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Prolegomena [= Preliminaries] to any Future Metaphysic that can Present itself as a Science

By Immanuel Kant

INTRODUCTION

These *Preliminaries* are meant for the use not of learners but of future teachers; and even the teachers shouldn't expect this book to help them by neatly laying out a ready-made science. Rather, it is to help them to *discover* this science. [Throughout this work, 'science' means 'branch of knowledge that is theoretically organised, highly structured, and soundly based'.]

For some learned people, philosophy is just the history of philosophy (ancient and modern); these preliminaries aren't written for them. They must wait their turn. When those who work to draw ·truth· from the well of reason itself have done their work, *then* the historians can give the world the news about their results. ·But they won't regard it as *news*, because· nothing can be said now that the historians won't think has been said already! And it is safe to predict that they'll think the same about anything said in the future; human understanding has busied itself for centuries with countless topics in many ways, so it is to be expected that every new idea will resemble *something* that has been said in the past.

If you think that metaphysics is worth studying, my aim is to convince you of the following:

It is absolutely necessary that you stop your work for a while, regard anything that has been done as *not* having been done, and face up to the preliminary question of *whether such a thing as metaphysics is even possible*.

If it is a science, why can't it get universal and lasting approval, like other sciences? If it is not, what enables it to go on giving itself airs with its *pretence* of being a science, keeping men's minds in suspense with hopes that never die but are never fulfilled? If we are to show that there's knowledge to be had from metaphysics, or to show that there isn't, we must once and for all reach a conclusion about the nature of this would-be science, for it can't go on as it has been doing. It seems close to ridiculous, when every other science makes steady progress, that this one - claiming to be wisdom personified, the oracle that everyone consults - goes on circling around

the same spot, never taking a step forwards. Its fringe hangers-on have scattered; and people who are sure enough that they can shine in other sciences won't be found risking their reputations in this one, where there are no objective standards for distinguishing sound knowledge from mere chatter, so that any ignoramus can feel entitled to pass judgment.

There's nothing extraordinary in the idea that when people have worked hard at a science they should wonder •how much progress it has made, and be led from that to wonder •whether such a science is possible at all. Human reason so loves *building* that it has repeatedly built a tower of theory and then dismantled it to check the soundness of the foundation. It is never too late to become reasonable and wise; but if an insight comes late, it will be that much harder to make use of it.

When we ask whether a certain science is *possible*, that presupposes that we have doubts about whether it is *actual*. That doubt will shock anyone whose whole fortune, perhaps, consists in this supposed jewel called 'metaphysics'; and so anyone who voices the doubt can expect to be attacked on all sides. Some of the attackers - clutching their big metaphysical books, and proudly conscious of their intellectual possessions, which they think are legitimate because they are old! - will look down on him with contempt. Others, for whom everything they see is all of a piece with something they have seen before, won't understand him. And for a while things will stay as they were, as though nothing had happened to raise the hope or the fear of an impending change.

Nevertheless, I confidently predict that if you read these preliminaries and think for yourself, not only will you come to doubt the supposed science that you have practised under the name of metaphysics, but eventually you'll become quite sure that nothing *like* that *can* exist without satisfying the demands that I shall state here - demands on which its possibility depends. You will also become sure that since the demands never have been met, there has up till now been no such thing as metaphysics.

But the search for metaphysics will continue, because the interests of human reason are so closely bound up with it; so you'll agree that metaphysics is unstoppably on the road to a total reform (or, better, a new birth) on a wholly new plan, even if people struggle against it for a while.

David Hume's attack on metaphysics was more decisive for its fate than any other event since the *Essays* of Locke and Leibniz - actually, since the earliest recorded beginnings of metaphysics. Hume threw no *light* on this kind of knowledge, but he struck *a spark* from which a light could have been kindled, if it had fallen on something flammable and the resultant smoulder had been nursed into flames.

Hume's primary starting-point was a single, though important, metaphysical concept, namely that of *the connection of cause with effect* (including such derivative concepts as those of *force* and *action* and so on). Reason purports to have given birth to this concept, but Hume put to reason this challenge:

Explain to me what entitles you to think there could be a thing *x* such that: *given that there is x, there must necessarily also be something else y* - for that's what the concept of cause says.

He showed beyond question that it is completely impossible for reason to have - in an *a priori* way and purely through concepts with no input from experience - the thought of such a union of *x* with *y*, because the thought of such a union includes the thought of necessity. We cannot at all see why, given that one thing exists, some other thing *necessarily* must exist, or how the concept of such a connection could arise *a priori*. From this he inferred that reason is utterly deluded

regarding the concept of cause, wrongly thinking it to be among her own children when really it is a bastard child of the imagination that was got in the family way by experience. What the imagination did according to Hume was to consider certain sense-impressions that were related to one another by the law of association

- so that, for instance, after experiencing many F impressions followed by G ones, you get into the *habit* of expecting a G whenever you experience an F, the habit becoming strong enough so that any new experience of an F *compels* you to expect a G -

and to mistake a subjective necessity (habit) for the objective necessity arising from intellectually seeing what must be the case. He inferred from this that reason can't come up with a thought of the form *x is necessarily and objectively connected with y*, or even with the *general* thought of that *kind* of connection. If reason did produce any such thought (Hume held), the concepts it involved would be purely fictitious, and all reason's claims to *a priori* knowledge would be merely the deliverances of ordinary experience, wrongly labelled. What Hume was saying, in effect, was that metaphysics doesn't exist, couldn't possibly exist.¹

His inference was hasty and wrong, but at least it was based on investigation; and this investigation thoroughly deserved a better response than it got. It ought to have brought together the intelligent people of the time to search for a happier solution of Hume's problem as he had formulated it; and if that had happened, a complete reform of the science of metaphysics would have quickly followed.

But metaphysicians have always suffered the misfortune of not being understood by anyone, and this is what happened to Hume. It really hurts to see how totally Hume's opponents - Reid, Oswald, Beattie, and finally Priestley too - missed the point of his problem. They kept taking for granted things that he had called into question, and offered furious and often arrogant demonstrations of things he had never thought of questioning; so they didn't pick up the pointer he had given to an improvement that metaphysics might undergo. In this they failed so completely that at the end of the debate the status quo was still standing: it was as though nothing had happened!

Hume had never cast doubt on the proposition that the concept of cause is proper, useful, and even indispensable for our knowledge of nature; *that* wasn't in question. What *was* in question was whether reason could think that concept *a priori*. If it could, the concept of causation would be the source of an inner truth - truths coming just from itself, not *from* anything outside it given through experience - so that it could be applied *to* things other than merely the objects of experience. *That* was Hume's problem. He wasn't challenging our indispensable *need* for the concept of cause, but merely asking what its origin is. If the origin was settled, questions about the conditions governing the use of the concept, and about the domain in which it can be validly used, would automatically have been answered also.

To deal adequately with this problem, however, Hume's opponents would have had to dig deeply into the nature of reason, considered as the faculty of pure thinking: not a job to their

¹ Yet Hume called this destructive science of his 'metaphysics' and put a great price on it. 'Metaphysics and morals', he says, 'are the most important branches of learning. Mathematics and natural science are not half so valuable.' But all that this brilliant man had in his view was the negative work involved in damping down the extravagant claims of speculative reason and thus settling many endless and vexatious controversies that lead mankind astray. He lost sight of the positive harm that is done when reason is robbed of its most important vistas - which it needs if it is to mark out for the will its highest goal in all its endeavours. [This dark remark reflects views of Kant's about reason's link with freedom, and freedom's link with morality.]

taste! They were more comfortable with a different approach, one that let them defy Hume without bringing any insight to his problem, namely by appealing to *common sense*. It is indeed a great gift from heaven to have plain common sense. But this common sense must be shown in practice, through judicious and reasonable thoughts and words, not by appealing to it as an oracle when one has no rational arguments to offer. *Appeal to common sense when insight and science have failed you, but don't appeal to it before then!* - that rule of intellectual conduct is one of the devious inventions of recent times, and it enables a shallow ranter to join battle with a solid thinker, and hold his own. But anyone with a flicker of insight left to him would be careful *not* to grasp at this straw. If you place this appeal to common sense in a clear light you will see that it is nothing but an appeal to the opinion of the mob - whose applause embarrasses the philosopher but brings joy and reassurance to the popular smart alec. I should think that Hume had as much claim to sound common sense as Beattie did, and he also had something that Beattie lacked, namely a *critical reason* that restrains common sense so that •it doesn't speculate or, if speculations are the topic of discussion, •it doesn't crave for any decision when it isn't satisfied that it has the arguments to support one. This is the only way someone's common sense can remain sound. Chisels and hammers can serve very well in working wood, but for copperplate we need an engraver's needle.

