

The Transcendental Aesthetic

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1. Introduction

As Peter Strawson claims at the beginning of his classic study on the *Critique of Pure Reason*¹ (henceforth, 'the First Critique'), *The Bounds of Sense*, no philosopher has done more to specify the cognitive-semantic limits that determine the general structure of human experience than Immanuel Kant. This effort (i.e., transcendental philosophy), which for the Königsberg sage had the status of a science (i.e., the science of all the principles of pure reason) can be found in the first half of the *First Critique*. My goal here is to explicate the first part of that first half, the Transcendental Aesthetic (henceforth, 'the TA').

Understood as a system that contains the principles of pure reason, the *First Critique* consists of two fundamental parts: the transcendental doctrine of elements, and the transcendental doctrine of method. As Kant declares in the Introduction to both the first and the second editions:

there are two stems of human cognition, which may perhaps arise from a common, albeit to us unknown root, namely sensibility and understanding; through the first, objects are given to us, through the second, they are thought.
(A15/B30)

On the basis of this division of two fundamental faculties of the mind, the transcendental doctrine of elements is divided into two parts, asymmetrical in their extension: the TA and the Transcendental Logic. The TA, as immediately indicated by the etymology of 'aesthetic', deals with sensibility, although not in its "empirical aspect," but instead in its "formal one"². The second part, on the other hand, deals with the discursive and conceptual, or intellectual, faculty of the mind, that is to say, the understanding.

¹ Strawson (1966).

² I provisionally understand by this, the difference between (i) considering sensibility from a strictly commonsensical perceptual point of view, directly accessing the apparent world, and (ii) considering it as pre-equipped with a structure that is cognitively responsible for the ordering of perceptual content.

As I mentioned above, the Aesthetic and the Logic receive asymmetrical treatments by Kant. These asymmetries mirror various philosophical tensions in the *First Critique*, and have led, ever since publication of the first or A edition in 1781,³ to controversies that involve not only genealogical and developmental questions about the text,⁴ but also involve fundamental issues and problems having a direct bearing on contemporary philosophy.

The core of these controversies is constituted by what we can call the *problem of the unity of our cognitive faculties*. This problem, in my opinion, arises whenever we conceive the cognitive operations of the mind on the basis of several distinct faculties, or powers, that collectively entail the mind's *prima facie compartmentalization*. More precisely, the problem of unity arises as soon as we attempt to explain how the interaction between those faculties or powers promotes and realizes the overall normative objectives of the cognizing subject—truth, justification, knowledge, consistency, coherence, systematicity, and so-on. Unfortunately Kant was not fully, or even very, explicit in this regard, and this philosophical reticence has triggered several sharply different interpretations of the distinctive roles of the several cognitive faculties of the mind in generating knowledge, according to Kant, and, correspondingly, several sharply different interpretations of Kant's conception of the cognizing mind's unity.⁵

This paper follows the first line of interpretation. It starts with the idea that, according to Kant, *objective perceptual cognition (Erkenntnis) and knowledge (Wissen)* is possible only in virtue of the combination of the activities of the faculties of sensibility

³ As soon as the *First Critique* appeared in 1781, readers focused on the differential treatments of sensibility and understanding. See especially the objections made by J. S. Beck and K. L. Reinhold in their correspondence with Kant. Likewise, the critical observations about this issue made by Jacobi and the young Fichte are illuminating and directly relevant to later discussions.

⁴ In the Introduction to his (1936), H. J. Paton discusses the notorious 'patchwork' thesis, the most extreme version of which is attributed to Vaihinger, to the effect that the *First Critique* is a text fundamentally composed of notes written at different periods in Kant's philosophical development during the 'silent' decade between 1770 and 1780, and then merely strung together afterwards in a more or less hurried and disorganized way for publication in 1781. Against this claim, Paton considers the overall nature of Kant's project, its development over time, Kant's intentions regarding the scientific character of his project, the sacrifice that this implied for its popularity, and, more importantly, Kant's own belief about the novelty of the theories he had presented there.

