

ON THE UNAVOIDABLE TASKS OF PURE REASON

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Abstract: This paper outlines a heuristic approach to Kant's philosophy as a whole, attributing to him the special brand of rationalism that began with Descartes's and Leibniz's theories of human problem-solving, and which lives on, for instance, in Carnap's theory of the logical construction of the world. The paper begins with a reconstruction of Kant's account of pure reason as a general device inherent to human nature, which carries with it unavoidable tasks brought about by inborn *a priori* principles leading to unavoidable or necessary problems. The paper then presents the necessary problems of pure reason according to their classification, hierarchy, mode of generation, their division into solvable or unsolvable, and the solution methods they require. Some additional comments are offered on the claim that the human problem-solving capacity should be cultivated as a duty of virtue. The paper also comments on the fact that over time Kant expanded his list of problems, and most likely did not think that he had exhausted the matter. Finally, Kant's solutions to the necessary problems of pure reason are reviewed, and it is shown that his system of pure reason, which comprises various *a priori* doctrines developed successively, can be seen as the totality of those solutions organized and unified according to the order of the problems which itself was constituted as the critical work progressed.

Key-words: Kant; Pure Reason; Unavoidable Problems; Problem-solving Methods; Kant's System.

THE PROBLEM-SOLVING APPROACH TO KANT

To begin with, I would like to say a few words on the problem-solving or heuristic approach both to human knowledge in general and to Kant in particular. According to that approach, human thinking is viewed as being essentially a problem solving activity, rather than a contemplative activity. In this sense, the goal of human thinking is that of answering questions of various kinds so as to come to terms with different interests human beings may have regarding the natural world and human action.¹ Contemplation, on the other hand, aims at representing the world in images that are triggered by amazement and aim at truth, that is, at re-presenting correctly the external world in internal mental states.

In Antiquity, Greek philosophy was mostly of the contemplative or representative kind, whereas Greek science was more inclined towards problem-solving. Examples of the latter are the geometric algebra of Euclid's *Elements* and Diophantus's *Arithmetica*. In the Middle Ages, with God being thought as the omnipotent creator, benevolent ruler, and just judge of the world, the contemplative attitude prevailed and was put forth especially by mystical thinkers like Meister Eckhart. In modern times, world affairs having been taken over by man conceived as a free agent,

¹ This point was very clearly made by Kant in different versions of his anthropology. See, for instance, Ak 25.1: 469–472. [References to Kant's works are given by volume and page of the *Akademie* edition, except for the *Critique of Pure Reason*, for which the standard A and B edition pagination was used; English translations are from the Cambridge edition.]

the thinking oriented towards problem-solving gained the upper hand, especially in the writings of Bacon, Descartes, and Leibniz. Bacon recommended inductive methods. Cartesian *Regulae* purport to guide the mind in solving all kinds of problems about quantity and order. Leibniz's ideal of "*Calculemos*", replacing traditional scientific and philosophical disputes, has become iconic of modernity.²

Kant fits well into this picture.³ Before showing how that is so, I would like to tell how that fact came to my attention and how I came to interpret Kant as a theorist of human problem-solving.⁴ Since the breakdown of logical positivism some four decades ago, contemporary epistemology went into a foundation crisis from which it still has not recovered. Having come to the conclusion that logical positivism reached a dead-end, I wished to find out how it came to be. I noticed that human problem-solving was an issue on which traditional rationalism and positivism met. To my great surprise, I found out that the early Carnapian positivism was not exclusively, nor even primarily, a theory of science from the axiomatic point of view, but rather a theory of science from the heuristic point of view. In the 1920's Carnap viewed science not as an image of the world but as a system of conceptual knowledge which has no boundaries, meaning that there is no yes-or-no question whose answer is in principle unanswerable by science (CARNAP, 1928, p. 290). In other words, Carnap's basic tenet for science was that "the truth or falsity of each statement which is formed from scientific concepts can in principle be ascertained" (p. 292). It was therefore no surprise for me that Carnap's famous criterion of cognitive significance were actually a set of decision procedures for sentences about the phenomenal world.⁵ Indeed, Carnap himself presented his project as a realization of Leibniz's *mathesis universalis* (p. 8).

Carnap clearly distinguished between those scientific concepts that can be constructed in his constitutional system and that are, accordingly, decidable (*entscheidungsdefinit*) and those that cannot. The former are introduced by constitution procedures based on empirical data, championed by Carnap, while the latter are introduced by means of implicit definitions which have the form of an axiom system and differ from constituted concepts by not being decidable and therefore giving rise to propositions which in general do not obey the law of the excluded middle.⁶

² As a matter of fact, Leibniz reclaimed for modern western thought a procedure already advocated by Pythagoras, which was not too valued in slave-based economies, and which came into partial oblivion under the combined influence of metaphysics and religion.

³ Kant said that the *Critique of Pure Reason* was intended to be the true for Leibniz (see 1790, Ak 8: 250).

⁴ For more details, see Loparic 2005, Introduction.

⁵ This result is presented in Loparic 1984. Carnap's project (i.e. logical positivism in general) of the scientific decision making for theoretical as well for practical purposes is iconic for the first decades of the last century.

