 4& of the *Prolegomena*.

and the answer is: through the pure a priori intuitions, the categories and the transcendental principles. Moreover, the necessity of the deductions in the *Prolegomena* is now clear, because only by reaching here *the same* “results” (the pure a priori forms of intuition, the categories and the transcendental principles) as in the *A Critique*, it may be said in B that our way of knowing is possible *a priori*, i.e. only after it has been demonstrated in the *Prolegomena* that the only certain knowledge of pure mathematics and pure physics is possible a priori thanks to *our way* (*pure a priori* intuitions, categories and transcendental principles) of knowing because it is *a priori*.

Taking over the results of the *Prolegomena* in the *B Critique* has relevance for the “experiment of pure reason” itself “as „experimental step” to the extent that its hypothesis (that we refer to *phenomena*, not to *things in themselves*) was demonstrated. Based on what I showed above, I will argue here that the results of the *Prolegomena* are valid insofar as they were taken as the “experimental part” of the “Experiment of pure reason” in the sense that this part proves the presence of the same a priori concepts and structures that make possible both pure mathematics and pure physics as well as any relation to the object in a possible experience *in general*.

In order to set forth the “experiment of pure reason”, in the *B Critique* Kant refers to the revolution in the way of thinking within mathematics and physics. His well-known references from the B “Preface” will help us to easily draw the shape of his “experiment”. For this task I will take as a guide this claim: “Whether or not the elaboration of knowledge belonging to the activity of reason follows the sure path of science can be judged immediately *by the result*.”²⁷

The results show that traditional metaphysics does not follow this path, unlike the *pure sciences*; instead the *Prolegomena* shows us the way: metaphysics may become science if it seeks to imitate, but at a transcendental *a priori* level, “the changed way of thinking” (the perspective of the hypothesis) that occurred in these sciences and their way of obtaining synthetic *a priori* knowledge. The path to be followed is that of mathematics and physics (the shape of the experiment within the modern science), that had benefited from a kind of „sudden revolution in the way of thinking”.

Kant states that initially, especially in the ancient Egypt, mathematics was used for practical purposes, so it groped for a long time, and it needed a change that should be attributed „to a revolution, brought about by the happy inspiration of a single man”:

„...the first person who demonstrated the isosceles triangle (whether he was called “Thales” or had some other name) had a revelation. For he found that what he had to do was not to trace what he saw in this figure, or even trace its mere concept, and read off, as it were, from the properties of the figure; but rather that he had to produce the latter from what he himself thought into the object and presented (through construction) according to a priori concepts, and that in order to know something securely a priori he had to ascribe to the thing nothing except what followed necessarily from what he himself had put into it in accordance with its concept.”²⁸

²⁷ Imm. Kant, *Critique*, (B, VII).

²⁸ *Ibidem*, (XII).

For it has an empirical component, opened to experience, it was much harder for physics to find the great path of science: unlike the inductive method based on observation of the early science, Kant praises those who took this new path of physics with special reference to Copernicus and Galileo. Accordingly, the “sudden revolution” in sciences would have been based on a modified hypothesis about the relation to the object: in physics Copernicus would not have allowed the planets to revolve around the earth because this road was clogged; he thought it was the other way around: the earth rotates and revolves around the sun. This modified hypothesis would have been successful because it meant what we have said above, namely that the control of both theory and experiment is possible if we assume that the structure that conditions it is synthetic *a priori* (due to mathematics, in this case). Or, as Kant states in the B “Preface”, as a changed method in the way of thinking, “we know *a priori* about things only what we ourselves put into them”. The changed way of thinking in physics is in debt to mathematical modelling in the frame of the new experimental method.

In both mathematics and physics, the sudden change in the way of thinking states that, in order to certainly know something *a priori*, we must assign to the thing only what necessarily results from what we have put into it in accordance with our *a priori* concept thought and represented (through *construction*) in the object.