Thus •sound common sense and •speculative understanding are both useful, but each in its own way: •the former serves in judgments that apply immediately to experience, •the latter comes into play when universal judgments from mere concepts are to be made, as in metaphysics. In the latter environment sound common sense has absolutely no right to judge.

Here is an open confession about something that happened many years ago: it was my recollection of the thought of David Hume that broke into my dogmatic slumber, and pointed my work in speculative philosophy in a completely new direction. I was nowhere near accepting his *conclusions*. He had reached them by looking at only a part of his problem - a part that by itself can give us no information. Still, if we start from a well-founded but undeveloped thought that someone else has left to us, we can hope that by continuing to think it through we shall get further than did the brilliant man to whom we owe the first spark of light.

So I tried first to see whether Hume's objection could be put into a general form, and I soon got a result:

The concept of *the cause-effect connection* is far from being the only idea by which the understanding has *a priori* thoughts about the connections of things. On the contrary, metaphysics consists purely of such concepts - i.e. concepts of the connections of things. I tried to find out how many such concepts there are, and succeeded in this in the desirable way, namely by starting from a single principle. Then I proceeded to the deduction of these concepts, which I was now certain didn't come from •experience (which is all that Hume provided for them) but rather from •pure understanding. [By the phrase 'the deduction of these concepts' Kant refers to a *theoretically grounded and justified list of the concepts in question* - something that proves and explains why the metaphysical concepts of the connections of things are just exactly the ones on the list.] This deduction had seemed impossible to Hume; and apart from him nobody had even *thought* of it, although everyone had confidently used the metaphysical concepts, without asking what their objective validity was based on. The deduction was the hardest task that anyone could tackle in the service of metaphysics; and the worst of it was that I couldn't get help from metaphysics as it then was, because this deduction is what's needed to make metaphysics possible. But despite getting no help from metaphysics I *did* succeed in solving the Humean problem, not merely for a particular case of the cause-effect connection but with respect to the whole faculty of pure reason. With

that done, I could safely - though always slowly - go on to map out the whole domain of pure reason, establishing its boundaries and its contents. I did all this completely, and from general principles, which is what metaphysics needed if its system was to be securely built.

I expounded the Humean problem in its most general possible form in my book *Critique of Pure Reason*; but I am afraid that that work may go the same way as the problem did when Hume first propounded it. The book will be misjudged because misunderstood; and people will misunderstand it because they are inclined to skim through the book rather than *thinking it through*. That is ·admittedly· a disagreeable task, because the work conflicts with all ordinary concepts, as well as being dry, obscure, and long-winded! ·Despite those drawbacks·, I confess that I didn't expect to hear a *philosopher* complain that the book isn't a crowd-pleaser, not entertaining, not an easy read, given that what's at issue in it is no less than the existence of a highly prized and indispensable kind of knowledge - a question that *can't* be settled except by working strictly according to rule and with great precision. Such work might in the course of time please the crowd; but ·a concern for· popularity is quite inappropriate at the start. Still, one of the complaints is justified: the book's plan is diffuse, making it hard for the reader to keep in mind the chief points of the investigation; and that contributes to a certain obscurity. I intend to remedy that with these *Preliminaries*.

The earlier work, which maps out the entire faculty of pure reason, will be the foundation to which the *Preliminaries* are to be related. But the latter work - ·the book you now hold in your hands· - is only a preparatory exercise ·and not a contribution to metaphysics itself·; because we can't think of letting metaphysics appear on the scene, or even have a faint hope of attaining it, until our critique has been established as a science that is complete in every detail.

We have long been used to seeing dreary old knowledge spruced up as new by being taken out of its former context and turned into a system in fancy new clothing with new terminology; and that's all that most readers will initially expect my critique to be. But these *Preliminaries* may help the reader to see that it is ·not old stuff in new clothes, but· a wholly new science that no-one has ever thought of - indeed, the very *idea* of which was unknown - and to which no previous work has made the slightest contribution. The only exception to that is the pointer one could get from Hume's doubts; but even he didn't suspect ·there could be· such a possible formal science; instead, he played safe by running his ship onto the shore (scepticism), and letting it lie there and rot. I prefer to give the ship a *pilot* who can safely sail it anywhere he likes, by means of secure principles of navigation drawn from a knowledge of the globe, and equipped with a complete chart and compass.

Suppose we are confronted by a new science that is wholly isolated and the only one of its kind. If we start with the assumption that we can make judgments about it in terms of knowledge that we have already gained - which is precisely what has first to be called in question ·when considering a new science· - all we shall achieve is to see everywhere things we already know, with the •words sounding familiar but everything seeming (·so far as the •content is concerned·) to be pushed out of shape, senseless, gibberish. That's because we'll be relying on •our own notions, which long habit has made second nature for us, instead of relying on •the author's. But the longwindedness of the work, to the extent that it comes from the science itself and not merely from the exposition, as well as the unavoidable dryness and by-the-rules precision, are qualities that can bring credit to the science - though not to the book!

It isn't given to many of us to write with the subtlety and grace of David Hume, or with the solidity and elegance of Moses Mendelssohn. Yet I flatter myself that I could have written in a

crowd-pleasing way if my aim in the *Critique of Pure Reason* had been merely to outline a plan and leave it to others to complete, rather than having set my heart on the good of the science that had occupied me for so long. Indeed it took a lot of perseverance and a good deal of self-denial to put the prospect of later but more lasting applause ahead of the enticements of an immediate success.

The *making of plans* is often an arrogant and boastful activity through which someone gives himself airs as a creative genius by demanding what he doesn't himself supply, finds fault with what he can't improve, and makes proposals that he himself doesn't know how to carry out - though a sound plan for a *general critique of pure reason*, if it isn't to amount only to the usual spouting of pious hopes, will have to have more content than one might expect. But the domain of pure reason is so separate from everything else, and so inter-connected within itself, that we can't lay a finger on one part without affecting all the others, and can't build anything there without first determining where each part is and how it relates to the rest. That's because our judgment within this domain can't be corrected by anything outside it, and so the validity and use of every part of the domain depends on how it relates to all the rest - just as with the structure of an organism we can work out the purpose of each part only from a full conception of the whole. So it can be said that such a critique shouldn't be trusted unless it is *perfectly complete*, down to the smallest elements of pure reason, and that in the domain of reason you must settle everything - or you'll settle nothing.

As for a mere plan or sketch of the critique of pure reason: its usefulness as a *sequel* to the critique is a measure of how useless - how unintelligible and unreliable - it would be if given *in advance*. Taken as a sequel, it gives us a vantage-point from which we can take in the whole thing, can test - one by one - the chief points of the science, and can make the exposition of it much better than it was the first time around.

[In the next paragraph Kant uses 'analytic' and 'synthetic' to mark a distinction between two *methods of presentation* of some doctrine. An analytic presentation starts with things we all know to be true and works its way from those to the theory or doctrine that explains and is supported by them. A synthetic presentation goes in the opposite direction: it starts with the fundamental theses of the doctrine to be expounded, and works from those to various of their consequences, which could include the things-we-already-know that are the *starting-point* for the analytic format. This use of 'analytic' and 'synthetic' occurs *only* here and on pages 15 and 70. Everywhere else in this work and throughout the *Critique of Pure Reason* Kant uses the terms in an utterly different sense, in which it distinguishes not expository methods but kinds of proposition. *This* use of the terminology is the one that is still current; Kant explains it in section 2 below.]

With my critique of pure reason completed, I now offer a *plan* of it as a sequel. The plan is to be laid out in the analytic manner, whereas the critique itself had to be composed in the synthetic style so that readers could command a view of all the *joints* of the science - the natural hanging-together of the structural parts of 'pure reason', an utterly special cognitive faculty. But if you also find *this* too obscure - this plan that I offer as the *Preliminaries to any future Metaphysic* - bear in mind that it's not necessary for everyone to study metaphysics, that many people have the aptitude to succeed very well in sciences (even deep ones) that are closer to sense-experience, yet can't succeed in investigations dealing with highly abstract concepts, that such people should employ their talents on other subjects; that someone who undertakes to make judgments in metaphysics - let alone to construct a metaphysical system - must *satisfy* the demands I have made here, which he can't do by *rejecting* them, so he must either adopt my solution or thoroughly refute it and put another in its place; and, finally, that this notorious obscurity (allegations of which are often a cloak to cover the accuser's laziness or stupidity) also has its uses as a defence against insolent intruders. There's no shortage of *them* in metaphysics!

