Judgment and Construction:
On Kant's Conception of the Understanding

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It is a criterion of adequacy on any philosophical theory of perception that such a theory account for the following two characteristics of perception. First, perception is different in character from thought. Thought is conceptually articulated. It is fundamental to thought that it has propositional structure. By contrast, perception is sensory. It is not articulated (or at least not articulated in the way thought is), and whether we should think of it as having propositional structure is open to debate. Let us capture this characteristic of perception by means of the following principle:

Heterogeneity: The structure of perception is different from the structure of thought.

The second basic characteristic of perception is that it has an epistemic function. By this I mean that perception provides reasons for belief. It's a fundamental fact about perception that we sometimes justify beliefs by reference to what we perceive (or take ourselves to perceive). This gives us a second principle:

Epistemic Function: Perception has an epistemic function.

It can seem very difficult to accommodate both Heterogeneity and Epistemic Function in a coherent account. The reason is that Epistemic Function seems to require that perception and thought share a common structure, while Heterogeneity seems to require that they don't. Epistemic Function seems to require a common structure because the ability to serve as a reason for belief appears to demand the kind of structure that enables something, for instance, to stand in relations of inference. Yet Heterogeneity asserts that perception is fundamentally different in character from thought. And this may be taken to imply that perception has a fundamentally different structure from thought. Call the problem of giving an account of perception that accommodates both Heterogeneity and Epistemic Function the Basic Problem.

This paper considers the Basic Problem through the lens of Kant's theory of cognition, as developed in the *Critique of Pure Reason*. Kant's theory offers valuable insights for how to approach this problem. In particular, it offers a way of thinking about perception that manages to integrate both Heterogeneity and Epistemic Function in a coherent account. A central aspect of this way of thinking about perception is the idea that perception involves the use of concepts, but does so in a way that is distinct from the way in which concepts figure in thought. Attributing conceptual structure to perception makes it possible to account for its epistemic function. At the same time, the heterogeneity of perception and thought is preserved because the special way in which concepts are involved in perception is consistent with the sensory character of perception.

In this paper, I shall argue that Kant recognizes such a special kind of concept-use; or, using the Kantian terminology that I will be employ from now on, such a special way of exercising the understanding, the capacity for concepts. However, my approach to this topic will be indirect. I shall argue that an area of Kant's thought that, at least on the face of it, is not directly related to the topic of perception, provides evidence of this kind of concept-use. This is Kant's philosophy of mathematics; in particular, his theory of geometrical construction. I shall argue that Kant's theory of geometrical construction contains a conception of a kind of concept-use that is distinct from the way in which concepts figure in thought. In Kantian terms, this is a conception of a kind of concept-use that is not in judgment; alternatively, a conception of a way of exercising the understanding that does not take the form of judgment.[1] Adapting a term of Kant's, I shall

[1] For the purposes of this paper, I use the term 'judgment' in a wide sense, which encompasses both the act of

refer to this kind of concept-use as sensible synthesis. So the idea is that Kant's theory of geometrical construction provides us with a conception of sensible synthesis, which shows sensible synthesis to be an exercise of the understanding that is distinct from judgment.

This notion of sensible synthesis is relevant to perception because it concerns spatial representation. Kant's theory of construction contains a conception of spatial representation, and Kant's own view of how we represent space in perception seems to be modeled on this conception.[2] For this reason, we can expect to learn something about Kant's view of perception by attending to his theory of geometrical construction; at least insofar as this theory sheds light on Kant's thought about spatial representation. This is what I intend to do in this paper.

I shall begin by laying out the distinctive way in which what I have called the Basic Problem shows up in Kant's theory. This will serve to provide some needed context for the discussion that is to follow. It will also allow me briefly to indicate what is at stake exegetically in attributing to Kant a conception of sensible synthesis along the lines I have indicated. Next, I will illustrate Kant's theory of geometrical construction by discussing a geometrical proof. This will put me in a position to argue that geometrical construction involves the use of concepts. Finally, I will discuss some features of Kant's theory of concepts and argue that there is a sense in which for Kant spatial representation is not conceptual. This will allow me to make the case that the kind of concept-use characteristic of construction does not take the form of judgment.

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merely entertaining a content and the act of committing oneself as to the truth-value to a content. This use of the term just differs from the one familiar from Frege, where judgment always implies a commitment as to the truth-value of a thought.

[2] In a section of the *Critique* called the Axioms of Intuition, Kant says that "intuitions in space […] must be represented through the same synthesis by means of which space […] in general is determined" (B203). As the context makes clear, what he is saying here is that the same synthesis that is involved in geometrical construction is also involved in perception (or, as Kant calls it, empirical intuition). – References to the *Critique of Pure Reason* are to the pagination of the first (A) and second (B) editions, as is customary. Translations are from Immanuel Kant, *Critique of Pure Reason*, transl. and ed. Paul Guyer and Allen Wood, New York: Cambridge UP, 1998. I have tacitly modified the translation where appropriate.

I. Kant's Version of the Basic Problem

It is one of the virtues of Kant's theory of cognition that he is fully aware of the Basic Problem. He accepts both Heterogeneity and Epistemic Function, and he feels the tension that this generates. To see this, consider that Kant takes it to be one of his most important insights to have properly grasped the heterogeneity of perception and thought (or, in his terms, intuition and judgment). Indeed, he claims that this differentiates him from philosophers such as Leibniz and Locke. According to Kant, "[…] Leibniz *intellectualized* the appearances, just as Locke totally *sensualized* the concepts of the understanding" (A271/B327). In so doing, each of them failed to see that sensibility and understanding (that is, the capacities, respectively, for perception and thought) are "two entirely different sources of representation" (ibid.). But to say that sensibility and understanding are different sources of representation is in part to say that perception and thought are fundamentally different in character.