⁵ The second interpretation is the most traditional understanding of Kant's work. The first interpretation has been recently developed by Robert Hanna and Lucy Allais, amongst others, in the context of contemporary discussions in the AngloAmerican philosophy of the mind about the conceptuality or non-conceptuality of the contents of perception. Kantian non-conceptualism was originally provoked by John McDowell's use of Kantian ideas to provide historical support for his ultraconceptualism, in his influential (1994). At the same time, there has also been a reaction against the non-conceptualist Kantians from, e.g., Paul Abela (2012) and Hannah Ginsborg (2006), (2008). Cf. Hanna (2005), (2008), (2011); and Allais (2009) and (2012). In the Latin American world, see e.g., Peláez (2013), and Lazos (2014), for an approach to Kant that is similar to that of Hanna and Allais.

and understanding *in judgments of experience*. But this does not entail that there cannot be *cognitions of particular apparent or phenomenal objects* yielded by the operations of sensibility *outside* the context of judgments of experience. That is to say, I share the contemporary ‘Kantian non-conceptualist’ view that, according to Kant, the contribution of sensibility is functionally and representationally separable from that of the understanding, since the structural conditions of sensibility, which are essentially different from those of the understanding, independently enable the cognition of particular objects.⁶

In a famous passage, Kant claimed: “Thoughts without content are empty, intuitions without concept are blind” (A51/B75). This claim, which points to the problem of the relationship between sensibility and understanding I have just mentioned, has been interpreted in a conceptualist direction, namely, as saying that the faculty of sensibility and its products, the intuitions, are representationally determined by the understanding and its logical functions, the concepts. Kant, however, immediately goes on to say:

These two faculties or capacities cannot exchange their functions. The understanding is not capable of intuiting anything, and the senses are not capable of thinking anything. Only from their unification can cognition arise. But on this account one must not mix up their roles, rather one has grounds to separate them carefully from each other and distinguish them. This is why we distinguish the science of the rules of sensibility in general, i.e., aesthetic, from the science of the rules of understanding in general, i.e., logic. (A52/B76)

This claim counts directly against the idea that the division between the TA and Transcendental Analytic is merely rhetorical, and expresses on the contrary a commitment to the idea that this division of the faculties is how things stand in cognitive reality. Indeed, Kant here explicitly endorses the view that these two faculties contribute, *in essentially separate ways*, to our (judgmental) cognition.

In light of this, in this paper I will focus on the TA as the science of the formal rules of sensibility, to the extent that these rules make an essentially separable cognitive contribution to judgments of experience and their objective contents. I will use the so-called ‘geometry argument’, explicitly formulated in the Transcendental Exposition of the Concept of Space. This argument is intended to shed light on the features of sensibility that make possible the appearance, to the subject, of the particular objects that understanding proceeds to subsume under concepts. Although my focus is on the Transcendental Exposition of the Concept of Space, in order to do justice to what Kant

⁶ This view has also been recently defended by Barry Stroud in his (2015), outside the specific context of Kant-scholarship, although, to be sure, Stroud has also written influentially on Kant.

says regarding the epistemic status of that concept, I will have to begin with the Metaphysical Exposition of the Concept of Space and other preliminary remarks.

2. Preliminary Remarks

Before tackling the Metaphysical Exposition of the Concept of Space, it is necessary to consider some background notions.

Kant begins the TA with the definition of a fundamental notion in his epistemology, the notion of *intuition*. He says:

In whatever way and through whatever means a cognition may relate to objects, that through which it relates immediately to them, and at which all thought as a means is directed as an end, is *intuition*. (A19/B33)

Later on he writes that intuition “is immediately related to the object and is singular”, in contrast to a concept, which is “mediate, by means of a mark which can be common to several things” (A320/B377). To this, one should add what Kant says regarding his lectures on logic: “All our cognitions, namely, all representations consciously referred to an object, are either *intuitions* or *concepts*. Intuition is a singular representation (*repraesentatio singularis*), concept is a general representation (*repraesentatio per notas communes*) or *reflective* (*repraesentatio discursiva*)” (Log, 9:91).

An intuition, then, is a singular, relational, immediate representation—that is to say, it picks out an existing individual object in a non-mediated way. On the other hand, a concept is general and mediated via ‘marks’ (*Merkmale*) or descriptive attributes, and ‘falling under’ or subsumption: it represents objects by determining the class of actual or possible objects that satisfies a shared set of marks (the *notas communes* Kant mentions in the *Logic*). By contrast, as we saw above, an intuition relates to its object ‘immediately’. In spite of Kant’s lack of clarity regarding this immediacy condition, we could say that it is a direct or *essentially non-descriptive* cognition, that is to say, one in which we do not access the object by means of the qualitative attributes or marks that it shares with other actual or possible objects, but instead by a cognitive *acquaintance* or cognitive *contact* with the object as a *spatiotemporal whole*. That is, intuition consists of the conscious apprehension of the whole object, as given (e.g., via causal affection in outer sense), along with its qualitative properties—none of which might actually be self-consciously discriminated or individuated by me, at that time, or even later, if I happen to be a non-rational animal, a ‘babe’ or ‘beast’—as located in space and time, relatively to my perceiving body. So in intuiting, *per se*, I do not see (or hear, or smell, etc.) an object *as* grey or *as* round (or screechy, or perfume-like, etc.), that is to say, under an allocentric or third-person point-of-view, dominated by the general concepts of ‘grey’ or ‘round’, et cetera. Rather in intuiting, *per se*, *I see (or hear, or smell, etc.) the whole object itself, along with all its qualitative*