People who maintain a cautious silence in relation to other sciences approach metaphysics in a spirit of bold pronouncements and snap judgments, because in this area their ignorance is not contrasted with the knowledge of others.

PREAMBLE ON THE SPECIAL FEATURES OF ALL METAPHYSICAL KNOWLEDGE

Section 1: The sources of metaphysics

If a domain of knowledge is to be exhibited as a science, we need to know exactly what features are special to it, marking it off from all other sciences. Otherwise the boundaries of all the sciences run into one another and none of them can be treated soundly according to its own nature. Our idea of a possible science and of the territory it covers is based on its special features - whether they have to do with its •subject matter, or its •sources of knowledge, or the •kind of knowledge it involves, or of some or all of these together.

Let us consider first the *sources* of metaphysical knowledge. The very concept of metaphysics ensures that the sources of metaphysics can't be empirical. If something could be known through the senses, that would automatically show that it doesn't belong to metaphysics; that's an upshot of the meaning of the word 'metaphysics'. Its basic propositions can never be taken from experience, nor can its basic concepts; for it is not to be physical but metaphysical knowledge, so it must lie beyond experience. •Outer experience is the source of physics properly so-called, and •inner experience is the basis for empirical psychology; and metaphysical knowledge can't come from either of these. It is thus knowledge *a priori* - knowledge out of pure understanding and pure reason.

Mathematics also answers to that description. To demarcate metaphysics from mathematics as well as from empirical enquiries, we'll have to call it *pure philosophical knowledge*. In this phrase, 'pure' means 'not empirical'; and 'philosophical' stands in contrast to 'mathematical'. The difference between these two ways of using reason - the mathematical and the philosophical - is something I needn't go into here; I have adequately described it in my *Critique of Pure Reason*. So much for the sources of metaphysical knowledge.

Section 2: The only kind of knowledge that can be called metaphysical

(a) *The distinction between synthetic and analytic judgments in general.*

Because of what is special about the sources of metaphysical knowledge - namely, that they don't include experience - all such knowledge must consist in judgments that are made *a priori*. However, *a priori* judgments can be divided into two groups, according to their content: (1) those that merely spell out what's already there, adding nothing to the content of the knowledge, and (2) those that add something, and enlarge the given knowledge. We can call (1) *analytic* judgments, and (2) *synthetic*.

Analytic judgments say nothing in the predicate that wasn't already thought - though less clearly - in the concept of the subject. If I say 'All bodies are **extended**', I haven't added anything to my concept of body, but have merely analysed it. Extension was already implicitly thought of in the concept of *body*, before I made the judgment. So the judgment is analytic. On the other hand

the proposition ‘Some bodies are **heavy**’ contains something in the predicate that isn’t thought - even unclearly or implicitly - in the concept of *body*. It thus enlarges my knowledge in that it adds something to my concept, and hence must be called a synthetic judgment.

(b) *The common principle of all analytic judgments is the law of contradiction.*

All analytic judgments rest wholly on the law of contradiction. The predicate of an affirmative analytic judgment has already been thought in the concept of the subject, so it can’t be denied of the subject without contradiction. This is the case with the proposition ‘Every body is extended’. That’s equivalent to something of the form ‘Everything that is F and extended is extended’, so that to deny it would be to say that something is F and extended and not extended, which is an outright contradiction. The law of contradiction, which says that no contradiction is true, thus underlies the truth of the analytic proposition that all bodies are extended.

So all analytic propositions are *a priori* judgments, even those that contain empirical concepts as does the judgment ‘Gold is a yellow metal’. I must have experience if I am to have the concepts of gold, of yellow, and of metal; but to know that gold is a yellow metal I need no further experience; all I need is to analyse my concept of *gold*, which contains the concept of *being a yellow metal*.

(c) *Synthetic judgments need a different principle from the law of contradiction.*

Some synthetic judgments have an empirical origin, and can be known only *a posteriori*; other synthetic judgments have *a priori* certainty, and originate in pure understanding and reason. No synthetic judgment can come from the law of contradiction alone. Such judgments must *conform* to that principle (which is just to say that they mustn’t be self-contradictory), but they can’t be *deduced* from it.

In the rest of this section four kinds of synthetic judgment will be identified and discussed. Although they are all synthetic - meaning that none of them can be established merely by analysing concepts - three of the four kinds can be learned *a priori*.

(1) *Judgments of experience* are always synthetic. It would be absurd to base an analytic judgment on experience: why go to experience when the judgment can be derived purely from my concept? That every body is extended is a proposition that holds *a priori*, and not a judgment of experience. For before I look to experience I already have in the concept of body all that I need for that judgment: I need only to extract the predicate (‘extended’) from that concept according to the law of contradiction. In doing that, I also become conscious of the *necessity* of the judgment - and that’s further evidence that this analytic judgment isn’t based on experience, because experience can never teach me that something is necessary.

(2) *Mathematical judgments* are all, without exception, synthetic. This is certainly true and is very important, but it seems to have escaped the notice of all previous analysers of human reason, and indeed to be directly opposed to all their theories. Those earlier thinkers saw that all the *inferences* of mathematicians proceed *according to* the law of contradiction, and wrongly slipped into thinking that mathematical *truths* were known *from* the law of contradiction. This was a great mistake. The law of contradiction can lead one to a synthetic proposition, but only *from* another synthetic proposition. (Still, it must be borne in mind that mathematical propositions are always *a priori* judgments, not empirical ones. They carry necessity with them, and that can’t be learned about from experience. If you disagree, I shan’t argue; I shall merely make this claim about the propositions of *pure* - i.e. non-empirical - mathematics!)

One might think that the proposition $7 + 5 = 12$ is analytic, and that it follows according to the law of contradiction from the concept of the sum of 7 and 5.

But if we look more closely, we find that the concept of the sum of 7 and 5 contains only the uniting of 7 and 5 into a single number;

and in thinking this we don't have the least thought of what this single number is in which the two are combined. I can analyse my concept of the uniting of seven and five as long as I please - I shall never find 12 in it. I have to go outside these concepts and - with the help of an intuition that corresponds to one of them (my five fingers for instance) - add the 5 given in intuition to the concept of 7, adding them one by one. Thus in this proposition $7 + 5 = 12$ we really amplify our concept of $7 + 5$, adding to it new concept that wasn't thought in it. That is to say, *arithmetical propositions are always synthetic*. It will be easier to grasp this if we take larger numbers. It is obvious that however we might turn and twist our concept of

the sum of 38976 and 45204

we could never find 84180 in it through mere analysis, without the help of intuition.

[Kant's use of the term 'intuition' needs to be explained. Traditionally, the word has had two meanings. •In one it contrasts with 'demonstration' - you know something intuitively if it is immediately self-evident to you, whereas demonstrative knowledge involves a series of deductive steps. •In the other meaning - which alone is relevant to Kant - our faculty of 'intuition' is our ability to be mentally confronted by individual things, to have in our minds representations of *the things* and not merely of certain *features or properties* of them. Kant uses 'intuition' to stand not just for the faculty but also for the mental representations that it involves. Thus, for example, when you see the Lincoln Memorial you have *an intuition* of it, and this is an exercise of your *faculty of intuition*. That intuition is a 'sensible' one, meaning that you get it through your senses. It stands in contrast with a *concept* of the Lincoln Memorial - such as the concept or abstract thought of a large white memorial to a great American statesman. Having in your mind a (conceptual) representation of a large white memorial etc. is quite different from having in your mind an (intuitive) representation of the Lincoln Memorial, that one particular individual object.

[Now, Kant holds that we are also capable of having in our minds intuitions that don't come from the senses; he calls them 'pure' or '*a priori*' intuitions. When in the previous paragraph he speaks of the intuition of my five fingers, that is a •sensible intuition: I feel or look at the fingers. But he believes - as we'll see in section 7 - that pure mathematics involves •pure intuitions: for example, a geometer works out the properties of circles not by merely taking the abstract concept *circle* and analysing it, but by somehow giving himself a pure intuition of a circle, and working out the properties of all circles from that. This is something like imagining-a-circle, but it isn't ordinary imagination, which is copied from sense experience.