It is equally clear, however that Kant ascribes an epistemic function to intuition. He characterizes intuition as the singular representation of an *object*. And he says that, through intuition, *objects* are given to the mind. Although these characterizations of intuition do not mention reasons or justification, they warrant ascribing a commitment to the thesis of Epistemic Function to Kant because they identify a crucial presupposition of the ability to provide reasons for belief. The presupposition is that perception has objective purport; that it is, or purports to be, a representation of the world; or, as we could also put it, that perception has representational content.

This suggests that in Kant's thought the Basic Problem takes on a distinctive shape, and I would like to make this explicit by introducing a new formulation of the problem, which I will label Kant's Basic Problem. We can get this shape of the Basic Problem more fully into view if we characterize it in terms of the following two theses:

Sensibility: Intuitions are sensible.

Objective Purport: Intuitions have objective purport.

Sensibility should be taken to entail that intuitions are heterogeneous to judgments; that is, that intuitions are different in character from judgment. Objective Purport, on the other hand, articulates a presupposition of Epistemic Function. Just from these two theses, however, it is not clear why there is a problem. To get Kant's Basic Problem more clearly into view, I need to say more about how Kant understands these two claims; in particular, how he understands Objective Purport. I propose to do this by characterizing Kant's position in terms of two additional claims. These are

Categories: A mental state has objective purport only if it exhibits categorial unity.

and

Spontaneity: Categorial unity is a product of the understanding.

Categories captures Kant's claim that the categories (or pure concepts of the understanding) articulate the concept of an object. And we can gloss Spontaneity as the claim that categorial unity is tied to the application of concepts. For the understanding is characterized by Kant both as a spontaneous capacity and as the capacity for concepts.

Once we unpack the thesis of Objective Purport in terms of Categories and Spontaneity, it becomes clear why we are dealing with a version of the Basic Problem; that is, why Sensibility and Objective Purport generate what I am calling Kant's Basic Problem. Using the Kantian terminology I have introduced, we can characterize this problem as follows: If intuitions belong to sensibility, and sensibility is heterogeneous to the understanding, then it is hard to see how intuitions could meet the requirement for objective purport. Objective purport requires concepts, and concepts go with the understanding. Heterogeneity seems to imply that a mental act (or, in Kant's terms, a representation) can be attributed *either* to sensibility *or* to the understanding, but not to both. Consequently, it looks like either intuitions are sensible, or they have objective purport (and are therefore epistemically significant), but not both. This, then, is Kant's Basic Problem.

A common strategy among Kant commentators for addressing this problem is to endorse a view I call Judgmentalism. This is the view that an intuition has objective purport just in case it is brought under a concept in judgment. Implicit in this view is the idea that every act of the understanding, and thus every act of concept-use, is an act of making a judgment, of entertaining a proposition. Henry Allison's reading of Kant illustrates this strategy. Allison says that an intuition is the representation of an object only if it is "taken under some general description or 'recognized in a concept'"; in other words, only if the intuition is subsumed under a concept.[3] And to subsume something under a concept is to make a judgment. Judgmentalism, then, claims that an intuition has objective purport just in case it is taken up into judgment.

I think there are several problems with this view, both textually and philosophically. I shall only mention these, without giving a detailed discussion, since my main goal here is to present an alternative to Judgmentalism. The main textual problem Judgmentalism faces is that there are a number of passages in which Kant seems to say that one can enjoy an intuition independently of making a judgment.[4] The main philosophical problem is that Judgmentalism appears to undermine the thesis of Sensibility. To see this, consider that Judgmentalism in effect makes an intuition into a component of judgment. And, indeed, it has been suggested by Judgmentalists that an

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[3] Henry Allison, *Kant's Transcendental Idealism*, 81. It may be helpful to provide a bit of the context from which the quote is taken: "[...] sensible intuition provides the mind only with the raw data for conceptualization, not the determinate cognition of objects. As discursive, such cognition requires not merely that the data be given in intuition but also that they be taken under some general description or 'recognized in a concept.' Only then can we speak of the 'representation of an object'" (ibid.).
[4] See, for instance, B132: "That representation which can be given prior to all thinking is called intuition."

intuition is the equivalent of a singular term; that is, of an item that combines with a concept in order to form a proposition. But if this is right, then intuition has logical structure. And it seemed to be the upshot of the thesis of Sensibility that an intuition does not have logical structure.[5]

To make this objection stick, it would need some spelling out. I cannot do that here, but I hope it has become clear that, at least on the face of it, the thesis of Sensibility presents a problem for Judgmentalist views. What I would like to do in this paper is to suggest that we can find the materials for an alternative to Judgmentalism – and thus provide a more promising solution to Kant's Basic Problem – if we consider Kant's philosophy of mathematics. What we find here is the idea of a special kind of exercise of the understanding (that is, a special kind of concept-use), which I call sensible synthesis (and which must be distinguished from the use of concepts in judgment). Recognizing this special kind of concept-use will put us in a position to propose a solution to Kant's Basic Problem, which is not purchased at the price of downplaying the significance of the thesis of Sensibility – which is what Judgmentalism ends up doing. I shall argue that sensible synthesis constitutes a kind of concept-use which has specifically *sensible* features. And this will put us in a position to claim *both* that intuition has objective purport *and* that this is compatible with the heterogeneity of sensibility and understanding. The idea is to argue that intuitions do indeed depend on the involvement of concepts for their objective purport. But if we can find our way to a notion of concept-use that does not take the form of judgment, then this will enable us to preserve the heterogeneity of sensibility and understanding (and thus avoid the problem faced by Judgmentalism).