⁶ I was also clued towards studying Kant by Hilbert's work. In the same year Carnap's *Aufbau* was published (1928) Hilbert wrote that the decision problem for first order predicate calculus was the main problem of mathematical logic. I could not help being impressed by the implicit similarity between the problem-solving virtues aspired by Hilbert in his formal systems and the heuristic effectiveness that Carnap expected of his constitutional system. Furthermore, Hilbert repeatedly pointed back to Kant's theory of pure intuition as the framework for understanding his own views on the nature of formal symbols. I was thus led to the conclusion that I should consult Kant's work if I wanted to be clear on one of the most interesting episodes of the history of contemporary problem-solving theories, in which Hilbert and Carnap were the main characters.

While studying Carnap, I eventually went back to early positivism, particularly Mach's. I very soon found out that Mach's "psychology and logic of research", as it is presented for instance in *Prinzipien der Wärmelehre* and *Erkenntnis und Irrtum*, was nothing other than a theory of scientific problem-solving. I also came to an unexpected conclusion about Mach's concept of the structure of scientific theories which made me reject one of the most common views in the contemporary historiography of Mach's positivism. It is often assumed that, being an ontological reductionist, that is, having reduced physical things to classes of sensations, Mach was also a methodological reductionist, by which it is meant that his methodology purported to reduce all scientific terms to terms referring to (classes of) sensations, and all scientific propositions to propositions about such referents. Although Mach was a monist, he did not defend his stance as a positive philosophical thesis about the world, but rather as a principle which may prevent scientists from asking unsolvable questions. Furthermore, he did not propose that theoretical concepts and propositions (including the ones from mathematics) be eliminated from science. On the contrary, he insisted quite strongly on the importance of bold and even objectively implausible thought-constructs. Mach also steered me back to Kant. Mach saw in Kant's theory of science an early and inadequate version of a psychology and of a logic of research, i.e. of a scientific research program, something which he himself wanted to create.

Very close to Mach is the well known Neo-Kantian philosopher Hans Vaihinger, founder of the journal *Kant-Studien* (1895). He argued that the human thinking is an organic function of fictional nature (1927 [1911], p. 12). The outcomes of human thinking are fictions, consciously false representations that are used not to duplicate the real world but as instruments for computing sense data in such a way as to enable us to execute the impulses of our will in agreement with our biological goals (p. 5). Examples of such auxiliary constructs are the Kantian forms of intuition and understanding, as well as all kinds of concepts and other logical formations in general (p. 3).

Having given up the task of mirroring objective reality in consciousness and, accordingly, having renounced to the very idea of truth, Vaihinger also reduces all being and becoming to sense data as the ultimate things given to us. He thus puts forth a concept of knowledge free not only from any metaphysical commitments related to the supersensible but also from the ontological question about being. The only aim of positive knowledge is to produce artifacts, auxiliary constructions, useful fictions, instrumental in calculating sense data so that we can perform and control our actions in a rational way; the logical form of these fictions are *as if* rules.

Still according to Vaihinger, elements of this *as if* philosophy are very much present in the history of western thinking and in particular in Kant. Kant does not write as a metaphysician or an ontologist either in logic, physics, or ethics (p. 613). For the "radical Kant" reconstructed by Vaihinger, thinking means problem-solving, not representing things as they are. Thus, for instance,

space, time, and in particular the categories are special kinds of auxiliary representations which are employed by the mind while systematically working over the sensory material; even if only subjectively and therefore not objectively true, these representations are necessary for coming to terms with the given (p. 619).

The ideas of pure theoretical reason are also fictional constructs, more precisely heuristic fictions that have no reality except heuristic and practical (p. 628). The ideas of practical reason and the propositions in which they occur have the same fictional status. In support of his interpretation, Vaihinger quotes various passages, including one in which Kant says that the proposition “there is a God” does not express a belief in the existence of a substance, but only an axiom of practical reason by which it imposes itself as a principle of human actions (p. 727).⁷

Among more recent developments of this general idea, one finds Popper’s game of conjectures and refutations, which excludes metaphysics because it puts forth non-refutable propositions, and Kuhn’s description of science as a puzzle-solving activity, which admits metaphysics only as an auxiliary device. Among Kant scholars, Nicolas Rescher has been the one who perhaps most forcefully interpreted the first *Critique* as a theory of scientific and philosophical problem-solving (see Rescher 1981).

Additionally, there are several other lines of research which follow the same track. The results of the logical theory of computability and solubility come to mind here, as well as the insights coming from cognitive psychology and studies in artificial intelligence. Contemporary linguistics also provides a germane line of reflection on our higher cognitive processes in general.

Despite all these developments, some noteworthy philosophers have taken on reactive or even regressive stances. For example, there is Husserl’s return to things themselves, and Heidegger’s insistence on the central role of the ontological problem about being as being. (I will come back to this point later on.) Interestingly enough, Heidegger’s thinking about Being remains essentially a questioning not of the scientific kind aiming at determinate yes or no answers or at answers that are as precise as possible, but at a never ending search which Heidegger calls the “piety of thought” and which admits no determinate answer at all.