[The basic idea is something like this: Every time you see or feel something circular, various aspects of your mental state are contributed by the sensations that come from outside you, and others are contributed by your understanding, i.e. the concept-using faculty. If all of that were somehow stripped off, what would be left is a very thin, abstract intuition of *the circular thing* just as *a circle*. That is, nothing would be left of it but its purely spatial or geometrical properties; they will be the same for every circular thing; so the stripped down intuition will be the same in each case. That stripped down intuition is what Kant calls a 'pure intuition' of a circle. According to him, this isn't contributed by sensation from outside you; rather, it is conferred on your mental state by your own mind, specifically by your own faculty of sensible intuition. You are so built, he thinks, that you have to experience the world outside yourself *as spatial*, not because the outer world *is* spatial but because you impose spatiality on the intuitions you have of it. Kant puts this, sometimes, by saying that what's represented in a pure intuition is the *form* of your sensibility or of your sensible intuition.

[For the geometer to establish synthetic truths about circles, Kant holds, he must not only have •the concept *circle* but must also have •a pure intuition of a circle. This pure intuition, he sometimes says, *exhibits* the concept; it illustrates or exemplifies it; it shows the geometrician what a circle is, taking him from the merely conceptual *thought* of circles to a kind of abstract non-sensory *view* of a circle.

[The same story can be re-told about the perceptions of *events*: strip off everything empirical, and everything conceptual, and you are left with a mere, bare, pure intuition of time. As •space is a form of your sensibility in experiencing things outside yourself, •time - Kant thinks - is a form of your sensibility in relation not

only to things outside you but also to the flow of your mental history. Just as geometry is based on pure intuitions of space (or of spatial figures), Kant says, arithmetic is based on pure intuitions of time; see section 10. We now return to Kant's text.]

Nor is any principle of pure geometry analytic. That a straight line is the shortest path between two points is a synthetic proposition. For my concept of straightness contains nothing having to do with •quantity - it is purely a •qualitative concept - so it can't contain the thought of what is *shortest*, 'because that is quantitative'. Here again, we need help from intuition if we are to have a basis for putting *shortest* together with *straight*.

Why are we so prone to believe that in such a necessary judgment the predicate is already contained in our concept so that the judgment is analytic? The source of this mistake is a certain ambiguity. We ought to join in thought a certain predicate ('shortest') to a given concept ('straight'), and this requirement is inherent in the concepts themselves. But the question isn't what we •ought to think *along with* the given concept but what we •do think *in* it, even if unclearly. Once we distinguish those two ideas, we can see that while the predicate is indeed attached to the subject concept necessarily, it is *attached* only by means of an intuition that must also be present; it isn't to be found *in* the subject concept itself.

Some other principles that geometers use are indeed really analytic and rest on the law of contradiction: for example 'Everything is equal to itself', and 'The whole is greater than its part'. These identical propositions can be useful in setting out arguments, but they don't actually say anything; they can be useful methodologically, but they don't contribute to the content of what is said. Furthermore, even these analytic propositions, though they are indeed validated purely by our concepts, wouldn't be allowed into mathematics if they couldn't be illustrated by propositions that are connected with intuition. For example, 'The whole is greater than its part' is allowed into mathematics because it can be applied to numbers, areas and lengths, which are given to us in intuition.

Pure mathematical knowledge differs from all other *a priori* knowledge in this: it never proceeds *from* concepts, but is always achieved by *construction of* concepts. Mathematical propositions must therefore go beyond the *concept* to what the corresponding *intuition* contains, 'because this intuition guides the construction of the concept'; hence they can't and shouldn't come from the analysis of concepts, and are therefore one and all synthetic.

This may seem a small and unimportant point; but the neglect of it has done harm to philosophy. Hume had the worthy philosophical aim of surveying the whole domain of pure *a priori* knowledge - a domain in which the human understanding lays claim to great possessions - but he carelessly sliced off a large part of the territory, its most considerable province, namely pure mathematics. He thought that mathematics rested on the law of contradiction alone. Although he didn't classify propositions in quite the way that I do here, or with the same names, he *in effect* said: Pure mathematics contains only analytic propositions, but metaphysics contains *a priori* synthetic propositions. Now this was a great mistake, which infected his whole system of thought. If he hadn't made this mistake, he would have taken his question about the origin of our *a priori* synthetic judgments to cover not only •metaphysics (e.g. the concept of causality) but also •mathematics. He had too much insight to base mathematics on mere experience, so 'if he had likened metaphysics to mathematics in the way I have been defending' he would have spared metaphysics from the vile mistreatment to which he subjected it, because that attack would have hit on mathematics as well, which Hume can't have wanted to do. And then, fine thinker that he was, he would have been drawn into lines of thought like those that I am now offering - though he would have presented them in his own uniquely elegant style.

(3) *Natural science* also contains synthetic judgments that can be known *a priori*, for example:

- In all changes in the physical world the quantity of matter remains unchanged.
- When one body collides with another, action and reaction must always be equal.

Clearly these are not only necessary and *a priori* in origin but are also synthetic. I shall show this of the first of them. It says that the total amount of matter in the universe never changes, which is to say that matter is *permanent*. Now, in thinking the concept of matter I do not think its permanence but only its presence in the space that it fills. Thinking that *matter is permanent* isn't like thinking that *women are female*, or that *tigers are animals*. In judging that matter is permanent, therefore, I go beyond the concept of matter in order to add to it something that I didn't think in it. So the proposition isn't analytic but synthetic; yet it is thought *a priori*, as are the other propositions of the pure part of natural science - the 'pure' part being the part that owes nothing to experience. [This paragraph on natural science is brought across from the *Critique of Pure Reason*. There's evidence that Kant intended such a paragraph to occur here, and omitted it by accident.]

(4) *Properly metaphysical* judgments are all synthetic. The whole aim of metaphysics is to arrive at conclusions that are synthetic. Analytic judgments are also involved, but only as aids to constructing arguments; what metaphysics, properly so-called, is really about is the establishment of conclusions, which are always synthetic. If a concept (such as that of substance) belongs to metaphysics, then the analytic judgments that analyse this concept also belong there - for example the judgment that substance is that which exists only as subject etc. - and a set of such judgments can be used to work towards a definition of the concept in question. But such a judgment belongs to metaphysics only because the analysed concept does; the process of analysis is just the same as we use when analysing empirical concepts that don't belong to metaphysics. The only judgments that are really strictly metaphysical are synthetic ones.

When the *a priori* concepts that are the building-bricks of metaphysics have been gathered together in a systematic way, the analysis of them is of great value. The analytic judgments that are arrived at in this way can be separated out from the rest of metaphysics, and presented as a separate part of the whole system. The only use that these analyses have in metaphysics is as a useful preliminary to the procedure of arriving *a priori* at synthetic propositions involving the concepts that have been analysed.

The upshot of this section is that metaphysics is centrally concerned with *a priori* knowledge of synthetic propositions. These are what metaphysics is for. We are helped to arrive at them by analyses and analytic judgments - indeed, ones using the very same process of analysis as we do when trying to clarify our concepts in other branches of knowledge. But the essential content of metaphysics is the *generation* of knowledge *a priori*, both according to intuition and according to concepts, leading ultimately to synthetic propositions *a priori* - philosophical knowledge.

Section 3: A note about the analytic/synthetic distinction

The distinction between analytic and synthetic is essential in the present kind of enquiry into the human understanding; it isn't much use anywhere else, so far as I know. The reason why dogmatic philosophers overlooked this apparently obvious distinction is that they didn't look for the sources of metaphysics in the pure laws of reason in general and so they didn't see how metaphysical truths could be known *a priori* and yet be synthetic. [By 'dogmatic' philosophers Kant means, broadly speaking, ones who plunge ahead doing metaphysics without first raising the question of how - or

indeed whether - metaphysics is possible.] Thus two recent German philosophers tried to derive the law of sufficient reason, which is obviously synthetic, from the law of contradiction. [The law of sufficient reason says that there's a reason for everything that is the case, i.e. that there's a correct answer to every 'Why?'-question.] Still, there is a hint of this distinction in Locke's *Essay* at IV.iii.9ff. Having previously discussed the different kinds of judgments and how we arrive at them, including judgments of 'identity or contradiction' (which are analytic), and judgments of 'co-existence' (which are synthetic),

he admits that our *a priori* knowledge of the latter is very narrow and almost nothing at all. Grudging as that is, it does at least admit the *possibility* of *some* synthetic *a priori* knowledge. But what he says of this kind of knowledge is so skimpy and unsystematic that it's not surprising that it didn't prompt anyone - and in particular didn't prompt Hume - to consider propositions of this kind. It is hard to learn universal and yet definite truths from someone who only had them floating obscurely before him in his thought! One needs to discover them for oneself, in one's own thinking; *then* one can find them elsewhere, where one would certainly not have found them before because the authors weren't clear in their own minds about what they were saying. That's how I found the analytic/synthetic distinction in Locke's pages when Hume didn't find it there: the crucial point is that I had first worked out the distinction for myself.