[5] Moreover, there is reason to think that Kant's conception of judgment has no room for something like a singular term, since on this conception a judgment is, in the basic case, an act of predicating one concept of another concept. For discussion, see my "Intuition and Judgment," in: Claudio La Rocca et al. (eds.), *Kant and Philosophy in a Cosmopolitan Sense*, Berlin: de Gruyter, forthcoming.

Let me turn now to Kant's philosophy of mathematics; and, in particular, to his theory of geometrical construction. I will argue that this theory provides us with a notion of sensible synthesis. To show this, I will begin by discussing an actual geometrical proof and explain how Kant thinks such a proof works.

II. A Geometrical Proof

Before I turn to the proof itself, I need to provide some context. For Kant, mathematical knowledge is characterized by the following two features: first, it is synthetic a priori; and second, it is, as he puts it, knowledge "from the construction of concepts" (A713/B741). I shall discuss these in turn.

Consider, then, the claim that mathematical knowledge is synthetic a priori. To say that it is synthetic is to say that such knowledge does not rest on conceptual analysis. It involves more than merely explicating the content of a concept – which is what analytic knowledge is (for Kant). We might put the point by saying that, unlike analytic knowledge, synthetic knowledge is substantive knowledge of the world.

It is one of Kant's most deeply held commitments (and part of his case against Rationalism) that our only mode of access to objects is through intuition. What this means is that concepts alone cannot guarantee that there are, or even could be, any objects that fall under them. As long as I consider only concepts, I cannot exclude the possibility that these concepts might turn out to be empty, that they might not apply to anything in the world. Any claim to substantive knowledge about objects, therefore, must in some way be based on intuition. It follows that if mathematical knowledge is synthetic (where this means that it is substantive), then it, too, must be based on intuition.

Clearly, however, mathematical knowledge cannot be based on what Kant calls empirical intuition (and what we call perception). After all, mathematical knowledge is supposed to be a priori. This means that it is independent of experience. It is not through observation that I know, for instance, the Pythagorean Theorem. So if mathematics is synthetic, it must rest on a kind of intuition that is independent of experience; a non-empirical intuition. And notoriously this is exactly Kant's view. Kant thinks that mathematical knowledge is based on a non-empirical kind of intuition, what he calls *pure* intuition.

But what could that be, a non-empirical intuition? This is where the second characteristic of mathematical knowledge comes in: that is, the idea that such knowledge is based on what Kant calls the "construction of concepts". For Kant, a non-empirical intuition is an intuition that depends on the construction of a concept. In terms of this notion we can characterize the difference between empirical intuition and non-empirical intuition as follows: Empirical intuition is based on affection by objects: an object affects your senses and this yields a perception of it. By contrast, non-empirical (or pure) intuition does not depend on being affected by an object. Instead, it is based on the construction of a concept.

Let us now turn to the example. It concerns the proof of the theorem that the sum of the internal angles in a triangle is equal to two right angles; in other words, that the internal angle-sum of a triangle is 180 degrees. In Euclid's *Elements,* this theorem is Proposition 32 of Book I, and the proof of it that Kant discusses in the following passage is taken more or less directly from Euclid:

> Now let the geometer take up this question [viz. how the angle-sum of an arbitrary triangle relates to a right angle]. He at once begins to construct a triangle. Since he knows that the sum of two right angels is exactly equal to the sum of all the adjacent angles which can be constructed from a single point on a straight line, he prolongs one side of his triangle and obtains two adjacent angles, which together are equal to two right angles. He then divides the external angle by drawing a line parallel to the opposite side of the triangle, and observes that he has thus obtained an external adjacent angle which is equal to an internal angle – and so on. In this fashion, through a chain of inferences guided throughout by intuition, he arrives at a fully evident and universally valid solution of the problem. (A716f/B744f)

In this passage, Kant describes how the geometer first produces a diagram and then uses the diagram to draw certain inferences, which eventually yield an answer to the question about the angle-sum of a triangle. What I want to do now is to go through the passage and reconstruct the proof. In doing so, I will be referring to the diagram represented in Figure 1.