THE UNAVOIDABLE PROBLEMS OF PURE REASON

I maintain that Kant’s project of a critique of pure reason stems, as mentioned above, from his concerns about the capacity of human reason to solve its own problems. This is how the opening page of the first edition of the *Critique* begins:

Human reason has the peculiar fate in one species of its cognition that it is burdened with questions which it cannot dismiss, since they are given to it as problems by the nature of reason itself, but which it also cannot answer, since they transcend every capacity of human reason. (A vii)

There are very few commentators that have paid due attention to this sentence. One of them is Vaihinger. In his *Commentar zu Kants Kritik der reinen Vernunft* he writes:

⁷ For a more detailed statement of Vaihinger’s views, see Loparic 2008.

This beginning is *highly noteworthy* regarding the question about the so called central aim of the *Critique of Pure Reason*, because here Kant put at the *forefront* in a very pronounced way those problems that are the object of the *Dialectic*, especially of the *antinomies*. (1881, p. 82)

Vaihinger is certainly correct in drawing attention to the antinomies as problems prescribed by the nature of reason itself, but which cannot be solved dogmatically.⁸ However, since the context leaves no doubt that metaphysics is the “species” of knowledge whose fate is to fall into the perplexity, it seems that Kant is inviting us to consider not just the special metaphysical problems which give rise to the antinomies, but metaphysical problems in general. Identification and complete enumeration of the problems of pure reason is indeed one of the major tasks of the critique (B xxiii).

Now, all metaphysical problems are about *supersensible objects*. Kant identifies *three* such *objects* that traditionally have captured both the speculative and practical interests of all rational human beings as well as of philosophical schools: God, freedom, and immortality. All of them lie outside the domain of possible experience (B 7). The ultimate aim towards which speculative reason *has been* directed concerns indeed proving or refuting just *three propositions* about those objects: There is a God, The will is free, The soul is immortal (B 826; see also B 395). In the problem of proving those three propositions resides the main practical interest of pure reason:

Thus the entire armament of reason, in the undertaking that one can call pure philosophy, is in fact directed only at the three problems that have been mentioned. These themselves, however, have in turn their more remote aim, namely, **what is to be done** if the will is free, if there is a God, and if there is a future world. Now since these concern our conduct in relation to the highest end, the ultimate aim of nature which provides for us wisely has indeed in the disposition of reason is properly directed only to what is moral. (B 828–829)

Therefore, both practical and theoretical reason lead us to the domain of the supersensible.

THE UNDECIDABILITY OF TRADITIONAL PROBLEMS OF PURE REASON AND THE TASK OF TRANSCENDENTAL PHILOSOPHY

As said, Kant noticed that pure reason, in trying to satisfy its own interests – that is, in trying either to prove or to refute the three propositions mentioned above and thus solve the three unavoidable problems prescribed to it by its very nature – precipitates itself into darkness and contradictions. Pure reason therefore needs to study its own *problem-solving capacity* and attempt to establish a basis for distinguishing between solvable and unsolvable problems.

This insight was further developed by Kant by noticing that the three propositions which convey unavoidable problems of pure reason are synthetic *a priori* judgments. Hence, finding out whether a problem of pure reason is solvable is to find out whether synthetic *a priori* judgments

⁸ For a detailed analysis, see Loparic 1990.

are possible. The problem is that of whether they can be determinately true or false and therefore decidable, that is, provable or refutable, at least in principle.

Kant saw in it an *entirely new* philosophical problem to be solved by an also completely new philosophical endeavor: transcendental philosophy. In the *Prolegomena*, he presents transcendental philosophy as “a completely new science, of which no one had previously formed merely the thought, of which even the bare idea was unknown, and for which nothing from all that has been provided before now could be used except the hint that *Hume’s* doubts had been able to give” (1783, Ak 4: 262). This new science has one and only one task, to answer the question: how are synthetic *a priori* propositions possible? (Ak 4: 276–277) The expected answer will allow for a distinction between the solvable and the unsolvable problems raised human reason, and thus avoid the predicaments of dogmatic reason. The task of transcendental philosophy thus creates for pure reason a new interest in something that is of a higher order than any of the traditional interests of metaphysics.

THE THEOREM OF THE DECIDABILITY OF THE THEORETICAL PROBLEMS OF PURE REASON

It follows from the above that Kant’s critique of pure reason must contain a theory of the solvability (decidability) of the necessary problems of pure reason.⁹ In the first *Critique*, Kant tackles only theoretical problems of pure reason. The main result of his criticism of the problem-solving capacity of *theoretical* reason is the thesis that it must be possible for reason to achieve

... certainty regarding either the knowledge or ignorance of objects, i.e., to come to a decision [*entscheiden*] either about the objects of its questions or about the capacity and incapacity of reason for judging something about them, thus either reliably to extend our pure reason or else to set determinate and secure limits for it. (B 22, my italics)

In other words, human reason must be able to decide with utmost certainty whether a theoretical problem of metaphysics is at all solvable, and if it is solvable, we should be able to find the solution. I call this thesis *Kant’s theorem of the decidability* of the theoretical problems of metaphysics.¹⁰ As a matter of fact, Kant applies this thesis to all theoretical problems, including non-philosophical and scientific problems.¹¹ We can therefore speak of Kant’s theorem of the decidability of theoretical problems in general, and of his generalized theorem of decidability.¹²

⁹ It is this theory allows Kant to announce an end to all undecidable disputes, and the establishment of “perpetual peace” in philosophy (see Kant 1796).