properties, within an egocentrically-centered spatiotemporal perspective. Then and only then can I cognitively advance to the self-conscious discrimination or individuation of its qualitative properties, by ‘determining’ the object through the predicate of a judgment. Hence an appearance or *Erscheinung* is defined by Kant as the “*undetermined* object of an empirical intuition” (A20/B34, emphasis added).

Kant is fully explicit that the faculty of the mind making these representations possible, in virtue of its own receptive character, is sensibility or *Sinnlichkeit*. In a clear concession to empiricism, Kant maintains that in us humans, every empirical object of cognition must be given through the faculty of sensibility, and that there is no other way for the objects of intuition to be given to the mind. This means that every intuitive representation depends on our sensibility being affected either by external objects in *outer sense*, or by ourselves in *inner sense*. Of course, Kant’s notion of ‘self-affection’ in inner sense is harder to understand than external affection in outer sense.

Leaving aside for the moment the tricky question of how we can be ‘given’ to ourselves via self-affection in inner sense, it is crucial to note that for Kant an empirical intuition, as a singular, relational, immediate representation of an object, is not the same as *sensation* or *Empfindung*. Even if Kant is obviously influenced by classical empiricism (since according to him, the mind cannot create its own objects of knowledge, by thinking them into existence, like a divine being, by way of “intellectual intuition” (B72), but instead must be contingently and sensibly affected by what is ‘given’), his minimal version of empiricism avoids ‘sensationist empiricism’, according to which in which intuition picks out instances of sensory qualities, that is to say, ‘sense data’. “Sensation”, for Kant, is “the effect of an object on the capacity of representation” (A20/B34), that is to say, what consciously results from the triggering of our empirical intuition by an object and our direct access to it. Or in other words, a sensation is *a sensory adverb of empirical intuitional consciousness*, either what we would now call a ‘quale’ (if it’s non-relational, necessarily private, infallible, etc.) or more cautiously what we would now call a ‘phenomenal character’ (if it might be relational, contingently private, fallible, etc.) An intuition of an empirical object, or an empirical intuition of an object, therefore, is a representation that *directly refers to an object, and in so doing, generates a sensation* (A20/B34). But the sensation is ‘representationally transparent’, that is to say, *non-representational*.

In this way, for Kant, an empirical intuition does *not* refer to a sensation, but rather refers only to whole empirical objects, and *has* some sensations in so doing. Again, this is crucial for the realization that Kant is at most a *minimal empiricist*, not a classical *sense-datum empiricist* like Locke or Hume, and certainly not a *subjective phenomenal idealist* like Berkeley.

One could nevertheless ask about the rationale for this distinction between sensation and empirical intuition. What are its philosophical underpinnings and what does Kant want to achieve with it? As I see it, the sensorial apparatus and the current of responses it produces constitute a fluid sensory ‘matter’ or *hyle*, unable to bind itself

together to form even a simple representation of an object. For example, the reaction of the muscles and nerves in my arm when it gets poked by a needle is no more than a causal response to an stimulus from the outside world, that is to say, it cannot represent that which causes it. Then, in order to have a representation of the external object that causes our sensorial reactions, we must organize the current of sensory responses under certain spatiotemporal relations, via a special ‘synopsis’ in sensibility, which although it is minimally active in being *appropriately sensitive* to the object, is nevertheless still *cognitively and logically antecedent* to higher-level spontaneous acts of synthesis via the imagination, concepts, judgment, and apperception (A94/B127). If this is correct, then ‘receptivity’ for Kant is not the Lockean *passivity* of the senses, a *tabula rasa* that merely mechanically accepts and records causal impacts, like a *camera obscura*; rather for Kant receptivity is an *activated sensitivity*—in effect, a lower-level spontaneity—of the senses, that organizes sensory matter into objective wholes.