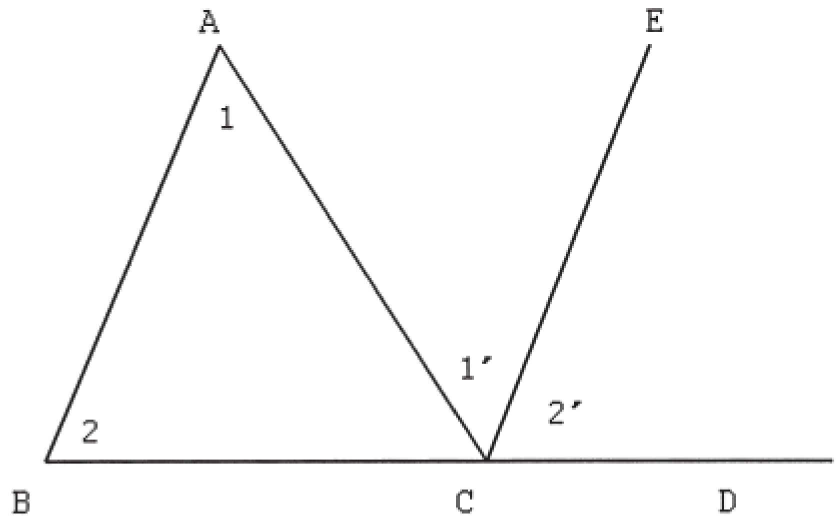

Figure 1

According to Kant's description, the geometer begins by constructing the triangle ABC. He then extends the base of the triangle, BC, to D. He does this, Kant says, because "he knows that the sum of two right angels is exactly equal to the sum of all the adjacent angles which can be constructed from a single point on a straight line." The geometer "knows" this, because he is drawing here on a theorem that has already been proved. It has *already* been proved in that, in Euclid's *Elements*, the proof for it is given prior to the proof we are now considering (viz. Proposition I.13, which says that the sum of all the angles that can be drawn from a point on a straight line is equal to the sum of two right angles). The geometer in Kant's example applies this theorem to the case of the line BD and the angles constructed on it from the point C. It follows that, in particular, the sum of the angles ∠BCA and ∠ACD is equal to two right angles.

The next step in the proof again draws on a theorem that has already been established. This is Euclid's Proposition I.31, which provides a technique for constructing a line that is parallel to a given line. Thus, the geometer in our proof constructs the line CE as a parallel to the line BA. Drawing on the same previously established proposition, the geometer knows that, if the line CE is parallel to the line BA, and if the line BC intersects both of these lines, then the angle here labeled 2 (=∠ABC) has the same size as the angle labeled 2' (=∠ECD); similarly, the theorem about parallels also shows that if the line AC intersects our two parallels, then angle 1 (=∠BAC) has the same size as angle 1' (=∠ACE).

Having established these claims, the geometer is now in a position to draw the following inferences: Since 1=1' and 2=2', it follows that the sum of the three angles 1, 2, and ∠BCA is equal to the sum of the three angles ∠BCA, 1', and 2'. Now, we already know that the sum of the three angles ∠BCA, 1', and 2' is equal to the sum of two right angles. It follows that the sum of the internal angles of the triangle ABC (1, 2, and ∠BCA) is equal to the sum of two right angles. And this is just the proposition we set out to prove.

III. Construction and Concepts

With this example of a geometrical proof before us we can now ask what it is to construct a concept in intuition. This, I will argue, will show us that geometrical construction, as Kant understands it, involves a non-judgmental exercise of the understanding; or as I call it, an exercise of the understanding in sensible synthesis. That is to say, the geometrical construction of a concept involves a kind of concept-use which does not take the form of judgment.

Let us begin by reflecting on how the proof actually proceeds. To begin with, notice that I did not simply talk about the concept of a triangle. I did not, as it were, present a bit of conceptual analysis. Rather, I talked about an actual triangle, that is, an object that instantiates the concept 'triangle.' In particular, I talked about the triangle ABC.

But now notice that there is a sense in which I did not talk about just one triangle, but indefinitely many triangles. For the proof I presented is supposed to be valid of any triangle whatsoever. The proof, in other words, concerns *all* instances of the concept 'triangle.'

If this is right, we need to ask how it works. What makes it the case that the proof I discussed holds of all triangles? I want to answer this question by considering a passage in which Kant gives an account of how proofs of this kind work. Here is the passage:

> Thus I construct a triangle by representing the object which corresponds to this concept either by imagination alone, […] or in accordance therewith also on paper […] – but in both cases completely a priori, *without having borrowed the pattern for my construction from any experience*. The single figure which we draw is empirical, and yet it serves to express the concept, without impairing its universality. For in this empirical intuition *we consider only the act whereby we construct the concept*, and abstract from the many determinations (for instance, the magnitude of the sides and of the angles), which are quite indifferent, as not altering the concept 'triangle'. (A713f/B741f, my emphases)

I have emphasized those clauses in the passage that are most important for my purposes, and my discussion will focus on these. In the first such clause, Kant says that in constructing a concept, e.g. the concept of a triangle, I represent something in intuition, but I do so "without having borrowed the pattern for my construction from any experience." But if not from experience, where *do* I get the pattern for my construction? Consideration of how Euclidean geometry proceeds will help us answer this question.

Euclid's *Elements* open with a set of postulates, which specify the operations that are permitted in the construction of geometrical figures. We can think of these as operations that can be performed with compass and straightedge. An example of such an operation is ‘To draw a straight line from any point to any point’ (First Postulate). Fundamental geometrical concepts, such as the concept of a triangle, are defined in terms that relate such concepts to the operations stated in the Postulates. Thus, a triangle is a figure that can be constructed by means of the repeated operation of drawing a straight line, viz. in such a way that three straight lines enclose a space.

Now notice that this already gives us everything we need in order to construct the concept of a triangle. Rather than “borrowing the pattern for our construction from experience,” we find it in the postulates and definitions of Euclidean geometry. Nothing is borrowed from experience here because what we are drawing on in constructing the triangle are, first, the general principles of Euclidean geometry and, second, a stipulative definition. And this, presumably, is what leads Kant to say that geometrical construction is a priori; that it draws on pure intuition, rather than empirical intuition. We might put the point by saying that what goes into the construction is determined not by what we perceive, but by which concept we decide to construct – along with what the construction rules permit us to do.