¹⁰ A more detailed discussion of this theorem can be found in Loparic 2005, chapter 1. See also Loparic 2001.

¹¹ Philosophical problems are brought about by the constitutive principles of reason itself. They are therefore necessary. Scientific problems result from occasional concerns, and are therefore optional. The latter fall into two groups: pure (belonging to mathematics and physics) and empirical.

¹² For the decision theorem in the *Prolegomena*, see Ak 4: 349–350.

Since traditional theoretical metaphysics does not raise the meta-problem of the solubility of theoretical problems – that is, since it remains *dogmatic* – it inevitably runs into insolvable problems. Kant’s new theoretical metaphysics, based on his theory of the problem-solving capacity of pure reason, has the distinctive feature of being able to show with certainty and security that either a problem is solvable or that it falls beyond the bounds of pure reason. A “no answer is an answer”, says Kant (B 507 footnote). Based on his theorem of decidability Kant proposes replacing the traditional metaphysics of nature, which gives undecidable answers to pseudo-problems, with a new set of metaphysical foundations of natural science, presented in a work published in 1786 under this same title, which contains rationally justifiable answers to solvable problems.

DECIDABILITY AND TRANSCENDENTAL THEORETICAL SEMANTICS

Which theoretical problems are solvable and which are not? Kant’s answer is very simple: “there is no question at all dealing with an *object* given by pure reason that is insoluble by this very same human reason” (B 505; my italics). Conversely, if “no object for the question is given”, then “the *question* itself is *nothing*” (B 506, footnote). This means that “a question about the constitution of this something, which cannot be thought through any determinate predicate because it is posited entirely outside the sphere of *objects that can be given to us*, is entirely nugatory and empty” (B 507, footnote; my italics). To say that a question is nugatory and empty is the same as saying that it uses indeterminate predicates, that is, concepts without contents within the domain (the “sphere”) of objects of possible experience. I recall here Kant’s famous dictum that “thoughts without content” – understood as being devoid of intuitive contents – “are empty”, and that it is “necessary to make the mind’s concept sensible (i.e., to add an object to them in intuition)” in order to make cognitive use of them in a judgment (B 75).¹³

Now we have reached a very important point. As in contemporary analytic philosophy, Kant’s semantic questions are *independent* of and *precede* those of epistemology. Obviously, a question formulated with thoughts without content is *unsolvable*. In other words, it does *not* admit an answer which uses determinate predicates and which is, for this reason, true or false in the sphere of possible experience. The solubility of theoretical problems can thus be essentially reduced to two more specific points: (1) Can concepts have content within the domain of objects which can be given to us? And (2) can the judgments given as answers to theoretical problems have their truth or falsity determined within that same domain?¹⁴

There is no doubt that these problems belong to Kant’s “transcendental logic”. Unlike formal logic – which “abstracts, as we have shown, from all content of cognition, i.e., from any relation of it to the object, and considers only the logical form in the relation of cognitions to one

¹³ As we can see, the thesis that concepts which are not “sensified” (*versinnlicht*) are empty is closely related to Kant’s conception of empty questions, a point rarely noted in the traditional reconstructions of his critical project.

¹⁴ For a more thorough analysis of Kant’s theory of problems, see Loparic 1988 and 2007.

another” (B 79) – transcendental logic is an *a priori* science concerned only with the laws of the understanding and of reason “insofar as they are related to objects *a priori*” (B 81). Transcendental logic indeed proceeds entirely *a priori*, without consulting experience. It uses the so-called “transcendental” knowledge by which we know “*that and how certain representations*”, including concepts, “are *applied* entirely *a priori*, or are *possible*” (B 80; my italics). For this reason, transcendental logic can be interpreted as an *a priori* theory of the meaning of concepts and of the truth of judgments within the domain of interpretation comprising natural phenomena accessible to intuition. In the contemporary jargon, it is an *a priori* or *transcendental semantics* of the constructivist type.¹⁵

It can be easily understood why transcendental logic comprises an “aesthetic”. Since a problem is solvable only if in its formulation we use only predicates that refer to objects that can be given to us, the theory of the “givenness” of objects of knowledge is an essential part of the theory of determinate predicates. For Kant, an object is “givable” [*dabile*] – and, in this sense, possible – if it can be experienced, that is, if it can be given in external or internal sensible intuition; contrary to what Descartes assumes, objects cannot be given to us in intellectual intuition. In the present interpretation, the theory that Kant calls “transcendental aesthetic” gives us the domain of interpretation of synthetic *a priori* theoretical judgments: the sphere of possible experience.¹⁶

In order to clarify this point, let me quote an important passage which sums up essential aspects of Kant’s requirements for concept formation:

For every concept there is requisite, first, the logical form of a concept (of thinking) in general, and then, second, the possibility of giving it an object to which it is to be related. Without this latter it has no sense [*Sinn*] and is entirely empty of content. (B 298)

Now, an object cannot be given to a concept but in empirical intuition. Though pure intuition can indeed precede the object *a priori*, even it “can acquire its object, thus its objective validity, only through empirical intuition, of which it is mere form” (B 298).