Correspondingly, Kant calls this current of responses, the multiplicity generated by sensibility, the ‘matter’ of the appearance, and that which organizes them into a representation, the sensory ‘form’ or ‘shape’ (*Form, Gestalt, morphê*) of the appearance. This minimally active synoptic-form/shape vs. sensory-matter (*hyle*) model is very similar to early Husserl’s theory of sense perception in *Logical Investigations*.⁷

According to Kant, since the rules that unite the multiplicity given by sensibility, that is to say, the sensations, cannot be themselves sensations, then those rules must be assumed to be mental functions, that is to say, *a priori* and preceding every sensation. On the other hand, the sensations themselves, that is to say, the matter of the appearance, the multiplicity which has to be organized, can only be given *a posteriori*, or by means of experience.⁸ Furthermore, from the *a priori* character of the rules that organize the multiplicity given in the sensibility, Kant extracts an important methodological conclusion, namely, that we could consider those rules independently of any sensation.⁹ This is the gist of the TA, a “science of all principles of *a priori* sensibility” (A21/B36).

⁷ See, e.g., Husserl (1970, vol. II, Investigation V, §44:652–8).

⁸ For clarity’s sake, I have modified the order of Kant’s argument. At A20/B34, Kant says: “Since that within which the sensations can alone be ordered and placed in a certain form cannot itself be in turn sensation, the matter of all appearance is given to us *a posteriori*, but its form must lie ready for it in the mind *a priori*,...”. As can be seen, while Kant infers the *a posteriori* nature of the matter of the appearance from the non-sensible character of the rules that organize that matter, I instead infer the *a priori* nature of the rules. Only after such an inference, I believe, it is fair to infer the *a posteriori* character of the matter of the appearance. Perhaps Kant is lacking a premise here or simply assuming that the matter of the appearance follows from the dependence of human sensibility on causal affection. In any case, I do not think that the inversion of the order of Kant’s exposition affects my point.

⁹ I will not dwell on this consideration, but I should briefly mention, that unlike those who believe that Kant draws philosophical distinctions between our mental faculties that do not agree with our actual cognitive processes themselves, I believe that Kant’s distinctions have a solid basis in reality. As we have seen, Kant thinks that there is a genuine distinction between mere sensation and what he calls an intuition.

This science, therefore, will consist in discovering and formulating the rules under which the variety given in sensibility is ordered. Such rules, found in the mind before any experience and hence *pure*,¹⁰ are for Kant also *intuitions* (A21/B35). In this regard, it is useful to consider the passage that follows this claim. Kant says:

Thus, when I separate the representation of a body from what the understanding thinks of it, as the substance, the force, the divisibility, etc., and likewise, what in it pertains to the sensation, as the impenetrability, the hardness, the color, etc., I still have, from this empirical intuition, something, that is, the extension and the figure. These pertain to the pure intuition, in which, as a mere form of the sensibility, occurs *a priori* in the mind, even without an effectively real object of the senses or the sensation. (A21/B35)

This passage immediately follows the assertion about the intuitive character of the pure *a priori* forms of the sensibility, and, despite its seemingly orthogonal nature, it contains something important regarding this point.

Kant invites us to undertake the mental experiment of starting out from the complete, objective perceptual cognition of an object of experience, that is to say, a certain body, then progressively divesting this complex cognition of the distinctive contributions of first, the understanding, on the one hand, and then second, empirical sensibility on the other. As strange as this mental experiment may appear to be, its dual cognitive-semantic purpose is to isolate the distinct types of representations that make up the complete, objective perceptual cognition of an object of experience, and, correspondingly, the distinct types of properties that inherently belong to an object of experience. On the one hand, we have general or second-order properties, such as substance and divisibility, corresponding to the understanding and our discursive capacity for generating concepts. And on the other, we have properties that are directly accessed via empirical intuitions adverbially accompanied by sensation, such as hardness or color, corresponding to empirical sensibility. Finally, as the precipitate outputs of our ‘chemical’ mental experiment, after screening out the contributions of the understanding and sensation, we have formal-intuitional properties such as extension and shape, corresponding to pure sensibility (A21/B35).

We might say that empirically sensible properties are ‘subjective’, in that they depend on idiosyncratic currents of experiences different for every individual. The other two types of properties, however, are *objective*, that is to say, they depend on the *a priori*

At the same time, this distinction underlies the difference Kant draws between ‘intuition’ and ‘experience of an object’.

¹⁰ “I call all representations *pure* (in the transcendental sense) in which nothing is to be encountered that belongs to sensation” (A21/B35).

structure shared by all the rational human beings. What matters here is that these properties are different in kind. The first, which I have called second-order and discursive, are provided by understanding and make *experience* possible, since they yield a complete cognition in which a particular is subsumed under concepts. The second, namely, extension and shape, are provided *a priori* by sensibility and make possible the *perception* of particular objects, and can therefore be considered independent of the second-order ones.