The confirmation of the possibility of the scientific character of metaphysics through the “results” of the *Prolegomena* justifies the need to establish a new, authentic science, in order to solve the central problem of the possibility of knowledge through *pure* reason. In other words, only as science can metaphysics solve its fundamental problem; and the “lesson” of the *Prolegomena* is that metaphysics must follow the „sudden” revolution in the way of thinking in sciences and their methodological model synthesized by „the modern experimental method”, as Kant described it in the B “Preface”.

Kant said that the change in the way of thinking in metaphysics, which has previously been a mere fumble, must follow and imitate what happens in sciences. Following the model of sciences, Kant set forth his own experiment in metaphysics based on a modified hypothesis: intuition does not follow the properties of objects, but they are oriented in accordance with the *pure a priori intuition* and the *categories*. Kant’s “experiment” is analogous to the experiment of modern science, but instead of objects, it is setup with the *pure* reason itself, an experiment that incorporates, as experimental part, the *analytical* method and the “results” of the *Prolegomena*. In order to ease the understanding of my point here, I will quote two famous fragments of the B “Preface”:

This method, borrowed from the physicists consists in this: to seek the elements of pure reason in that which admits of being confirmed or refuted through an experiment. Now the propositions of pure reason, especially when they venture beyond all boundaries of possible experience, admit of no test by experiment with their objects (as in natural science): thus to experiment will be feasible only with concepts and principles that we assume *a priori* by arranging the latter so that the same objects can be considered from two different sides, on the one side as objects of the senses and the understanding for experience, and on the other side as objects that

are merely thought at most for isolated reason striving beyond the bounds of experience. **If we now find that there is agreement with the principle of pure reason when things are considered from this twofold standpoint, but that an unavoidable conflict of reason with itself arises with a single standpoint, then the experiment decides for the correctness of that distinction.** [BXIX]

This experiment of pure reason has much in common with what the chemists sometimes call the experiment of reduction, or more generally the synthetic procedure. The analysis of the metaphysician separated pure a priori knowledge into two very heterogeneous elements, namely those of the things as appearances and the things in themselves. The dialectic once again combines them, in unison with the necessary rational idea of the unconditioned, and finds that the unison will never come about except through that distinction, which is therefore the true one. [BXIX]

In the notes from [B XXXVII-B XXXVIII (1226)] and [B XX-BXXI (1406)] of the “Preface”, Kant likens the (transcendental) “method” (in the first note) and “the experiment of pure reason” (in the second note) with the method borrowed from physicists, respectively with the experiment of chemists. In both cases it is about the same hypothesis synthesized above that must be resolved, either by acceptance or by rejection with the help of this “experiment”. In the first sentence of the first mentioned note (“this method borrowed from physicists consists in looking for the elements of pure reason in what can be confirmed or rejected with the help of an experiment”) the entire core of the project of the *Critique* is concentrated as an “experiment of pure reason”, where the possibility of knowing synthetically and at the same time a priori is proven by researching the competence of reason itself to relate to object, decomposing it into the transcendental a priori and determinative elements (the pure forms of sensibility and intellect, respectively the categories, on the one hand, and the ideas of reason, on the other). Criticism itself is thus instituted as an “experiment” where the analysis is focused on the propositions of pure reason especially when they venture beyond all boundaries of possible experience and admit no test by experiment with their objects (as it is the case in natural science); so the analysis will focus only on concepts and principles that we assume a priori by arranging the latter so that the same objects can be considered from two different perspectives, as objects of the senses and of understanding for experience, and as objects that are merely thought by isolated reason striving beyond the bounds of experience. The “object” of this experiment will therefore not be the type of object of the (empirical) physics, but primarily the “reason” itself in its fundamental elements, the concepts and principles admitted as a priori (the a priori forms of sensibility and of the intellect and the ideas of pure reason). Therefore, it must be noticed here also a difference of level, in the sense that the “original” object of research in the *Critique* is not given in intuition, is not even actual a priori elements, but first of all pure reason itself.