This procedure of “sensification” (*Versinnlichung*) – which starts with the construction of figures and magnitudes in pure intuitions and ends with an application of sensible concepts to empirical objects – was practiced by mathematicians as far back as ancient Greece.¹⁷ Kant adapted

¹⁵ An exhaustive study of Kant’s transcendental logic as an *a priori* theory of the reference of concepts and of the truth of judgments within the domain of possible experience can be found in Loparic 2005.

¹⁶ Therefore, this is neither a question of empirical psychology, nor of *a priori* psychology.

¹⁷ Kant’s theory of the determinability or possibility of predicates and judgments within this domain essentially follows the procedure by which both the reference and meaning of mathematical concepts and the truth or falsity of mathematical judgments are established. Kant writes: “One need only take as an example the concepts of mathematics, and first, indeed, in their pure intuitions. Space has three dimensions, between two points the can be only one straight line, etc. Although all these principles, and the representation of the object with which this science occupies itself, are generated in the mind completely *a priori*, they would still not signify anything at all if we could not always exhibit their significance in appearances (empirical objects). Hence it is also requisite for one **to make** an abstract concept **sensible** [*sinnlich*], i.e., to display the object that corresponds to it in intuition, since without this the concept would remain (as one says) without **sense** [*Sinn*], i.e., without significance” (B 298–299). Mathematicians traditionally meet this “requirement by means of the construction of the figure, which is an appearance to the senses (even though brought about *a priori*)” (B 299). In a sense, a construction is enough, since

it to produce, in the context of transcendental logic, an *a priori* theory of the reference and meaning of *a priori* theoretical concepts in general (philosophical, mathematical, and purely physical). For example, it is impossible to give a “real definition” of a category, that is, we cannot even define a single one of them “without immediately descending to conditions of sensibility” (B 300). If this condition is eliminated, “all significance, i.e., all relation to the object disappears, and one cannot grasp through an example what sort of thing is really intended by concepts of that sort” (B 300). In short, without rules for the application (*Anwendung*) of the categories to sensibility, it is impossible to show how “they could have any significance and objective validity” (A 242).¹⁸

The theory of the sensification of the categories, the central part of which is the transcendental schematism, is complemented by a theory of the truth of both philosophical and non-philosophical *a priori* theoretical judgments (the latter being those mathematical judgments and pure laws of natural science that Kant identified with Newtonian physics). This theory is likewise based on a sensification of those judgments. The central problem here is to determine the conditions under which the judgments that use determinate predicates are themselves *possible*, in the sense that their objective validity – their truth or falsity – can be determined within the domain of possible data. In contemporary terminology, the problem here is to find the truth conditions of theoretical *a priori* judgments within this domain. Therefore, according to the second edition of the first *Critique*, the “general task” (*allgemeine Aufgabe*) of transcendental philosophy is precisely the following: how are *a priori* theoretical judgments possible?¹⁹ With the progressive realization of the program of the critique of reason, the question concerning the possibility of metaphysics, pure mathematics, and pure natural science is no longer referred back to the theory of mental faculties or moods. It is reformulated in terms of a theory of judgments.

Kant’s solution to the general task of transcendental philosophy consists basically in saying that a judgment is possible if the discursive connection between the concepts stated in it can be suitably related to possible experience, that is, *sensified* in experience; in other words, if it can be presented (*dargestellt*) by means of a synthesis in intuition. Such a sensification is ensured either by examples or by *a posteriori* and *a priori* “constructions”. *A posteriori* constructions are experiments; *a priori* constructions are products of the transcendental imagination, that is, they are *a priori* schemata, either “constitutive” or merely “regulative” (heuristic). For example, in the case of categorical theoretical judgments (of the form *S* is *P*), sensification provides an *intermediary third element* which enables one to connect the concept of the subject to that of the predicate. In the case of categorical *a posteriori* judgments, this third element is *a posteriori*. But in categorical *a priori* judgments (philosophical, mathematical, and physical), besides being sensible and

mathematical concepts like that of magnitude, are *a priori* in origin and so are “the synthetic principles or formulas from such concepts” (B 299). However, mathematical constructions on their own do not ensure the empirical employment of mathematical concepts, nor their use or relation to physical bodies.

¹⁸ In the original: “*irgendeine Bedeutung und objektive Gültigkeit*”.

¹⁹ See B 73. I take it as obvious that demonstrating the possibility of a judgment (i.e., that it can be true or false within the domain of possible experience) is not the same as demonstrating that it is true or false. The former belongs to semantics (pure or empirical), the latter to epistemology.

theoretical (cognitive), the third element must be *a priori*. This is precisely what a transcendental schema of a category amounts to.