In this way, the TA isolates from a complete, objective perceptual cognition of a fully-determined empirical object—that is to say, a judgment of experience—the distinctive cognitive-semantic contributions made by understanding and empirical sensibility, with the aim of displaying the *a priori* structure of sensibility. As a direct consequence of this, Kant discovers that sensibility contains two *a priori* formal-intuitional representations, (i) the representation of space, the form of inner sense, and (ii) the representation of time, the form of inner sense; corresponding to these two representations he also discovers two formal-intuitional *structures* immanent in the world of appearances or phenomena, that make possible the perception of apparent or phenomenal particulars, namely, space and time.¹¹

3. The Metaphysical Exposition of the Concept of Space

According to Kant, a characteristic power of the human mind is our capacity to represent objects *as outside us*,¹² in space. It is clear from Kant's pre-Critical (or 'proto-Critical') breakthrough essay of 1768, 'Concerning the Ultimate Ground of the Differentiation of Directions in Space', that this capacity implies the existence of our own living bodies as egocentrically-centered frameworks for representing orientable spaces.¹³ Kant refers to this ability as the "outer sense", The form of outer sense is the representation of space. In space, he continues, the following properties of external objects are determined: shape, magnitude, and relations to other objects (A23/B37).

¹¹ In what follows, I will focus only on what belongs to the "concept" (actually, pure intuition) of space due to its central importance in objective perceptual cognition. See also note 17 below.

¹² In his famous 'Proof of an External World', G. E. Moore refers to the ambiguity in Kant's expression "things as outside us" (Moore 1993). It would have been better, Moore argues, to use the simpler expression "external things" or even "things external to our minds". Moore notices an important passage in the *Critique*, where Kant clarifies the issue: "But since the expression *outside us* carries with it an unavoidable ambiguity, since it sometimes signifies something that, *as a thing in itself*, exists distinct from us and sometimes merely something that belongs to outer *appearance*, then in order to escape uncertainty and use this concept in the latter significance—in which it is taken in the proper psychological question about the reality of our outer intuition—we will distinguish *empirically external* objects from those that may be called 'external' in the transcendental sense, by correctly calling them 'things *that are to be encountered in space*'" (A373).

¹³ See, e.g., Hanna (2000); Hanna (2001) section 4.3; Hanna (2006) chs. 2–3; and Hanna (2016).

In the rest of the Metaphysical Exposition,¹⁴ Kant intends to show that just like the representation of space, that is to say, the form of outer sense, space itself, is, in general, a subjective structure: it belongs to the *subjective constitution of our minds*,¹⁵ and is itself, in particular, a pure intuition. In short, he intends to show that the representation of space is space, or at least, that space is “nothing more than” the representation of space. This is Kant’s famous (or notorious) thesis of *the transcendental ideality of space*.

The first argument refers to the possibility that the “concept”¹⁶ of space be obtained, in empiricist fashion, from experience. Against this view, Kant contends that in order to relate our sensations to something outside us, or to represent objects as standing in spatial relations, we must presuppose the representation of space.

Kant held, as I mentioned above, that sensations are mere adverbial impressions of our sensibility, purely subjective, different from each other only in terms of qualitative aspects, and representationally transparent. Thus, to relate sensations to something external and, in that sense, to be able to distinguish them by their object and not merely by their qualitative differences, empirical intuitions are required, and the pure intuition of space must be necessarily added as a formal-structural feature of the representational content of that empirical intuition. Therefore, far from being obtained from external experience, the formal-structural representation space makes external experience possible.

The second argument aims at showing that space is an *a priori* representation that is a necessary condition for any external representation. As Kant says, “One can never represent that there is no space, although one can very well think that there are no objects to be encountered in it” (A24/B39). As an argument, this paragraph is certainly cryptic. Kant seems to be operating on the psychological assumption that we cannot imagine

¹⁴ By “exposition”, Kant means what results from an analysis of a given concept that does not, however, have to be a complete analysis, or analytic definition; and by “metaphysical”, he means that the exposition refers to an *a priori* concept.

¹⁵ Kant lays out the problem by contrasting his own views about space to the Newtonian (absolutist) conception and the Leibnizian (relationist) conception. In my opinion, Kant is not as interested in arguing against the absolutist and relationist conceptions of space per se, as he is identifying an assumption he believes underlies both conceptions, namely, that space is objective in the specifically noumenal-realist sense that it is *metaphysically grounded on things-in-themselves or noumena*, either by *being identical with a noumenal absolute container* (Newton) or by *being strongly supervenient on noumenal monads and constituted by extrinsic apparent relations between them* (Leibniz). This means that Kant is primarily interested in whether noumenal realism about space or transcendental ideality about space, is correct.