But even if we grant this point, we might still wonder how the construction succeeds in being general, in being valid of all triangles, not just of the particular triangle that one might take to be represented in the diagram (e.g. in figure 1, above). Kant addresses this point towards the end of the quoted passage, when he says that in carrying out a geometrical proof “we consider only the act whereby we construct the concept, and abstract from the many determinations (for instance, the magnitude of the sides and of the angles), which are quite indifferent, as not altering the concept ‘triangle’”. A triangle is defined as a plane figure enclosed by three straight lines. If my diagram is to be a construction of this concept, it must express precisely what is contained in this definition – nothing more and nothing less. It must *not* be, e.g., the concept of a scalene triangle or an isosceles triangle, or a triangle whose base is three inches long. The concept I am to construct is indeterminate in respect of these features, and my construction must reflect this. This means that the construction must be indeterminate with regard to, for instance, the size of the angles that make up the triangle.

Does the diagram in Figure 1 meet this requirement? I think it does. For notice that nothing I said about the triangle ABC when I gave the proof of Proposition I.32 depended on the actual size of the angles represented in the diagram. In effect, I treated these angles as being of arbitrary size. To see this, consider the auxiliary constructions I added to the triangle. It's easy to see that one could extend the line BC to point D, as well as draw a line parallel to BA and intersecting point C, for an arbitrary triangle ABC. No matter how I draw the triangle, I can always extend its base and construct a line parallel to one of its sides. My drawing functions as the construction of a general concept, then, because I treat it as being indeterminate in certain ways; or, as Kant would put it, because I attend only to the act whereby I construct the concept.

With this rough-and-ready sketch of Kant's notion of construction in intuition before us, I want now to return to the topic of sensible synthesis, that is, of a kind of exercise of the understanding that does not take the form of judgment. My contention is that construction in intuition, as Kant understands it, involves such an exercise of the understanding. And I now turn to making the case for this. I shall do so in two steps. First, I shall argue that construction involves the use of concepts and, therefore, the exercise of the understanding. Then, in the next section of the paper, I shall argue that this kind of concept-use does not consist in making a judgment.

To make the case that construction involves the use of concepts, consider that sensibility and understanding are the two basic cognitive capacities Kant recognizes. It should be possible, therefore, to account for geometrical construction in terms of these two capacities. We can characterize each of these capacities in terms of a pair of features: Sensibility is the capacity for intuitions; and it is characterized by Kant as a receptive capacity. A receptive capacity is one which depends on affection from without; it does not generate its own content, but receives this content from elsewhere; it is, as we might put it, essentially passive. By contrast, the understanding is the capacity for concepts. It is what Kant calls spontaneous, and to say this is to say that the understanding is a capacity to bring forth representations from itself, through its own activity. A very rough first gloss on this would be to say that a spontaneous capacity is essentially active. Let us see which of these features apply to geometrical construction.

As we have seen, construction involves intuition. More specifically, it involves pure, or non-empirical, intuition. But construction is not merely the product of a receptive capacity. For construction is clearly *not* the result of being affected by objects. It's not as if we passively receive the image of a triangle through our senses. On the contrary, we are quite active. We construct the figure by carrying out an operation in accordance with a technique. This operation, moreover, is informed by certain concepts. The diagram is constructed so as to be a representation of the concept of a triangle. This concept shapes the very act of constructing the figure, which for this reason may be understood as involving the application of a concept.

There is another reason why construction cannot be understood as merely receptive, and therefore not as the product of sensibility on its own. This has to do with a peculiar feature of spatial representation. Consider a finite region of space. Any such region is bounded by other regions of space. And these in turn are bounded by yet other regions of space. And so on indefinitely. Now, Kant thinks an awareness of anything as genuinely spatial has to involve an awareness, however implicit, of this characteristic of space. That is, any representation of a particular region of space has to represent this region as part of a larger whole. Indeed, Kant takes this to imply that we must think of any part of space as a limitation of a single, all-encompassing space.[6]

For our purposes, the important point here is that an awareness of this kind of part-whole structure is not something that sensibility could furnish on its own bat. Sensibility is a receptive capacity, and this means that it is a capacity to represent what is currently affecting me. Anything that goes beyond this is due to an exercise of spontaneity. But any awareness of the part-whole structure of space goes beyond what's currently affecting me. Therefore, spatial representation involves an exercise of spontaneity; that is, an exercise of the understanding.

It seems clear, then, that there is a sense in which geometrical construction involves the application of concepts. If this is right, geometrical construction is characterized by three of the four features I mentioned: it involves intuition; it is spontaneous; and it involves concepts. The latter two mark it out as an exercise of the understanding, the capacity for concepts. And as I shall now argue, the first implies that construction is a special kind of exercise of the understanding, one which does not consist in the making of judgments.