Kant complemented his transcendental semantics with a theory of the *a priori* methods for solving problems. His methodology consists of a proof theory to which he adds an *a priori* scientific research program that provides scientists with (i) procedures for setting up rational fictions that are useful in seeking and organizing empirical facts, and (ii) procedures for finding empirical explanations (explanatory hypotheses) for those facts. Kant's proof method is essentially the combined method of analysis and synthesis.²⁰ The characteristics of this research program change according to the nature of the problems at hand. Just like philosophical problems, problems of pure mathematics and pure physics can only be solved by *a priori* procedures, whereas empirical problems in the field of natural science can be solved by factual research.

HEIDEGGER ON KANT'S TRANSCENDENTAL PHILOSOPHY

As a dissonant but nonetheless very instructive counterpoint to this interpretation I'd like to mention Heidegger's views on Kant's critical project. According to Heidegger, the critique of pure reason "is nothing other than the groundwork of metaphysics as science" (1977 [1927/28], GA 25, p. 10), that is, as an ontic or factual science about a certain region of entities: the supersensible ones (p. 15). To be sure, Kant declared this science to be impossible. However, Kant was the first to understand that the task of grounding the science of the supersensible required the clarification of the concept of being in general, i.e., an ontology, and that, indeed, is the very essence of the philosophy. One Kantian name for ontology is "transcendental philosophy" (p. 58). Another term with the same meaning is "metaphysics", understood as referring not to the ontic science of the supersensible, but as a "*presentation of the whole of pure possible knowledge in a systematic connection*" (p. 62).

Kant noticed – and this was, according to Heidegger, his fundamental discovery – that metaphysics as science of objects in general (restricted, however, to those which belong to the domain of possible experience) states all items of its knowledge in synthetic *a priori* judgments (p. 51). This is how Kant was led to the question: how are synthetic *a priori* judgments possible? Precisely this question is the fundamental task of Kant's transcendental philosophy or ontology.²¹

I must say that I thoroughly disagree with Heidegger on this point. As I mentioned above, Kant presents transcendental philosophy as an entirely new philosophical discipline whose main task is to solve a completely new philosophical problem, that of the possibility of synthetic *a priori* judgments. This self-understanding would be completely misleading if we took transcendental philosophy and its problem to be a mere restatement of traditional metaphysics. Be that as it may, in the Section called "Phenomena and Noumena", which is in a strategic part of the first *Critique*,

²⁰ See Loparic 2005, especially chapter 2.

²¹ See, for instance, 1977 [1927/28], GA 25, p. 51; and 1951 [1929], p. 22.

Kant makes a very strong statement about the fate of ontology in his new system of thought, a statement that was never, to the best of my knowledge, commented on or quoted by Heidegger. The *Transcendental Analytic*, says Kant,

... has this important result: That the understanding (...) can never overstep the limits of sensibility, within which alone objects are given to us. Its principles are merely principles for the exposition of appearances, and the proud name of an ontology, which presumes to offer synthetic *a priori* cognitions of things in general in a systematic doctrine (e.g., the principle of causality) must give way to the modest one of a mere analytic of the pure understanding. (B 303)

Now, providing rules for the exposition of appearances – the sole aim of the *Transcendental Analytic* – is, of course, the same as establishing principles for framing theoretical discourse which is determinately true or false about appearances, not about beings as beings in general. Kant did not restate traditional general ontology; he took an entirely new stance in the history of philosophy: he conditioned the answer to any theoretical question to the solution of a previous problem, that of the conditions of possibility of theoretical discourse in general. By making this move, Kant steered philosophy into a *semantic turn*, which is entirely unprecedented and which, 150 years later, was yet to be duly appreciated even by thinkers of Heidegger's magnitude.²² Kant's transcendental philosophy as presented in the first *Critique* is neither a metaphysics (a science of the supersensible) nor an ontology (a theory of beings as beings), but an *a priori* semantics.²³

APPLICATION TO KANT'S THEORY OF THE PROBLEMS OF PURE THEORETICAL REASON

It's easy to see that in the light of Kant's *a priori* semantics of theoretical judgments, the three traditional problems of theoretical metaphysics are excluded from Kant's repertoire of problems of pure reason. At the end of the first *Critique*, Kant asks how great might the *true* speculative interest of reason be, in proving the three metaphysical propositions? Very small, indeed, since the critique of pure reason shows that "one would not be able to make any use of the discoveries that might be made which would prove its utility *in concreto*, i.e., in the investigation of nature" (B 826). There might be another interest: "to get beyond the nature" and to render theology, morals and religion "dependent solely on the faculty of speculative reason and on nothing else" (B 395 footnote). But this is, of course, a spurious interest, since the three propositions mentioned are metaphysical, transcendent and have no immanent use (B 827). In other words, these propositions are about supersensible objects, and transcendental semantics shows that no such proposition has a determinate truth value; hence they cannot be proved nor refuted directly.

²² See Loparic 2005.

²³ Heidegger's views on Kant's critical project are discussed at length in Loparic 2008.

This does not mean, however, that there are no pure reason problems in Kant's system of critical philosophy. I shall first deal with *theoretical* problems. In the theoretical part of Kant's transcendental philosophy, the place of the three traditional metaphysical problems about the supersensible is occupied by the three system-problems based on the ideas of reason. Let me first explain the nature of these problems.