¹⁶ As N. K. Smith first noticed in 1918, there is an obvious tension between, on the one hand, saying that the representations of space (and time) are (pure) intuitions, not concepts, and, on the other, referring to a metaphysical exposition of the *concept* of space. The resolution of this tension lies, as Kemp Smith suggests, in understanding that Kant’s use of “concept” (*Begriff*) here actually derives from an earlier usage in the Inaugural Dissertation, and functions, in context, as a synonym of “representation” (*Vorstellung*). See Smith (2003/1918:99); and also Hanna (2001:212, n. 61).

and/or conceive any empirical situation in which there is no space—that is, he seems to be saying that space ‘formal-structurally appears’ in every *actual* empirical intuition we survey using our powers of imagination and/or conceivability. However, this psychological assumption is not, in itself, enough to show that space will *necessarily* appear as a formal-structural ingredient in every empirical intuition. So, charitably, he must mean that our act of imagination and/or conceptualization surveys every *possible* empirical intuition. Hence he concludes from this that space is

the condition of the possibility of appearances, not as a determination dependent on them, and is an *a priori* representation that necessarily grounds outer appearances. (A24/B39)

The third and fourth arguments are dedicated to demonstrate that space is not a concept, but an intuition. Kant first proceeds by means of a comparison between the kind of representation associated with the pure intuition of space and the kind associated with a concept. In the latter, the parts compositionally precede the whole and the concept synthetically emerges from its parts. For instance, the empirical concept ‘cat’ is constituted by a set of specific or generic attributes or marks picking out the common features or properties shared by all cats: feline, mammal, animal, et cetera. The concept is a synthetic construction from this ordered set of marks or attributes. In contrast with this, Kant explains, the pure intuitional representation of space is not a logical construction from specific or generic attributes or marks picking out features or properties shared by all spaces. On the contrary, the pure intuitional representation of space picks out is unique global space-frame whose proper parts are all continuously related sub-regions resulting from arbitrary divisions or *limitations* of the global structure (A25/B40). In short, the underlying structure of concepts is *finite, general, and logical*, whereas the underlying structure of the pure intuition of space is *infinite, singular, and mereological*.

In the fourth argument, Kant states: “space is represented as a *given* infinite magnitude” (B40). Unlike a concept, in which a characteristic or feature is present in a variety of particulars that the concept subsumes and over which it ranges by virtue of its generality, by abstracting from the specificity of these particulars, space is intuited as an infinite whole whose proper parts or sub-regions all *coexist*. The coexistence of the proper parts or sub-regions inside this unique space is what determines the extensional appearance of particulars as *occupying* such regions, and, therefore is the source of their individualization. In other words, the apparent or phenomenal particulars include their relational spatial properties *essentially*. This is what Hanna calls “the intrinsicness of space”.¹⁷ So, necessarily, if the global space-frame were to be removed, then the

¹⁷ See, e.g., Hanna (2006:42–3).

particulars would no longer exist. Conversely, necessarily, if, as Kant holds, the global space-frame is itself transcendently ideal, *then the particulars are transcendently ideal too.*

4. The Transcendental Exposition of the Concept of Space

As is well known, in the Transcendental Exposition of the Concept (i.e., Representation) of Space, Kant is interested in the way in which our cognition of space, restricted by the pure or a priori, global, infinite, singular, given mereological form or structure revealed by the Metaphysical Exposition, may in turn provide cognition of synthetic *a priori* propositions about space. Such a cognition must meet two requirements.

First, the cognition must “actually flow” from the given representation (B40), that is to say, the cognition must *begin with this representation itself.*

Second, the cognition must presuppose “a given way of explaining this representation” (B 40), that is to say, *the cognition must have a determinate specific character that sufficiently yields the representational content of that cognition.*

This clarifies the difference between a ‘metaphysical’ exposition of the representation of space, which unpacks *the cognitive-semantic content* of our spatial representation, and a ‘transcendental’ exposition, which *justifies and explains* that content.

Right after formulating this distinction, Kant lays out an argument from geometry:

Geometry is a science that determines the properties of space synthetically, and yet *a priori*. What then must the representation of space be for such a cognition of it to be possible? It must originally be intuition; for from a mere concept no propositions can be drawn that go beyond the concept, which, however, happens in geometry (Introduction V). But this intuition must be encountered in us *a priori*, i.e., prior to all perception of an object, thus it must be pure, not empirical intuition. For geometrical propositions are all apodeictic, i.e., combined with consciousness of their necessity, e.g., space has only three dimensions; but such propositions cannot be empirical or judgements of experience, nor inferred from them. (Introduction, II.) (A25/B40–1)

In other words, after having established in the Metaphysical Exposition that the representation of space is a pure intuition, Kant is now arguing our pure intuition of space justifies and explains geometrical knowledge. In other words, starting from the premise that space is a pure intuition, Kant asks: ‘What do we represent when we represent space?’, and ‘What knowledge is made possible by our representation of space?’