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[6] Compare the following passages:

> […] if one speaks of many spaces, one understands by that only parts of one and the same unique space. And these parts cannot as it were precede the single all-encompassing space as its components (from which its composition would be possible), but rather are only thought in it. It is essentially single; the manifold in it, thus also the general concept of spaces in general, rests merely on limitations. (A25/B39)

> The representation of space and the representation of time and all their parts are *intuitions*, thus individual representations along with the manifold that they contain in themselves (see the Transcendental Aesthetic), thus they are not mere concepts by means of which the same consciousness is contained in many representations, but rather are many representations that are contained in one and in the consciousness of it; they are thus found to be composite, and consequently the unity of consciousness, as *synthetic* and yet as original, is to be found in them. (B136n)

IV. Concepts and Spatial Representation

Assuming that the construction of a concept in intuition is indeed an act of the understanding, hence a kind of concept-use, we need to ask whether or not this takes the form of making judgments. I shall answer this question in the negative. My argument to this effect involves two steps. First, I will argue that the way in which Kant conceives of concepts does not permit him to think of the representation of anything spatial as being purely conceptual in nature. From this it follows that spatial representation cannot be a matter of making judgments; at least not primarily. Second, I will argue that, at the same time, spatial representation involves a kind of awareness that sensibility by itself cannot account for. This kind of awareness is connected to, but distinct from, the generality of geometrical construction, which we have already discussed. Isolating it will serve to support my contention that, although we should not think of construction as an act of judging, it does involve the application of concepts.

Let me begin by saying a bit more about Kant's view of mathematics. Kant holds that mathematical knowledge is knowledge of what he calls magnitudes. Space is, in his view, a magnitude. Therefore geometry, which for Kant is the science of space, gives us knowledge of magnitude.

A magnitude is defined by Kant as a whole of logically homogeneous parts.[7] This distinguishes a magnitude from what he calls a *compositum*, which is a whole of heterogeneous parts. More precisely, a magnitude is a whole of what we might call *strictly* logically homogeneous parts. These two notions, logical homogeneity *simpliciter* and strict logical homogeneity, may be defined as follows:

[7] For the following, compare Daniel Sutherland, "The Role of Magnitude in Kant's Critical Philosophy," *Canadian Journal of Philosophy* 34 (2004), 411-442; see also Sutherland, "Kant's Philosophy of Mathematics and the Greek Mathematical Tradition," *Philosophical Review* 113 (2004), 157-201.

Logical Homogeneity: For all x and y, x and y are logically homogeneous (with regard to F) iff there is a concept F such that Fx and Fy.

Strict Logical Homogeneity: For all x and y, x and y are strictly logically homogeneous iff, for all concepts Φ, Φx and Φy.

To say, then, that two things are logically homogeneous is to say that there is at least one concept F under which both of them fall. So, for instance, apples and oranges are logically homogeneous because both apples and oranges instantiate the concept 'fruit'. By contrast, for two things to be strictly logically homogeneous is for them to be qualitatively identical, and yet numerically distinct. For this is just what it means that both things instantiate all the same concepts. In other words, two things are strictly logically homogeneous just in case there is no concept that is instantiated by one thing, but not by the other. Kant's favorite example of this are drops of water.[8] According to Kant, we can imagine that two drops of water have exactly the same (intrinsic) properties, so that we may say that they are qualitatively identical. But since they occupy different locations in space, we have not just one drop, but two. So the two drops are numerically distinct despite being qualitatively identical.

This example already indicates that Kant thinks of space as a magnitude, that is, a whole that consists of strictly logically homogeneous parts. One part of space is exactly like any other part of space (if we abstract from what may be located in these parts). And yet one part of space is a distinct part of space from every other part – for they have different locations. It follows that, since geometry is the science of space, the object that geometry investigates is characterized by strict logical homogeneity.

I now turn to Kant's theory of concepts. We shall see that it follows from this theory that strict logical homogeneity cannot be represented by conceptual means. More precisely, it cannot be represented by conceptual means *alone.* Strict logical homogeneity

[8] See A272/B328.

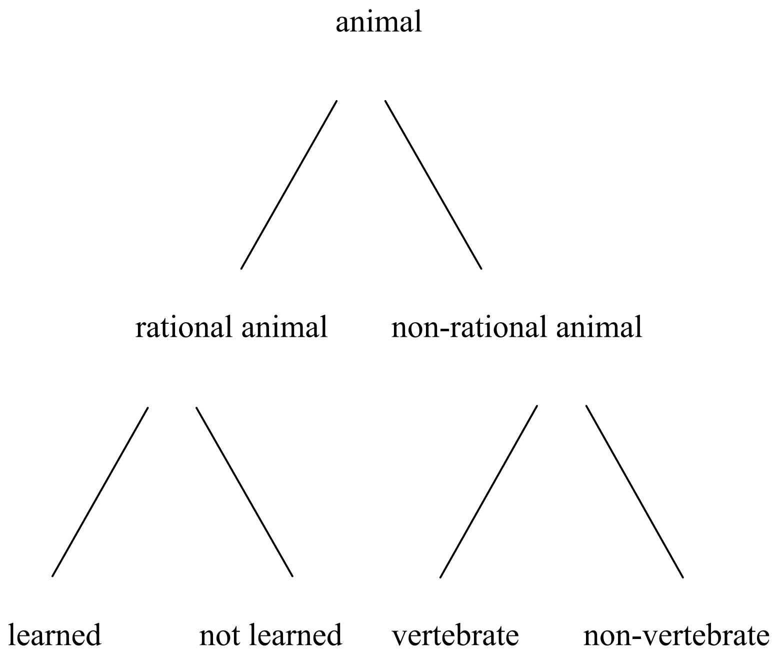
can be represented, however, with the aid of intuition.[9] Since geometry (and mathematics in general) is about magnitudes, and magnitudes exhibit strict logical homogeneity, it follows that geometry must involve intuition. Indeed, this is one of the main reasons why Kant holds that geometry rests on intuition. But let me explain why conceptual means alone are not sufficient to represent strict logical homogeneity.