Each human natural capacity is associated with an interest, that is, as Kant says in the second *Critique*, "a principle that contains the condition under which alone its exercise is promoted" (1788, Ak 5: 119). It is reason, as a general capacity of principles, which "determines the interest of all the powers of the mind but itself determines its own" (Ak 5: 120). Now the interests of pure reason are either speculative, logical, associated with our theoretical capacities, or practical, related to our capacity to act. The former are never unconditional, for they presuppose one's intentions in employing theoretical reason, but the latter are unconditional (Ak 5: 31). Indeed, "all interest is ultimately practical and even that of speculative reason is only conditional and is complete in practical use alone" (Ak 5: 121). Theoretical philosophical problems are thus optional in the following sense: we have to solve them if we want to be rational and act rationally. It is true that according to Kant we have the duty of cultivating our problem-solving capacity, and even a duty to philosophize. Yet these are duties in a broad sense, which is to say that exactly how far we must develop our rational capacities is something that cannot be specified beforehand. Now, of course, if we push to the extreme our will to use reason, we shall inevitably be confronted by the three major system-problems, represented, as I shall explain below, by the three main ideas of pure reason and accompanied by appropriate methods.

That said, what is the principle dictating the speculative interests of pure reason? It is the logical principle that sets us as a task that, if the conditioned is given, a regress in the series of all its conditions is to be performed. This is a *logical postulate* of reason, which directly results from the analysis of the very concept of something given, that through the understanding we follow up and extend as far as possible the connection with its conditions (B 526). What is actually demanded by the logical postulate of pure reason is *that we try to maximally extend* of our true propositional knowledge of appearances.

There are only three basic logical relations with respect to which we can try maximally to amplify our objective knowledge, namely: subject-predicate, antecedent-consequent, and part-aggregate relations (B 379). There are accordingly only three basic mutually irreducible *a priori* necessary problems pertaining to the maximal extension of our empirical knowledge – the first concerning all predicates of a given subject, the second concerns all antecedents of a given consequent, and the third concerns all members of a given aggregate (B 379). General conceptual representations of such maximal extensions of our synthetic objective knowledge are called "ideas" or "transcendental concepts of reason": "the transcendental concept of reason is none other than the **totality of conditions** to a given conditioned thing" (B 379).

The manifold role of ideas as *sources of open classes of empirical problems*, representations of unconditioned entities and heuristic guidelines comes out clearly in the following passage:

Hence the pure rational concepts of the totality in a synthesis of conditions are necessary at least as problems of *extending* the unity of understanding, if possible, *to the conditioned*, and they are grounded in the nature of human reason, even if these transcendental concepts lack a suitable use *in concreto* and have no other utility than *to point* the understanding in the right direction so that it may be *thoroughly consistent* with itself when it extends itself to its uttermost extremes. (B 380, italics added).

There are thus as many necessary system-problems as there are ideas in Kant's philosophy. An example may be helpful here. Consider the idea of absolute completeness at the origin of any given appearance, that is, the idea of the absolute totality of its causes. This idea leads necessarily, says Kant, to the task of *finding* a maximum series of the empirical conditions for the existence of any given experience. Yet, since it can be proven that "no maximum in the series of conditions in a world of sense, as a thing in itself, is given" (B 536), the idea actually does nothing more than set *as a task* the constitution of an indefinite empirical sequence of conditions by the amplifying (synthetic) operation which we might call *continued empirical regress* (see B 527, 537). Hence, the cosmological principle of a totality of conditions corresponding to this idea also maintains its validity:

... not indeed as an **axiom** for thinking the totality in the object as real, but as a **problem** for the understanding, thus for the subject in initiating and continuing, in accordance with the completeness of the idea, the regress in the series of conditions for a given conditioned. For in sensibility, i.e., in space and time, every condition to which we can attain in the exposition of given appearances is in turn conditioned. (B 536)

Now the concept of a series of all conditions, that is, of the absolute totality of conditions of something given is an idea that is not applicable to any object that can be given in the domain of possible experience. This is a particularly important property of the problems of pure reason: they are not solvable in the domain of possible experience by means of objective decision procedures. If we do not acknowledge this fact we fall into perplexities. In the case of the cosmological ideas of reason, we fall into antinomies (B 701).

Thus, the *objective* undecidability, and therefore unsolvability, of the problems of pure reason should not be taken to imply that they can be disregarded, but only that they must be correctly handled. Even if an idea does not rule out a solution to any particular empirical problem of the series of problems which it brings about, it does impose on us the task of continuing indefinitely trying to solve the problems which belong to that series. System-problems created by ideas are therefore not necessary in the sense that we must find out the values of some particular objective unknowns, but in the sense that without violating our own rationality we cannot be satisfied with any set of empirical solutions to those problems. Thus, the remarkable result is that

our reason, insofar as it is the source of ideas, originates a complete *program of open-ended empirical research*. In other words, the critique of pure reason turned metaphysics into *methodology*.²⁴ The basic rules of Kant's methodology are, as was shown by Vaihinger, *as if rules* for constructing systems of empirical judgments.

Eliminated from speculative philosophy and replaced with other problems, the three traditional problems of pure reason must nevertheless to be taken into account, but only as problems of pure practical reason.