Section 4: The general problem of the *Preliminaries*: is metaphysics possible at all?

If we had a real metaphysics that could claim to be a science - if we could say 'Here is metaphysics, all you have to do is to learn it, and it will convince you of its truth' - then we wouldn't have to ask whether metaphysics is possible, just as we don't have to ask whether geometry, say, is possible. Our only question would concern *how* it is possible, and how reason should set about doing metaphysics; and this would be •a test of our mental skills, not •a challenge to the existence of the thing itself.

However, things haven't turned out so well for human reason. There's no single book that one can point to, as one might hold up a copy of Euclid, and say, 'This is metaphysics; here you will find knowledge of a highest being and of a future world, which is the noblest aim of this science, proved from principles of pure reason.' Many propositions have been agreed without dispute to be necessary and certain, but they are all analytic, and concern the materials and building-stones of metaphysics rather than the enlargement of our knowledge. You may point to some synthetic propositions (e.g. the law of sufficient reason) which are widely accepted, though you have never proved them through mere reason, *a priori*, as you ought to have. Help yourself to them; but when you want to use them for some serious purpose you will find yourself caught up in wrong or dubious assertions - the sort of thing that has set metaphysical systems against one another in their doctrines or in their arguments, destroying their claims to be believed.

Indeed, the very attempts to create a science of metaphysics were the first cause of early scepticism - a way of thinking in which reason attacks itself so violently that it could never have arisen except in complete despair about our ability to carry out reason's most important designs. Men began to investigate reason itself, long before starting methodically to investigate nature in the physical sciences. Even at that stage, reason had already been employed in connection with ordinary experience; and reason is always present to us, whereas laws of nature have to be laboriously sought out. So metaphysics floated to the top like foam, which dissolved the moment it was scooped off. But as soon as one lot of foam dissolved, more came frothing up to the

surface. Some philosophers eagerly collected foam; some tried to show their wisdom by ridiculing the vain efforts of others; none looked for the cause of the foam down in the depths.

We are tired of dogmatism that teaches us nothing, and just as tired of scepticism that promises us nothing (not even permission to rest comfortably in ignorance). The knowledge we need is important, and that's a challenge to us; but we have had centuries of bad experience with things we thought we knew through 'pure reason' that turned out not to be knowledge at all, and that fact makes us suspicious. So we are •under pressure to push on forwards, and also •nervous about doing so. Where do we go from here? That depends on the answer to the question 'Is metaphysics possible at all?' We should try to answer this not by picking away sceptically at particular doctrines of this or that actual system of metaphysics - for we don't yet admit that there *are* any systems of metaphysics - but by considering the *concept* of such a science.

In the *Critique of Pure Reason* I tackled this problem by looking into pure reason itself: by establishing the nature of reason, I was able to work out what its materials and methods must be. This is hard to do. It demands a reader who is resolved to think himself gradually into a system based on reason itself and on nothing else, aiming to develop knowledge out of that alone, without help from any fact. Because the present work is called *Preliminaries*, on the other hand, it ought to consist of preliminary exercises; they should aim not to •expound the science itself but rather to •show what's needed for the science to be brought into existence. Preliminaries should try to get help from something that is already known to be reliable, from which one can confidently work back to the ultimate sources that aren't yet known.

Although we can't take it for granted that there is any such science as metaphysics, we can - fortunately - say with confidence that some pure synthetic *a priori* knowledge is real and that we already have it. I refer to *pure mathematics* and *pure natural science*. Each of these contains propositions that are everywhere recognized - partly through reason that shows them to be necessary and certain, and partly through universal agreement arising from experience (though not actually based on experience). So we have some *a priori* synthetic knowledge that is, at least, unchallenged; we don't have to ask *whether* such knowledge is possible (for it is real), but only *how* it is possible. When we can answer that, we'll know how to go about showing the possibility of all other kinds of synthetic *a priori* knowledge.

Section 5: The general problem: how can there be knowledge based on pure reason?

We have seen the vast difference between analytic and synthetic judgments. It is easy to see how there can be

analytic propositions:

they come purely from the law of contradiction. There is also no special problem about how there can be

synthetic propositions that are known *a posteriori*,

i.e. known from experience: experience itself is nothing but a continual joining together of perceptions, so it isn't surprising that it enables us to join concepts in a synthetic way. Returning to an example used earlier, the synthetic proposition that *some bodies are heavy* can be established through experiences in which •perceptions of body are joined with •perceptions of weight. What we do have a problem about is the possibility of

synthetic propositions that are known *a priori*.

Whatever makes this sort of knowledge possible, it isn't the law of contradiction and it isn't experience, so we must search to find out what it is.

But we cannot rightly start by asking *whether* synthetic *a priori* propositions are possible. For there are plenty of them, really given to us with undisputed certainty; and as our present procedure involves starting with what we already know, we shall start from the premise that there is human *a priori* knowledge of some synthetic propositions. But then we still have to ask *how* this knowledge is possible, i.e. what makes it possible. When we know that, we can learn how to use such knowledge and can learn what its limits are. Stated precisely, then, the crucial question is this:

How is it possible to have a priori knowledge of synthetic propositions?

I have sometimes expressed this as a question about knowledge 'out of pure reason'. That's just another way of asking the same thing. When I speak here of knowledge out of pure reason, I always mean knowledge of synthetic propositions, never of analytic ones; and of course knowledge through pure reason is always *a priori*. [At this point Kant has a footnote commenting on the shift from the old senses of 'analytic' and 'synthetic' (explained on page 6 above) to his new senses for those terms.]

Metaphysics stands or falls with the solution to this problem. Someone may propound his metaphysical claims as plausibly as he likes, smothering us with conclusions piled on conclusions; but if he hasn't first answered this question properly, we are entitled to say to him:

'This is all pointless ungrounded philosophy and false "wisdom". You purport to be using pure reason to create *a priori* knowledge, not by merely analysing concepts but by making new connections that don't rest on the law of contradiction; and you think you have insight into these connections independently of all experience. But how do you get such insight? How can you justify your claims?'

He can't answer by appealing to the common sense of mankind, for that isn't evidence - it's mere hearsay. . . .

The question must be answered, but that is hard to do. One reason why an answer wasn't attempted long ago is that a satisfactory answer to this one question demands much deeper, more persistent and more careful thought than goes into the most lengthy and ambitious metaphysical works ever published. (A weightier reason is that nobody thought to ask the question!) Every reader who looks hard at the problem will initially be frightened by how hard it is. Indeed, if it were not that there really is synthetic *a priori* knowledge, the thoughtful person would think such knowledge to be impossible. This is what happened to David Hume, although he didn't put the question to himself in this general form (which is the form we need if we are to get an answer that is decisive for the whole of metaphysics). Hume asked an intelligent question: How can I arrive at a judgment in which one concept is connected *necessarily* with another, even though the one doesn't contain the other? He thought it couldn't be done; which led him to conclude that only experience can provide us with such connections. In other words, he thought that this supposed necessity (which is the same as this supposed *a priori* knowledge) is merely a long-standing *habit* of accepting something as true, and hence of taking •a necessity in our thought - •a mere mental compulsion - to be •a necessity in the world.

If you want to complain about the toil and trouble that I am going to give you in solving this problem, I invite you to try solving it in an easier way! Perhaps that will make you grateful to the man who has taken this deep task over for you, and you may even come to be surprised - given how difficult the problem is - that the solution isn't even harder than it is. I have had to

work for many years •to solve this problem in its full scope - i.e. covering all the cases - and finally also •to be able to present it in the analytic form, as you will find it here. [This is the old sense of ‘analytic’, explained on page 6.]

All metaphysicians are therefore solemnly and legally suspended from their business until they have satisfactorily answered the question: How is *a priori* knowledge of synthetic propositions possible? Only an answer to this will provide them with the credentials they must produce if we are to credit them with teaching us things in the name of pure reason. If they can’t produce those credentials, we - as reasonable men who have often been deceived - should flatly refuse to listen to them, without asking any more about what they are offering.