Kant assumes that geometry is the science of space, a mathematical sub-discipline that studies the formal-quantitative properties of space, and, like other 18th century

philosophers and scientists, that geometry is *a priori*. He defends its synthetic character by means of examples. What Kant wants to show is, once presuppose that the representation of space is a pure or *a priori* intuition, how our representation of space yields the body of knowledge constituted by the science of geometry. The question, therefore, is not whether the pure representation of space does this—that is presupposed without special argument—but, rather, how this is possible?

Kant's answer is that in order to cognize the properties of space, we must begin with a cognition of space itself, as a complete structure. The geometer must be able to represent, the total object of the science of geometry, if she is to know, or mentally represent, its properties. Since the original representation of the total object of geometry, namely, space, is *a priori*, so is our cognition of its properties. Furthermore, since the original representation of the total object of geometry is an intuition, the cognition of its properties is synthetic: for Kant, a judgment or proposition is synthetic if and only if its denial is conceptually or analytically consistent, and its meaning and/or truth are grounded on intuition.¹⁸ From this it follows that the first principles of geometry, and the theorems deduced from them, must emerge from the pure intuition of space. To support this view, as is well known, one simply needs to show the contradictions that would ensue from assuming that the geometrician's original representation of the object of geometry were neither intuitive nor *a priori*. If the original representation of space were a concept, the theorems of the geometrician would not be synthetic, since the properties of space would follow from the mere analysis of its concept. But the theorems of geometry are synthetic, which is shown by mathematical practice, according to which the geometer employs non-analytical *constructive* procedures to demonstrate the truth of synthetic *a priori* propositions.¹⁹

Now Kant turns to the second requirement of a transcendental exposition, that is to say, to show that the cognitions of geometry “are only possible under the presupposition of a given way of explaining this concept.” He says:

Now, how can an outer intuition inhabit the mind that precedes the objects themselves, and in which the concept of the latter can be determined *a priori*? Obviously, not otherwise as insofar as it has its seat merely in the subject, as

¹⁸ See, e.g., Hanna (2001) ch. 4.

¹⁹ It is interesting to note that Kant, like many 18th century philosophers interested in mathematics, and specially in geometry (Hobbes, Spinoza, Leibniz, Wolff, etc.), rejects the Cartesian analytical methods on the grounds that if Descartes were correct, the properly spatial character of geometry would be lost. Instead, they looked to Euclid's *Elements* as the model for geometrical practice, along with its strictly constructive procedures to develop geometrical theorems. Hintikka (1967) and (1969), who first developed this line of interpretation, goes even further and states that Kant's distinction between analytic and synthetic judgements emerges from the division between analytic and synthetic geometry. There is some truth in this claim; and in the next section, I will come back to this idea.

its formal constitution for being affected by objects and thereby acquiring *immediate representation*, i.e., *intuition* of them, thus only as the form of outer *sense* in general. (B41)

Kant is facing here an apparent paradox in geometrical cognition. Geometric principles, it had been established, describe and codify our *a priori* cognition of space and spatial relations; yet, at the same time, the properties of space so described are given only as sensible features of spatial outer objects. In this sense, the spatial connections between the pure geometrical forms correspond naturally to the spatial connections between empirical objects. In other words, although the pure science of geometry cognitively flows from my *a priori* representation of space, it applies directly to spatial empirical objects themselves.

Note that Kant does not ever doubt *that* pure geometry is applicable to empirical objects—what he wants to ask is, *how* is this possible? His answer is that space is *transcendentally ideal*: space is nothing more than, or even identical to, the pure representation of space = pure intuition = the *a priori* form of outer sense. This means that, in order to guarantee the applicability of geometry to empirical objects, it is necessary to prove that space is subjective and mind-dependent, that is to say, that it originates from our own cognitive constitution. Here is how Kant puts this crucial point in the *Prolegomena to Any Future Metaphysics*:

[...] the propositions of geometry are not the result of a mere creation of our poetic imagination, and [that] therefore they cannot be referred with assurance to actual objects; but rather [...] they are necessarily valid of space, and consequently of all that can be found in space, because space is nothing else than the form of all external appearances, and it is this form alone in which objects of sense can be given. Sensibility, the form of which is the basis of geometry, is that upon which the possibility of external appearance depends. Therefore the appearances can never contain anything but what geometry prescribes to them. (Pro, 4:287)

The following section in the TA starts precisely here. If geometry prescribes to sensibility the types of objects we experience, and it is this in virtue of which geometry represents space as the formal condition for all outer phenomena, then we must also ask: precisely *what* type of experiential objects does geometry construct?