Regarding the method that Kant borrowed from the chemists, here is the proper place to add some important historic clarification. Following S. Neiman and R. Westfall in I. Pârnu²⁹, the process of the chemists has a special philosophical significance if we

²⁹ Cf. I. Pârnu, *Posibilitatea experienței. O reconstrucție teoretică a Criticii rațiunii pure*, pp. 328–330.

consider that “the chemical analysis in Kant’s time was rather *rational* than *real*: through his analysis the chemist aimed to reveal the composition of the compound bodies and not to isolate their elements as concrete substances to act upon”³⁰. Referring to Westfall’s studies in this respect, Pârnu adds that chemists wanted to detect the invisible mechanisms that would generate the order of phenomena, to formulate them with the help of “elements” understood rather metaphysically (metaphysical constituents) as principles of the internal composition of compound bodies, and not to isolate simple substances to act upon them.³¹

The complex methods and procedures that Kant used in the three works presuppose the mathematical meaning of analysis in Newton. Here is a helping fragment from *Metaphysische Anfangsgründe der Naturwissenschaft (MANW)*³² where Kant refers to the method under which he developed the system of the transcendental philosophy of the *Critique*:

And so a separated metaphysics of corporeal nature [*MANW*, my note] does excellent and indispensable service for general metaphysics, in that the former furnishes examples (instances *in concreto*) in which to realize the concepts and propositions of the latter (properly speaking, transcendental philosophy [my emphasize]), that is, to give a mere form of thought sense and meaning.

In this treatise [of *general metaphysics* or *transcendental philosophy*, my note], although I have not followed the mathematical method with thoroughgoing rigor (which would have required more time than I had to spend thereon), I gave nonetheless imitated that method – not in order to obtain a better reception for the treatise, through an ostentatious display of exactitude, but rather because I believe that such a system would certainly be capable of this rigor, and also that such perfection could certainly be reached in time by a more adept hand [...].

In Newton, the method of analysis appears as an experimental method, where the emphasis is on construction; starting with the *A Critique* Kant uses this meaning of analysis, and not that of the logical one. In Pârnu’s interpretation, that we also endorse, the *Prolegomena* is constituted as an alternative construction of the *Critique*; we add here that the analytical method appears at the fundamental level of Kant’s transcendental construction (the level of the conditions of possibility of any reference to objects in general) *in a certain way*. This level is different from the logic level and also from the meta-theoretical level. As Pârnu argues, the procedure that Kant uses to obtain the structure and the fundamental elements of the theory at this level is that of “rational generalization”³³ – a mathematical procedure.

³⁰ S. Neiman, *The Unity of Reason. Rereading Kant*, New York, p. 48, Oxford, Oxford University Press, cited in I. Pârnu, *Posibilitatea...*, p. 329.

³¹ R. Westfall, *The Construction of Modern Science*, Cambridge, Cambridge University Press, 1977 (chapter IV), cf. I. Pârnu, *Posibilitatea...*, p. 328.

³² Next fragments are from Imm. Kant, *Metaphysical Foundation of Natural Science*, translated and edited by Michael Friedman, Cambridge, Cambridge University Press, 2004. The well known reference is from the „Preface” (478), pp. 13–14.

³³ The rational generalization of this methodological procedure led Kant to the idea of ensuring the objectivity of pure concepts by the constructibility of their objects in pure intuition or possible experience. The

Consequently, it is not the Newtonian physics that Kant has in mind in the *Prolegomena*, nor in the *MANW*³⁴, because, as M. Flonta claims, “The object of pure physics is the laws of nature in general, that Kant calls universal laws. They derive from the a priori conditions that make the experience possible. On the contrary, the laws of proper physics, the laws of the Newtonian physics, are laws of a determined nature that cannot be known independently of experience and are contingent.”³⁵ This is also the reason why in my text I emphasize the fundamental level of theorizing the transcendental theory by capitalizing pure and a priori terms.

The experimental part of the experiment provides the test for verifying or rejecting the hypothesis that things are viewed from a double point of view (as phenomena for knowledge, respectively as things in themselves that can only be thought), i.e. the consistency of this hypothesis is tested with the principle of pure reason; but if they are looked at from one point of view [that we refer only to things in themselves, not to phenomena], there is an inevitable contradiction of pure reason with itself, and then the experiment decides in favour of the accuracy of that distinction (between phenomena and thing in itself). Kant explicitly states that, “from this deduction of our faculty of knowing a priori it follows... that we can never go beyond the limits of possible experience with it”; but this is proved by the fact that the “results” of the *Prolegomena* point only to pure a priori intuitions and categories as the conditions of possibility of referring to the object in a possible experience.

