apodictic teachings through intuition[d] but can never derive them from it. This observation with respect to the nature of mathematics already guides us toward the first and highest condition of its possibility; namely, it must be grounded in some *pure intuition* or other, in which it can present, or, as one calls it, *construct* all of its concepts *in concreto* yet *a priori*.* If we could discover this pure intuition and its possibility, then from there it could easily be explained how synthetic *a priori* propositions are possible in pure mathematics, and consequently also how this science itself is possible; for just as empirical intuition makes it possible for us, without difficulty, to amplify (synthetically in experience) the concept we form of an object of intuition through new predicates that are presented by intuition itself, so too will pure intuition do the same, only with this difference: that in the latter case the synthetic judgment will be *a priori* certain and apodictic, but in the former only *a posteriori* and empirically certain, because the former only contains what is met with in contingent empirical intuition, while the latter contains what necessarily must be met with in pure intuition, since it is, as intuition *a priori*, inseparably bound with the concept *before all experience* or individual perception.

§8

But with this step the difficulty seems to grow rather than diminish. For now the question runs: *How is it possible to intuit something* a priori? An intuition is a representation of the sort which would depend immediately on the presence of an object. It therefore seems impossible *originally* to [4:282] intuit *a priori*, since then the intuition would have to occur without an object being present, either previously or now, to which it could refer, and so it could not be an intuition. Concepts are indeed of the kind that we can quite well form some of them for ourselves *a priori* (namely, those that contain only the thinking of an object in general) without our being in an immediate relation to an object, e.g., the concept of magnitude, of cause, etc.; but even these still require, in order to provide them with signification and sense, a certain use *in concreto*, i.e., application to some intuition or other, by which an object for them is given to us. But how can the *intuition* of an object precede the object itself?

* See *Critique* p. 713.[1]

[d] *Anschauung*

[1] See pp. 195–6.

§9

If our intuition had to be of the kind that represented things *as they are in themselves*, then absolutely no intuition *a priori* would take place, but it would always be empirical. For I can only know what may be contained in the object in itself if the object is present and given to me. Of course, even then it is incomprehensible how the intuition of a thing that is present should allow me to cognize it the way it is in itself, since its properties cannot migrate over into my power of representation; but even granting such a possibility, the intuition still would not take place *a priori*, i.e., before the object were presented to me, for without that no basis for the relation of my representation to the object can be conceived; so it would have to be based on inspiration. There is therefore only one way possible for my intuition to precede the actuality of the object and occur as an *a priori* cognition, *namely if it contains nothing else except the form of sensibility, which in me as subject precedes all actual impressions through which I am affected by objects*. For I can know *a priori* that the objects of the senses can be intuited only in accordance with this form of sensibility. From this it follows: that propositions which relate merely to this form of sensory intuition will be possible and valid for objects of the senses; also, conversely, that intuitions which are possible *a priori* can never relate to things other than objects of our senses.

[4:283]

§10

Therefore it is only by means of the form of sensory intuition that we can intuit things *a priori*, though by this means we can cognize objects only as they *appear* to us (to our senses), not as they may be in themselves; and this supposition is utterly necessary, if synthetic propositions *a priori* are to be granted as possible, or, in case they are actually encountered, if their possibility is to be conceived and determined in advance.

Now space and time are the intuitions upon which pure mathematics bases all its cognitions and judgments, which come forward as at once apodictic and necessary; for mathematics must first exhibit all of its concepts in intuition – and pure mathematics in pure intuition – that is, it must first construct them, failing which (since mathematics cannot proceed analytically, namely, through the analysis of concepts, but only synthetically) it is impossible for it to advance a step, that is, as long as it lacks pure

intuition, in which alone the material[e] for synthetic judgments *a priori* can be given. Geometry bases itself on the pure intuition of space. Even arithmetic forms its concepts of numbers through successive addition of units in time, but above all pure mechanics can form its concepts of motion only by means of the representation of time.[2] Both representations are, however, merely intuitions; for, if one eliminates from the empirical intuitions of bodies and their alterations (motion) everything empirical, that is, that which belongs to sensation, then space and time still remain, which are therefore pure intuitions that underlie *a priori* the empirical intuitions, and for that reason can never themselves be eliminated; but, by the very fact that they are pure intuitions *a priori*, they prove that they are mere forms of our sensibility that must precede all empirical intuition (i.e., the perception of actual objects), and in accordance with which objects can be cognized *a priori*, though of course only as they appear to us.

§11

The problem of the present section is therefore solved. Pure mathematics, as synthetic cognition *a priori*, is possible only because it refers to no other objects than mere objects of the senses, the empirical intuition of which is based on a pure and indeed *a priori* intuition (of space and time), and [4:284] can be so based because this pure intuition is nothing but the mere form of sensibility, which precedes the actual appearance of objects, since it in fact first makes this appearance possible. This faculty of intuiting *a priori* does not, however, concern the matter of appearance – i.e., that which is sensation in the appearance, for that constitutes the empirical – but only the form of appearance, space and time. If anyone wishes to doubt in the slightest that the two are not determinations inhering in things in themselves but only mere determinations inhering in the relation of those things to sensibility, I would very much like to know how he can find it possible to know, *a priori* and therefore before all acquaintance with things, how their intuition must be constituted – which certainly is the case here with space and time. But this is completely comprehensible as soon as the two are taken for nothing more than formal conditions of

[e] *Stoff*

[2] Kant developed his analysis of motion and time in the *Metaphysical Foundations of Natural Science*.