They may want to carry on their business not as *science* but as an *art* of swaying people with pronouncements that are good for them and agreeable to ordinary common sense. They are entitled to ply this trade; but then they should speak the modest language of rational belief, admitting that they mustn’t claim to •know - and shouldn’t even •conjecture - anything about what lies beyond the bounds of possible experience. The most they can legitimately do is to •assume things; and even then they aren’t making assumptions for theoretical purposes (for they must renounce those), but solely for practical use, assuming whatever is needed to guide our thought and behaviour in everyday life. That’s their only chance of being useful and wise. It will be better, too, if they give up the name ‘metaphysician’; for metaphysicians, properly so-called, aim to be theoretical philosophers; they try to establish judgments *a priori*, which means necessary judgments; so they can’t fool around with conjectures. What they assert is science or it is nothing at all. . . .

In now proceeding to the answer to the question ‘How is *a priori* knowledge of synthetic propositions possible?’, according to the analytic [old sense] method in which we presuppose that such knowledge through pure reason is real, we can appeal to only two sciences, namely *pure mathematics* and *pure natural science*. Only these can represent objects to us in intuition. If one of them should yield an item of *a priori* knowledge, it could show that this knowledge is real by showing that it fits with the intuited object; and we could then work back from the reality of this knowledge to whatever it is that makes it possible.

In order to move on from these kinds of pure *a priori* knowledge, which are both real and grounded, to the possible kind of knowledge that we are seeking, namely to metaphysics as a science, we must take our question a little more broadly. As well as enquiring into •the possibility of metaphysics as a science, we must also investigate •the natural human disposition to pursue such a science. That involves looking into the *a priori* thoughts that are uncritically accepted, developed, and *called* ‘metaphysics’. The truth of such thoughts is under suspicion, but the thoughts themselves are natural enough; they fall within the scope of our question because they involve the natural conditions out of which metaphysics arises as a science.

So our main problem splits into four questions, which will be answered one by one:

- 1) How is pure mathematics possible?
- 2) How is pure natural science possible?
- 3) How is metaphysics possible in general?
- 4) How is metaphysics possible as a science?

It may be seen that the solution of these problems, though chiefly designed to present the core of the *Critique*, also has an odd feature that is worth attending to separately. We are looking to reason itself for the sources of certain sciences, doing this so that from its performance we can assess *reason’s* powers as a faculty of *a priori* knowledge. This procedure also brings benefit to

those sciences, in respect not of their content but of their proper use; and they throw light on the higher question about their common origin, while also giving an occasion better to explain their own nature.

FIRST PART OF THE MAIN TRANSCENDENTAL PROBLEM: How is pure mathematics possible?

Section 6

Mathematics is a great and proved domain of knowledge; it already has a large scope, and there's no limit to how far it can be extended in the future; and its results are absolutely necessary and certain, which means that they owe nothing to experience. Mathematical propositions are pure products of reason, yet they are thoroughly synthetic. How can human reason create such knowledge wholly *a priori*? Doesn't our mathematical faculty, which isn't and can't be based on experience, presuppose some basis for *a priori* knowledge? This basis must lie deeply hidden, but we might be able to discover it through its effects - i.e. through our mathematical knowledge - if only we can track down the sources of that knowledge.

Section 7

We find that all mathematical knowledge has this special feature: it must first exhibit its concept in intuition, doing this *a priori* in an intuition that isn't empirical but pure. [See the explanation of 'pure intuition' on pages 9-10.] Without resorting to *a priori* intuitions, mathematics can't take a single step. So its judgments are always *intuitive*. (In contrast with philosophy, which has to be satisfied with *conceptual* judgments. Philosophy may *illustrate* its necessary doctrines *through* intuition, but can never *deduce* them *from* it.) This fact about mathematics points us to the absolutely basic thing that makes mathematics possible, namely that it is grounded in *pure intuitions* in which it can *construct* all its concepts - that is, can represent them in a manner that is •concrete rather than abstract, and •*a priori* rather than empirical. If we can discover this pure intuition and what makes it possible, we will then be able to explain how there can be synthetic *a priori* propositions in pure mathematics, and thus how mathematics itself is possible. Empirical intuition provides us with experiences that enable us to connect concepts with other concepts, forming *a posteriori* judgments that are empirically certain. Pure intuition also lets us connect concepts with other concepts, but in their case the synthetic judgment is *a priori* certain and necessary, not merely empirically certain. Empirical judgments contain only what we •happen to have encountered in •empirical intuition, whereas mathematical judgments contain what •must necessarily be met with in •pure intuition. The plates or coins or moons that I happen to have seen or felt may be significantly unlike the ones that you have encountered; but there can't be any such difference between my *a priori* intuition of a circle and yours. An *a priori* intuition is inseparably joined with the concept *before all experience*, independently of every particular perception.

Section 8

Now we seem to have made the problem worse than ever, for now we have to ask: How can one intuit anything *a priori*? An intuition is a representation of a sort that ordinarily depends directly on the presence of the object. There's no problem about an intuition of an object that is present to one at the time, or of an object that has been present at an earlier time and is still remembered. It seems impossible, though, to intuit something *a priori* without help from any outer stimulus. Such an intuition would have to occur without any object •being present or •having been present, to which the intuition could refer; and in that case it couldn't be an intuition - or so it seems. We can form some concepts *a priori*, without being related in any immediate way to an object: we can do this with the concepts that contain only the thought of an object in general, without any detail - for example the concepts of *quantity*, *cause*, and so on. (Though even these have meaning for us only if we use them concretely, applying them to intuitions through which we confront actual instances of quantity and cause in our experience.) But how can an *intuition* of an object precede the object itself?

Section 9

If our intuition had to represent things *as they are in themselves*, no intuition could ever take place *a priori*; intuition would be empirical every time. Here is why. If an intuition takes place *a priori*, then no object of it is present and given to me; but if the object isn't present and given to me, I can't know what it is like in itself. Actually, even if an object *is* intuitively present to me, it is incomprehensible how I could know a thing as it is in itself, for a thing's properties cannot migrate into my mind. Since I can't get the thing's own properties into my mind, the most I can do is to have in my mind my representations of them; but that means that I am taking in the thing not •as it is in itself but •as I perceive and think about it. Never mind that just now; let us pretend that this *is* possible. My present point is that such an intuition wouldn't take place *a priori*, i.e. before the object was presented to me; for if the object were not present, there would be nothing that connected my representation - my intuition - in any way with that object in particular.

There's only one way to have an intuition that precedes the reality of the object, and thus occurs as *a priori* knowledge. I could have such an intuition if it contained nothing but the *form of my sensibility*. My sensibility is my capacity for being affected by particular real things. Through it I come to have *sensible intuitions*. In any such transaction with an object, the faculty of sensibility makes its own contribution; the intuitions that occur in my mind depend not only on •what the objects are like but also on •the characteristic marks left on them by my faculty of sensibility; these constitute its *form*. The form of my sensibility is available to me in advance of any of the impressions in which I am affected by objects. That's because I know in advance that, whatever my particular experience turns out to be like, it will reflect the form of my sensibility; which is to say that I can know *a priori* that I can intuit objects of the senses only in accordance with this form of sensibility. It follows •that there can be •and we can know •propositions that concern merely this form of sensibility, •that such propositions are valid for objects of the senses, and •that they can't be applied to anything except objects of our senses.

Section 10

Thus it is only through the form of sensible intuition [= ‘form of sensibility’] that we can intuit things *a priori*. Such *a priori* knowledge, however, concerns objects only as they appear to us through our senses, and not as they may be in themselves. If *a priori* knowledge of synthetic propositions is to be possible, and we are to understand how it is possible, it must be subject to this limitation to how things appear as distinct from how they are in themselves.

Now, space and time are the two intuitions on which pure mathematics bases all its judgments that present themselves as certain and necessary. Pure mathematics must *construct* its concepts on the basis of pure intuition, i.e. the kind of intuition that is conducted *a priori*, with no reliance on the senses. Mathematics can’t proceed analytically by dissecting concepts, but only synthetically; so without pure intuition it can’t take a single step, since only pure intuition provides the material for synthetic *a priori* judgments. Geometry is based on the pure intuition of *space*. Arithmetic forms its own concepts of numbers by successively adding units in *time*. Our representations of space and time are merely intuitions, however, rather than concepts; and here is why. Start with empirical intuitions of bodies and their changes, and strip them of everything empirical - i.e. everything you know about them through sensation - and what you are left with is space and time. These are therefore pure intuitions. They must be involved in all empirical intuitions, and can never be omitted, because they underlie everything empirical. But just because they are themselves pure *a priori* intuitions, they must be mere forms of our sensibility. They precede all our empirical intuition, i.e. all our perceptions of real objects; through them we can know objects *a priori*, though indeed only as they appear to us and not as they are in themselves.