The nature of the experiment presupposes a methodological frame that attempts to transform the accepted procedure of metaphysics, undertaking an entire revolution based on the example of the geometers and the natural scientists. Kant claims that “it is a treatise on the method, not a system of the science itself; but it catalogues the entire outline of the science of metaphysics, both in respect of its boundaries and in respect of its entire internal structure”. In order to achieve that standard, to be truly a science, I sustain that the *synthetic* part under the synthetic method “from the principles” (originated in the *A Critique*) must be completed with the *analytical* part (and method) that starts from the exemplary results of the pure sciences and go up to their conditions of possibility, that are subsequently rationally generalized in a determinative structure of

analytical method of the *Prolegomena*, as an alternative formulation of the theory, is itself an elevation to another level (a transcendental design) of this analytical-constructive procedure. In this way, the transcendental “ascension”, not meta-theoretical nor logic, makes the fundamental model of the possibility of a priori knowledge the model of the competence of reason: from the research of the conditions of possibility synthetic a priori propositions it determines the possibility of synthetic a priori judgments, as fundamental functions of the capacity of reason itself (my translation), in I. Pärvu, *Posibilitatea...*, p. 284.

³⁴ Cf. Imm. Kant, *Metaphysical foundation of natural science*: „I have considered it necessary [to isolate] the former from the pure part of natural science (*physica generalis*), where metaphysical and mathematical constructions customarily run together, and to present them, together with principles of the construction of these concepts (and thus principles of the possibility of a mathematical doctrine of nature itself), in a system.” [473], p. 9. We have concentrated here the scheme of *MANW*'s theoretical construction.

³⁵ Cf. Mircea Flonta's introduction, „Introducere”, *Prolegomene...*, translated from German (in collaboration with Thomas Kleininger) and edited with Introduction, note 4, p. 199 (my translation from Romanian to English).

experience *in general* (in the B *Critique*). An important note here is the fact that for Kant, this experiment is not “identical” to that of the actual sciences: it is an experiment that takes place at the fundamental/structural level of the conditions of possibility *in general*, established independently of experience.

In the second edition of the *Critique*, after the “novelty” of the *Prolegomena*, the emphasis on sciences replaces the stress on the “reform of metaphysics” (from A *Critique*) with a stress on metaphysics as science (in B *Critique*); as it reached maturity, this metaphysics as science is the *idea* of a science of pure reason that judges a priori – the *Critique of pure reason* B. Thus, this was the reason why the deduction of pure mathematics and pure physics was needed in the *Prolegomena* separately, but, as we have seen, not for these sciences themselves but for metaphysics, whose results were taken up as the analytic-transcendental vein of the experiment in the B edition.

We have seen that a priori synthetic knowledge generally assumes a common root indicated in the *Prolegomena* and demonstrated in the B *Critique* by taking the results of the *Prolegomena* as a necessary step within “the experiment” in B. This construction guarantees the validity of both approaches in B and the hypothesis of this experiment: that we refer not to things in themselves but to *phenomena*. It was therefore necessary to determine the possibility of pure sciences, not for themselves but to reach the same pure a priori categories and forms (the intuitions of space and time).

The metaphysics entering the secure path of science (with A *Critique*) and its transforming into science require its reform by submitting it to the “exam of the *Critique*”, where its metamorphosis into a science that studies the possibilities and limits of pure reason happens. This new science (“never tried”) is none other than what the second edition of the *Critique* represents: the fundamental theory of the possibility of relating to objects in a knowledge as it is possible a priori; inspired by pure sciences, Kant launched this peculiar idea: the idea of philosophy/metaphysics as a science. There is a fundamental, a structural science that, on the one hand, attempts a global answer for the insoluble problems of traditional metaphysics and, on the other hand, at the same time, through the same answer, explains and traces the possibility of a priori synthetic knowledge in general, of the knowledge of pure sciences and experience.