ELEMENTS OF KANT'S THEORY OF THE PROBLEMS OF PURE PRACTICAL REASON

As said above, according to the first *Critique*, practical interests lead us unavoidably to the supersensible (B xxv, B 831).²⁵ However, Kant is not very specific there about the source of the practical interest in pure reason. That lack of precision is corrected in the *Groundwork* and the second *Critique*. Moral law imposes an unconditional rule, which prescribes how we have to act, and which is not optional. All our practical interests originate from the basic rule of moral functioning, that is, from the moral law. "All so-called moral interest consists simply in respect for the law" (1785, Ak 4: 402). The unconditioned sought for is not an object or an absolute totality of objects, but the absolute submission to the law, unconditional obedience.

Now, any action in respect to moral law has as its necessary goal the realization of the highest good. Therefore, the objective reality, that is, the performability (*Ausführbarkeit*) of this goal must be presupposed. To that end, it is necessary to introduce as *practical postulates* the freedom of the will, the existence of God, and the immortality of the soul (see 1788, Ak 5: 511 footnote). More precisely: the presupposition of the objective practical reality of the highest good which necessarily follows from the respect for the moral law requires us to introduce, as postulates of pure practical reason, the three main propositions of traditional metaphysics (see 1788, Ak 5: 132). The meaning of the practical postulates is thus very different from that of the logical postulate of theoretical reason discussed above.

It would thus seem that the problems of pure practical reason have been solved. That is not the case, however. In a footnote to the Preface of *Religion*, Kant observes that the proposition "There is a God" is a synthetic *a priori* judgment and, therefore, it is necessary to ask how this proposition is possible *a priori* (see 1793, Ak 6: 6 footnote). This remark makes it clear that Kant extended the scope of transcendental semantics to practical judgments in general, which is something new relative to the second *Critique*.

Now, as far as I know, Kant never proved the possibility of the judgment that God exists. This fact helps us understand the transformation of the practical postulates of the existence of God

²⁴ See, for instance, *Prolegomena*, Ak 4: 349. On this topic, see also Loparic 2005, chapter 9.

²⁵ For Kant's summary of the interests of pure reason, see B 732–733.

and of the immortality of the soul, which definitely have a metaphysical flavor, into practical *as if* rules, intended to govern human action. As said above, Hans Vaihinger's *Die Philosophie des Als Ob* continues to be a precious starting point of this topic in Kant. Only the postulate of freedom kept the *status* of a statement of practical knowledge. Indeed, from the knowledge that we must obey the moral law, it follows that we also know that we are free. Therefore, the freedom of the will postulate cannot be framed as an *as if* rule; this is a point which, interestingly enough, Vaihinger seems to have missed.

Kant offered several *as if* formulations of the two practical postulates. The ideas of God and immortality, he writes in 1796, receive their objective if only moral-practical reality in the context of the following *as if* rule: behave as if objects of the ideas of God and immortality were given (see Ak 8: 416). In *The Jäsche Logic* Kant returns this point and proposes the following formulation for the postulate of the existence of God: "Act as if there is a God" (*Handle so, als ob ein Gott sei*) (Ak 9: 93).

The semantic consequences of this modification in the syntax of the two postulates are summed up in the following definition: "A *postulate* is a practical imperative, given *a priori*, which admits of no explanation of its possibility (and hence of no proof). Thus we postulate, not things, or in general the *existence* of any object, but only a maxim (or rule) of the action of a subject." (1796, Ak 8: 419) What is the possible employment of the two practical *as if* rules? They are instrumental in strengthening [*Stärkung*] practical reason as moral mobile (see 1797, Ak. 6: 488). This strengthening is synonymous to virtue, which is defined by Kant as "a moral strength [*Stärke*] of the will" (1797, Ak 6: 405), its robustness (*robur*), which can additionally be increased by exercises of various kinds. In this function, the idea of God reveals itself as "of the greatest moral fruitfulness" (1797, Ak 6: 444).²⁶

FINAL REMARKS

The three traditional problems of metaphysics, although unavoidable, were radically reframed by Kant. The theoretical ones were replaced with three system-problems of an entirely new kind, based on the three ideas of pure reason that emerge from the logical postulate of pure reason. In the light of Kant's transcendental semantics, these problems do not admit any definite empirical solution, but rather lay out an indeterminately long series of individually solvable empirical problems.

Regarding the necessary tasks of practical reason, that of finding out whether our will is free is decided with a "yes" answer based on the fact of moral obligation (the fact of reason). But

²⁶ Virtue, or the strength of moral maxims in a person, differs essentially from grace, or supernatural assistance that helps to mitigate the weaknesses of human nature. Grace is a *parergon*, an inessential business, which has to do with religion but does not belong to it; in other words, the effects of grace cannot be attained by following the maxims of reason, and that is why grace is not one of the subject-matters of practical philosophy (see 1793, Ak 6: 23 footnote).

the problems of the existence of God and of the immortality of the soul are unsolvable, since they are not susceptible to receiving a yes or no answer. They are solved in a different way, that is, in terms of morally fruitful *as if* rules which apply the idea of God and of an immortal soul to human action. As you will now see, I have arrived at results which are in several aspects very close to the Kant interpretation offered by Vaihinger roughly a century ago.

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