Section 11

That solves the problem about how mathematics is possible. Pure mathematics is possible only because it bears on mere objects of the senses. The empirical intuition of such objects is grounded *a priori* in a pure intuition of space and time, and this pure intuition is merely the form of our sensibility. It precedes the actual appearance of objects, since it makes it possible for them to appear to us. Objects can appear to us only through our sensibility; and anything we get through our sensibility bears the marks of the form of sensibility. Our *a priori* intuitions don’t involve the *content* of the appearance, the element of *sensation* in it, for that belongs to the empirical realm; they involve the *form* of the appearance, namely space and time. If you suspect that space and time are features of things in themselves rather than mere features of how things relate to sensibility, then tell me: How in that case could we know *a priori* - in advance of any experience of things - what the intuitions of space and time must be like? Yet we do know this. There’s no problem about this knowledge so long as space and time are taken to be nothing more than formal conditions of our sensibility, and the objects are taken to be merely appearances. For then the pure intuition that embodies the form of sensibility can be understood as coming from *us* - from *our* side of the transaction with objects - which means that it can be had *a priori* rather than empirically.

Section 12

To clarify and confirm all this, we need only to look at how geometers do (and absolutely must) go about proving that two figures are completely congruent, meaning that one can be replaced at all points by the other. All such proofs ultimately come down to this: *The two figures coincide*

with each other; which is obviously a synthetic proposition resting on immediate intuition. This intuition must be given pure and *a priori*, otherwise the proposition couldn't hold as absolutely certain and necessary. If it rested on an empirical intuition, it would only have empirical certainty, and would mean: *So far as our experience has shown us*, this proposition has held *until now*. That space has three dimensions, and that no space could have more, is built on the proposition that not more than three lines can intersect at right angles in a point. This proposition can't be shown from concepts, but rests immediately on intuition, and indeed (because it is necessary and certain), on pure *a priori* intuition. That a line can be drawn to infinity, or a series of changes continued to infinity, presupposes a representation of space and time as not bounded by anything; and this can only come from intuition, and could never be inferred from concepts. Thus mathematics is really grounded in pure *a priori* intuitions; they are what enable it to establish synthetic propositions as necessary and certain.

[In this paragraph Kant speaks of a certain 'transcendental deduction' of certain concepts. A 'deduction' is a theoretically grounded or justified *list*; it is 'transcendental' in Kant's main sense of that word if it is based on considerations about what makes some kind of *a priori* knowledge possible.] Hence our transcendental deduction of the concepts of space and time - i.e. our establishing that whatever is given to us in experience *must* be in space and in time - also explains the possibility of pure mathematics. If we didn't have such a deduction, and couldn't take it for granted that *whatever is presented our senses - whether outer (space) or inner (time) - is experienced by us only as it appears, not as it is in itself*, we could still *do* mathematics but we wouldn't have any insight into what it is.

Section 13

If you can't help thinking that space and time are real qualities attached to things in themselves, try your intelligence on the following paradox. When it has defeated you, you may be free from prejudices at least for a few moments, and then you may be more favourably disposed towards the view that space and time are mere forms of our sensible intuition.

If two things are completely the same in every respect of quantity and quality that can be known about each separately, you would expect it to follow that each can be replaced by the other in all cases and in all respects, without the exchange causing the slightest recognizable difference. That is indeed the case with two-dimensional figures in geometry, but not with three-dimensional ones: it can happen that two of them have a complete inner agreement yet also have an outer relation such that one can't be replaced by the other. . . . What can be more like my hand, and more equal in all points, than its image in the mirror? Yet I can't put such a hand as is seen in the mirror in the place of its original: for if the original was a right hand, the hand in the mirror is a left hand, which could never serve as a substitute for the other. Here are no inner differences that any understanding could think - that is, no differences that can be expressed in concepts - and yet the differences are inner as far as the senses tell us, for the left hand can't be enclosed in the same boundaries as the right (they aren't congruent), despite all their equality and similarity. For example, the glove of one hand can't be used on the other. So the two hands are intrinsically different in a manner that can't be captured in concepts - it can only be *shown* through the fact that a spatial region that exactly contains one won't contain the other.

How can this be? Well, these objects are not representations of the things as they are in themselves, but are sensible intuitions, i.e. appearances, which come about through the relation to our sensibility of certain things that are unknown in themselves. When this sensibility is exercised as *outer* intuition, its form is *space*; and the intrinsic nature of any region of space is

fixed by how that region relates to space as a whole, the one big space of which it is a part. (The part is made possible by the whole: a small region of space can exist only if there's a larger region of which it is a part. This never happens with things in themselves, but it can happen with mere appearances.) Thus, to make intelligible to ourselves the difference between similar and equal yet incongruent things (e.g. snails winding opposite ways), we must relate them to the right and the left hand. That means that it must be done through intuition; it can't be done through any concept. That is, it must be done by *showing*, and can't be done by *telling*.

Note I

The propositions of geometry aren't mere fantasies that might have nothing to do with real objects. Pure mathematics, and in particular pure geometry, is objectively valid, but only in application to objects of the senses. When we represent such objects through our sensibility, we represent them not as they are in themselves but only as they appear to us. So they *must* have any features that are conferred on them by the form of our sensibility - and in particular they must be in space, because space is simply the form of all outer appearances. Outer appearances are possible only through sensibility, the form of which is the basis for geometry; so outer appearances must conform to what geometry says about them.

If the senses had to represent objects as they are in themselves, the situation would be quite different. For then the facts about our representation of space would provide no guarantee about how things are in reality. The space of the geometer - a mere representation - would be a fiction with no objective validity, for there would be no reason why things should have to conform to the picture that we make of them in advance of being acquainted with them. But if

- this picture, or rather this formal intuition, comes from the essential nature of our sensibility, through which objects must be given to us,

and if

- what this sensibility represents aren't things in themselves but only their appearances,

it then becomes conceivable - indeed undeniable - that

- all outer objects of the world of the senses must agree exactly with the propositions of geometry.

It is a remarkable fact that at one time mathematicians who were also philosophers began to have doubts about their geometrical propositions - not about whether they were true of *space*, but about they held good in application to nature, that is to *things in space*. They feared that a line in nature might consist of physical points, in which case the space of the natural object would consist of simple parts, although the space the geometer thinks about can't be like that. That is, they feared that the space of natural objects might not be infinitely divisible, and might instead be made up of atoms of space, so to speak; whereas geometrical space is infinitely divisible. They didn't realize that the spatiality of outer things *must* exactly conform to the space the geometer thinks about, because:

- all objects in space are mere appearances, i.e. not things in themselves but representations of our sensible intuition; and
- the space the geometer thinks about - *space in thought*, we might call it - is just a form of our faculty of sensible representation.

Putting these two together: an outer thing must be given to us through our sensibility, so it must conform to the form - the essential nature - of our sensibility, so it must obey the propositions of

geometry. This is the only way to defend the objective validity of geometrical propositions against shallow metaphysical attacks. . . .

Note II

Anything that is to be presented to us as an object must be given in intuition. But all our intuition happens through the senses - the understanding doesn't intuit anything. Now, we have just seen that the senses never *ever* enable us to know things as they are in themselves; all we encounter through the senses are the appearances of things; and these appearances are mere representations of sensibility. What follows is this: *All bodies, along with the space that contains them, are merely representations in us, and exist only in our thoughts.* 'Isn't this blatant idealism?' 'No, it is not, and I now explain why. Idealism says this:

Only minds exist, and the other things we think we perceive are only representations in us, with no external object corresponding to them.

I say the contrary:

Things are given to us as objects of our senses, existing outside us, but we know nothing of what they are in themselves; all we know are their appearances, i.e. the representations they cause in us by affecting our senses.

So I say that there *are* bodies outside us - i.e. things of whose nature in themselves we know nothing, knowing them only through our representations of them. We call such a thing a 'body', meaning 'the appearance to us of an unknown thing which is nevertheless real'. Can this be called idealism? It is the very opposite of it!

Long before Locke's time, but more so afterwards, it was generally accepted that although outer things are perfectly real, many of their properties belong not to things in themselves but only to their appearances. These properties, including heat, colour, taste etc., were agreed to have no existence of their own outside our representations. I go further. I count *also* as mere appearances the remaining qualities of bodies - the 'primary' qualities of extension, place, and space in general with all that depends on it (impenetrability or materiality, shape, etc.). I have weighty reasons for this view, and there isn't the slightest reason to reject it. A man who holds that •colours are aspects of the sense of sight and not qualities of the object in itself should not on that account be called an idealist. So I should not be called idealist either, merely because I hold that •*all* the qualities that make up the intuition of a body belong merely to its appearance. This doctrine of mine doesn't destroy the existence of the thing that appears, as genuine idealism does; it merely says that we can't through our senses know the thing as it is in itself.