5. Geometrical Objects and Empirical Intuition

In my opinion, it is necessary to consider two intimately related aspects of the Kantian conception of geometry in order to respond adequately to this question. First, we must

consider the aspects of geometrical practice Kant that considered characteristic of the discipline; and, second, in relation to this, we must also consider Kant's well known statements about the contrasts between mathematical cognition and philosophical cognition.²⁰

Regarding the first point, as Lisa Shabel²¹ has persuasively shown, Kant relied on Christian Wolff's text books for both learning and teaching mathematics, hence it is in those books where we find the key to understanding Kant's conception of geometric practice.

According to Wolff, "geometry is a science of space that considers the corporeal things in their extension, form and figure" (as quoted by Shabel 1998:600). Furthermore, Kant says that extension and shape are the two features of ordinary objects to which we have privileged cognitive access, that is to say, we can cognize extension and shape as structural features of material objects prior to our empirical scientific knowledge of them. This pre-empirical, pre-scientific knowledge reveals the features of space occupied by these objects; then geometry is the result of codifying that knowledge as an *a priori* science.

Both Wolff and Kant believed that the objects of geometry and the theorems that follow from them are *constructible*. A particular is constructed, from which, by means of various manipulations (specially of the step coinciding with Euclidean *ecthesis*), we obtain the desired results. However, Kant distances himself from Wolff, for whom geometrical theorems occurred in an empirical medium, by means of a mechanical procedure and the geometer's ability to examine the construction and discover the relations between the spatial magnitudes. Kant, who could not possibly accept the consequences of such an understanding of geometrical practice—since it condemns geometry to a posteriori, contingent results—holds that those constructs are 'determined by the conditions of pure intuition'. The constructed triangle is 'evaluated *in concreto*' in pure intuition, and the resulting cognition is pure and *a priori*—and hence, universal and necessary. But what is even more important for us here is that for Kant the axioms and principles underlying geometrical constructions are cognitively accessible to us in an univocal and immediate way, and precede the actual practice of geometry. These are not formalist axioms, as with Hilbert, but instead substantive principles like the ones Kant mentions in the *Metaphysical Exposition*, namely, that space is a given infinite magnitude, that it is

²⁰ In the *Transcendental Doctrine of method*, in the section *The Discipline of Pure Reason in Dogmatic Use*, Kant distinguishes philosophical cognition from mathematical cognition. The former is "rational cognition from concepts; mathematical cognition is from the construction of concepts" (A713/B741). For our purposes, we need not develop this distinction further in this context. The ensuing discussion will suffice. See also my (2008).

²¹ See Shabel (1998). I am generally following Shabel's outstanding work on the relationship between Wolff's and Kant's philosophies of mathematics. The philosophical argument to which I am applying her results is mine, however.

tridimensional, that two straight lines cannot enclose a single space, and that a triangle cannot be built except under the condition that two of its sides together are longer than the third one.

If geometry constructs particulars in pure intuition regulated by non-formalist, substantive principles according to the form of outer sense, and if, as mentioned before, for Kant sensibility does not contain anything except what geometry prescribes to it, then we have solid grounds for claiming that the objects of our perceptual experiences are particulars with various predicates concerning various spatial properties, the cognitive origins of which lie in pure intuition, and are then derivatively conceptualized by the understanding in synthetic judgments.

6. Conclusion

In this paper, I have explicated Kant's views about the cognitive-semantic contributions that sensibility makes to the form and content of our cognition. In particular, I have followed Kant's own efforts to separate the cognitive contributions of sensibility from the cognitive contributions made by other functions of the mind. The core of my argument can be summarized as follows:

- Intuitions and concepts are essentially different kinds representations. Intuitions are inherently singular, immediate, and relational/de re representations of an object, whereas concepts are general, mediate, and non-relational/non-de re representations.
- Space is a (pure) intuition, and is the *a priori* formal condition for every outer object.
- Geometry, understood as the *a priori* science of space, studies and elucidates the formal *a priori* properties of space and of the objects that appear in it.
- The formal *a priori* properties of space and of the objects that appear in it are: shape, extension, and spatial relations.
- Empirical intuition is a singular, immediate, relational/de re cognition of particulars possessing the properties of shape, extension, and spatial relations *intrinsically*.
- The transcendental ideality of space synthetically *a priori* necessitates the transcendental ideality of the particular empirical objects to which geometry applies.

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