A concept, for Kant, is an essentially *general* representation. However, Kant thinks of generality, not on the model of a mathematical function, as Frege would, but rather on the model of a biological taxonomy.[10] Take some concept, say, the concept 'animal.' What makes this a concept is that it subsumes other representations. For Kant (and the Aristotelian tradition) this shows itself not just in the fact that we can subsume objects under this concept. Rather, it shows itself primarily in the fact that other concepts are subordinate to this concept. This, in turn, manifests itself in the fact that we can generate such subordinate concepts by, as it were, dividing the concept 'animal'. Thus, we can introduce, e.g., the notion of rationality and divide the class of all animals into the rational animals and the non-rational animals. In this way, we have formed two new concepts, both of which are subordinate to our original concept.

Suppose we repeat this operation many times over. At each step we add more content to our concepts. In this way, we can generate a taxonomy of the kind familiar from biological classification; a taxonomy, that is, which contains genus- and species-concepts and which can be represented in a tree-structure:

[9] The implication is that if there are any concepts that represent magnitudes, they do so only in a derivative way.

[10] For discussion, see Lanier Anderson, "The Wolffian Paradigm and its Discontents: Kant's Containment Definition of Analyticity in Historical Context," *Archiv für Geschichte der Philosophie* 87 (2005), 22–74.



Now, the central point is that Kant thinks of concepts as essentially exhibiting the kind of structure captured by such a tree. That is, a concept, for Kant, is something that has a place in this kind of structure (the tree of Porphyry). If this is right, we can connect what I have just said to the problem of representing strict logical homogeneity by asking how numerical difference is represented in such a tree-structure. If we take, for example, the concept ‘human’ (and regard its content as fixed by the place it occupies in the tree), the question is what we have to do to represent two or more of such things. If our only resource is conceptual representation, understood along the lines just indicated, then the only means we have at our disposal is to add further determinations to the concept ‘human’. For instance, we can form the concepts ‘learned human being’ and ‘ignorant human being’.

It now looks as if we have succeeded in representing (at least) two humans. So we might say that we have succeeded in representing numerical diversity in the concept ‘human’. But if we reflect on how we did this, we will see that the representation of numerical diversity here depends on the representation of qualitative diversity. For we represented numerical diversity in the concept 'human' only by introducing a qualitative difference, the difference between 'learned human' and 'ignorant human'. Among other things, this means that we have here a case of numerical diversity combined with logical homogeneity. But we do not have a case of numerical diversity combined with *strict* logical homogeneity.

This shows that, as long as we are limited to conceptual means, we will simply not be able to represent strict logical homogeneity. For as long as we limit ourselves to concepts (in the sense I have introduced), the only means at our disposal is a move of the same kind as the one we just made. That is, we can only introduce additional qualitative distinctions. But this will never get us the representation of bare numerical diversity. We will never be able to represent a multiplicity of things that are the same in every respect – like Kant's two drops of water.

This shows that it is not possible to represent magnitudes, as Kant conceives of them, by conceptual means. For it is essential to the concept of a magnitude that one be able to represent "more of the same." And that one be able to do this independently of introducing qualitative differences – rather, what's at issue is the possibility of representing "more of *exactly that.*"

Now, space for Kant is such that it makes possible this kind of representation. Space is what we might call a principle of pure manifoldness. More precisely, space for Kant is a whole that is composed of strictly logically homogeneous parts. Thus, as I said before, every part of space has exactly the same properties as every other part. And since space is a form of intuition, this suggests that we can turn to intuition in order to represent strict logical homogeneity. If this is right, we can reason as follows: If mathematics is about magnitudes, and if strict logical homogeneity is essential to the notion of magnitude, then the objects of mathematics cannot be represented without taking recourse to intuition.

And this, of course, is Kant's claim: mathematics depends on intuition. By Kant's lights, it is no accident that the geometrical proof I discussed involves intuition.

Let me illustrate this by going back to this proof for a moment. I said that Kant thinks of spatial relations as exhibiting strict logical homogeneity. This holds, for instance, for the relation 'x is adjacent to y'. Recall now that the proof of the theorem about the angle-sum of a triangle depended in part on identifying instances of this relation. For instance, one step in the proof consisted in the recognition that the three angles 1', 2', and ∠BCA are adjacent to one another. It is because of this recognition that the theorem according to which the sum of all angles that can be drawn from a point on a straight line is equal to two right angles finds application. But this means that the proof depended in part on the representation of certain spatial relations, which, as such, are characterized by strict logical homogeneity.

I have now shown that in Kant's view conceptual means are insufficient for representing spatial relations. Rather, any representation of space must involve intuition. Spatial representation, therefore, cannot be a matter of combining concepts in judgment. Judgment, for Kant, paradigmatically expresses the kind of subordination relations among concepts on which a taxonomy like the one discussed above is based.[11] It is therefore a form of representation that is not fit to capture the kinds of relations characteristic of space. Specifically, it is not fit to represent strict logical homogeneity.[12]

Above I argued that geometrical construction involves the use of concepts. The idea was that construction consists in the application of a technique for generating figures

[11] In the basic case, a judgment for Kant involves predicating one concept of another concept. For discussion see, e.g., Manley Thompson, "Singular Terms and Intuitions in Kant's Epistemology," *Review of Metaphysics* 26 (1972), 314-343.