What would I have to say to stop people from accusing me of idealism? It wouldn't be enough for me to say:

Our representations of outer objects are perfectly appropriate, given how our sensibility relates to those objects;

for that's what I *have* said and still the accusations continue. I would also have to say:

Our representations of outer objects are exactly *like* the objects themselves.

But that, to me, makes as little sense as the assertion that the sensation of red is *like* the property of the pigment that causes this sensation in me.

Note III

'When you admit the ideality of space and time, you turn the whole world of the senses into pure illusion' - it is easy to foresee that this complaint will be levelled, and easy to show, from what I have said, that it is futile. At first all philosophical insight into the nature of knowledge through

the senses was tainted by taking sensibility to be a mode of representation which, though confused, lets us know things *as they are* without our being able to get the whole content of this representation *clear* in our minds. Replacing that disastrous mistake, I showed that sensibility has to be understood in terms not of this *logical* clear/obscure distinction but of something *genetic*, having to do with where knowledge comes from - sense-perception represents things not as they are but only the mode in which they affect our senses - and consequently that what sense-perception provides for the understanding to think about are *appearances* only, not things themselves. Now that I have given this necessary corrective, it would be an unpardonable misunderstanding - almost a *deliberate* one - to say that my doctrine turns all the contents of the world of the senses into pure illusion.

When an appearance is given to us, it is up to us to choose how to judge the matter. The appearance depends on the senses, but the judgment depends on the understanding, and the only question is whether a given judgment is *true* or not. But the difference between truth and dreaming isn't ascertained by the nature of the representations in question (for they are the same whether or not one is dreaming), but by their inter-connections according to the rules that bring representations together under the concept of an object and settle whether or not they can co-exist in a single experience. And it isn't the appearances' doing if our mind takes illusion for truth, i.e. if it takes the *intuition* through which we are given an object to be a *concept* of the thing or even to be the thing itself - these being items that the *understanding* can think but the *senses* can't present. The senses represent the planets to us as moving backwards and forwards, and in this there's neither falsehood nor truth, because as long as we take this planetary path to be nothing but appearance, we make no judgment about the objective nature of the planets' movements. But when the understanding isn't on its guard against this subjective representation's being taken to be objective, a false judgment can easily arise - 'They seem to be moving backward', we may say. The illusion mustn't be charged to the senses, however, but to the understanding, whose job it is to render an objective judgment on the basis of the appearances.

Thus, even if we gave no thought to where our representations come from, when we connect our sensory intuitions (whatever their content) in space and in time, according to the rules governing the way all knowledge hangs together in experience, we will encounter *illusion* or *truth* according as we are *negligent* or *careful*. The difference between illusion and truth turns on how sensory representations are handled in the understanding, not on where they come from. In the same way, if I

- take all the representations of the senses to be nothing but appearances,
- take space and time also to be appearances and as a mere *form* of sensibility that isn't to be met with outside its borders, and
- use these representations only in relation to possible experience,

then my regarding them as appearances won't involve me in the slightest temptation to think in terms of error or illusion; for appearances can hang together according to rules of truth in experience. Whether they do so hang together is something I can determine without bringing in their ultimate status, i.e. the question of whether space and its contents are appearances. That's how all the propositions of geometry hold good for space as well as for all the objects of the senses and consequently of all possible experience, whether I take space to be a mere form of the sensibility or regard it as something that clings the things themselves; though it is only in the former case that I can grasp how I can know *a priori* that these propositions are true of all the objects of external intuition. Apart from that one matter of knowing how geometry can be known

a priori, all my dealings with space and its contents are just what they would have been if I hadn't departed from the common view.

But there's a way in which an error *could* arise. If I pass off space and time as qualities inherent in things in themselves, there will be nothing to stop me from thinking that those two concepts would hold good for the same things that they now apply to even if my senses were different and couldn't present those things to me; and so I shall be led to venture to carry my notions of space and time out beyond all possible experience; and then I can fall victim to an illusion that would generate a grave error, namely that of passing off as *valid for everything* something that is merely a subjective condition of the intuition of things and *valid only for all objects of sense*, i.e. for all possible experience. I would be led into this error by thinking of space and time as containing •things in themselves, rather than as restricting them to the •conditions of experience.

So my doctrine of the ideality of space and of time (i.e. my doctrine that space and time are appearances) comes nowhere near to turning the whole world of the senses into mere illusion. I shall offer two graphic illustrations of this. Firstly, the doctrine is so far from •turning the sensible world *into* illusion that it is the only means of •saving something *from* being regarded as mere illusion; what it saves is one of the most important kinds of knowledge (the kind that mathematics propounds *a priori*), which the doctrine guarantees does apply to actual objects. Here is why it is the only way of securing this result. Without the ideality of space and time it would be quite impossible to decide whether the intuitions of space and time - which we don't take *from* any experience, and which nevertheless lie in our representation *a priori* - so that we take them *to* every experience - aren't mere phantoms thrown up by our brain, with nothing adequately corresponding to them, in which case geometry itself is a mere illusion; whereas we *have* been able to prove geometry's unquestionable validity with respect to all the objects of the sensible world, just because they are mere appearances.

Secondly, it is so far from being the case that these principles of mine turn the truth of experience into mere *sensory illusion* by making appearances of the representations of the senses, that they are rather the only means of preventing the *transcendental illusion* by which metaphysics has hitherto been deceived, leading to an infantile snatching at bubbles by metaphysicians who took appearances - which are mere representations - to be things in themselves. [By 'transcendental illusion' Kant here means something like 'abstract philosophical illusion'. His more special sense of 'transcendental', explained near the end of section 12, will come up again in the next paragraph.] That illusion is what brought on stage the remarkable *antinomy* [= 'contradiction'] *of reason* that I shall return to in sections 51-53. All it takes to clear up this 'internal contradiction into which reason falls' is a single observation: that appearance, as long as it is employed in experience, produces truth, but as soon as it goes beyond bounds of experience and consequently becomes transcendent [= 'freed from any constraints having to do with the senses'; not the same as 'transcendental' in either of the latter's senses], it produces nothing but illusion.

Thus, in letting things as we confront them through the senses retain their actuality, and limiting our sensory intuition of these things only by saying this:

in no respect - not even in the pure intuitions of space and of time - do they represent anything more than mere appearance of those things, never their constitution in themselves,

I am not imputing to nature a sweeping illusion. [For the phrase 'pure intuition', see the explanation on pages 9-10.] My rejection of all such imputations is so obviously valid and convincing that one

might think there was no need for it. And there wouldn't be, if it weren't for the existence of incompetent judges who - liking to have an old name for everything that diverges from their own wrong-headed though common opinions, and always clinging to the *letter* of what is said with no thought for its *spirit* - are ready to deform and distort well-defined notions by putting their own follies in the place of them. I have myself given this theory of mine the name •'transcendental idealism', but that can't entitle anyone to muddle it either with the •empirical idealism of Descartes or with the •mystical and visionary idealism of Berkeley. (My critique •of pure reason• contains the proper antidote to phantoms like Berkeley's. As for Descartes: all he had was an insoluble problem, which led him to think that everyone is at liberty to deny the existence of the corporeal world because it could never be proved satisfactorily.) Doubting the existence of things constitutes 'idealism' in the ordinary sense; but the doctrine I have labelled as 'idealism' - in the phrase 'transcendental idealism' - doesn't concern the existence of things, since it never entered my head to doubt that they exist. Rather, it concerns the sensory representation of things, especially of space and time. All I have shown regarding space and time, and thus more generally regarding all appearances, is that they aren't •things but mere •features of how we represent things, and aren't qualities of things in themselves. But the word 'transcendental' was meant to guard against this misconception. (For me, 'transcendental' signifies a reference to our knowledge not •of things but only •of our ability to have knowledge. •I characterized my idealism as 'transcendental' because it offers an explanation of *how we can know* certain things *a priori*.) But rather than furthering the misunderstanding, I now retract the label 'transcendental' and ask that my idealism be called 'critical'. But if it really is an objectionable idealism to convert actual things (not appearances) into mere representations, by what name shall we call the idealism that goes the opposite way and changes mere representations into things? It may, I think, be called 'dreaming idealism', in contrast to the former, which may be called 'visionary'. Both are refuted by my transcendental idealism - or, better, *critical* idealism.