[12] This claim needs qualification. There is a derivative way in which spatial relations may be represented in judgment, viz. through the use of spatial concepts. Spatial concepts, however, cannot be understood on the model of concepts presented above. Rather, they depend directly on intuition, specifically on the possibility of being constructed in intuition. For this reason, there is a sense in which such concepts are derivative, the sense, namely, that Kant intends when he says that the *original* representation of space is an intuition, not a concept; see e.g. B40f.

in space, and that this application involves a kind of concept-use. Moreover, I claimed that it is an essential aspect of spatial representation that such representation must include an awareness, at least implicitly, of the characteristic part-whole structure of space. And in Kant's scheme of cognitive capacities, this kind of awareness cannot be attributed to sensibility alone, since it cannot be understood as the act of a merely receptive capacity, and must therefore be in part a function of spontaneity, the capacity for concepts.[13] We can now see that this kind of concept-use cannot be an act of judgment. The reason is that it is essential to this kind of concept-use that it involves spatial representation. And as I have just argued, spatial relations cannot be represented through judgment.[14] If this is right, it follows that Kant recognizes a kind of concept-use that is not tied to judgment, hence a kind of exercise of the understanding which does not take the form of judgment.

IV. Construction and the Understanding

A judgment, for Kant, is a spontaneous application of concepts. It depends on intuition for its objective validity (which for present purposes we may gloss as its capacity to be true or false). But it does not itself *involve* intuition. To judge, for instance, that water expands when it freezes one does not need to be perceiving anything. By contrast, sensible synthesis, the kind of exercise of spontaneity that is involved in geometrical construction, constitutively involves intuition. Indeed, it seems to involve the generation of an intuition, or as Kant would put it, an act of determining sensibility.[15] There is, therefore, a robust sense in which this kind of synthesis, while being an act of the understanding, exhibits distinctively sensible features.

Why does this matter? Recall what I labeled Kant's Basic Problem. This is the problem that it is hard to see how intuitions can be both sensible and have objective

[13] See p.16, above.
[14] Again, this claim should be taken with the qualification made in the previous footnote.
[15] Cf. e.g. B152.

purport (and thus be epistemically significant). What makes this hard to see is that objective purport depends on the involvement of concepts, and thus on the understanding. As I put it earlier, for Kant a representation has objective purport only to the extent that it exhibits categorial unity – and the presence of categorial unity in a representation is always due to the understanding. But if intuition depends on the understanding for its objective purport, then, it seems, intuition cannot be sensible; at least not if we hold on to the idea (which I suggested is central to Kant's position) that sensibility is heterogeneous to the understanding.

I claimed at the outset that Kant's conception of geometrical construction points the way towards a solution to Kant's Basic Problem. We are now in a position to see why this is so. There are two steps here. The first step is to show that the notion of sensible synthesis (that is, the notion of a non-judgmental exercise of the understanding) makes it possible to see that the sensible character of intuitions is compatible with their objective purport, and does not undermine the heterogeneity of sensibility and understanding. The second step is to argue that a version of sensible synthesis is responsible not just for the pure spatial intuitions of geometry, but for empirical intuitions as well. This is not the place to develop such an argument, but in conclusion I would like briefly to sketch how it would go.

Again, the first step is to argue that the notion of sensible synthesis is just the kind of thing that is needed to preserve the heterogeneity of sensibility and understanding, on the one hand, while at the same time accounting for objective purport of intuitions – which, for Kant, means accounting for the categorial unity of intuitions. What the notion of sensible synthesis enables us to do is to argue that the heterogeneity of sensibility and understanding consists in the fact that intuitions do *not* have propositional structure, whereas judgments *do* have propositional structure. But if a notion of sensible synthesis is available, then the fact that intuitions do not have propositional structure does not prevent them from involving an exercise of the understanding; that is, an exercise of the capacity of concepts, the capacity for the representation of categorial unity. Therefore, the claim that intuitions are sensible is perfectly compatible with the claim that intuitions have objective purport.

However, the argument I have just given depends on a second step. This is to argue that sensible synthesis is involved not just in geometrical construction, but in all intuitions; specifically, in empirical intuitions. There is clear textual evidence that Kant is committed to such a view. For he literally says (in a passage already quoted at the outset) that "intuitions in space […] must be represented through the same synthesis by means of which space […] in general is determined" (B203). Exactly how we are to understand this would itself require a detailed discussion, which I cannot give here. For now, what I hope to have established is the following: First, there is strong evidence that Kant is committed to the view that the understanding can be exercised in a way that is distinct from judgment. Second, the construction of a geometrical figure is a prominent instance of this kind of exercise. Indeed, I believe it serves as Kant's model for sensible synthesis in general. And finally, the idea of such an exercise of the understanding provides us with an important conceptual tool needed to solve what I have been calling Kant's Basic Problem.[16]

[16] Additional conceptual tools are needed, however. For one thing, we need an account of the understanding that makes it intelligible that judgment and sensible synthesis are acts of the same capacity. I believe that Kant's doctrine of apperception contains the resources for such an account. For discussion, see my *Kant's Theory of Synthesis*, Ph.D. dissertation, University of Chicago, 2010, 197-241.