

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

Immanuel Kant

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[Brackets] enclose editorial explanations. Small ·dots· enclose material that has been added, but can be read as though it were part of the original text. Occasional •bullets, and also indenting of passages that are not quotations, are meant as aids to grasping the structure of a sentence or a thought. Every four-point ellipsis indicates the omission of a brief passage that seems to present more difficulty than it is worth. Longer omissions are reported between brackets in normal-sized type.

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Main transcendental problem 2: How is pure natural science possible?

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The word 'nature' has two senses. I shall use it in what I shall later call its 'formal' sense in this section and the next; and then in section 16 I shall start to use 'nature' in what I call its 'material' sense. Both will be in play in section 36. Nature is the existence of things insofar as it is governed by universal causal laws. If this meant the existence of things *in themselves*, we couldn't know nature either *a priori* or *a posteriori*. One way of knowing things *a priori* is knowing them through the analysis of concepts. We couldn't know nature *as it is in itself* in that way, because knowledge of what things are like in themselves can never come from analytically dissecting our concepts: we aren't asking what is contained *in* our concept of the thing, but rather about what is *added* to this concept in the reality of the thing itself. Some synthetic propositions can be known *a priori* because their truth is assured by the nature of our understanding, somewhat in the way that mathematical truths can be known *a priori* because our sensibility assures their truth. But this is also not applicable to the supposed 'knowledge of nature as it is in itself', which we are discussing. My understanding has an effect on how things *appear* to me, but it can't dictate what things are like *in themselves*. They don't have to conform to it; so if I am to know about things in themselves, my understanding must conform to them, not vice versa. That means that I couldn't know about them until they had somehow been presented to me; which is to say that I couldn't know them *a priori*.

Nor could I have *a posteriori* knowledge—i.e. knowledge through experience—of the nature of things in themselves.

If I am to bring things under causal laws, these laws must apply to them *necessarily*, and experience could never show me how things must be—only what there is and how it is. So it can never teach me the nature of things in themselves.

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Yet we do have pure natural science, which discovers *a priori* certain laws that govern all of nature, and discovers them to be necessary. One part of it is what we call 'general natural science', which is a preliminary to empirical physics. In this we find mathematics applied to appearances on the basis of intuition, and also conceptual principles that make up the philosophical part of pure knowledge of nature. A couple of qualifications should be mentioned. It isn't strictly pure, because there are things in it that are based on experience, such as the concepts of *motion*, of *impenetrability*, of *inertia*. Nor is it 'general' in the strictest sense, because it concerns only the objects of the outer senses, whereas a truly general natural science would apply laws to the whole of nature—not only outer objects (physics) but also inner ones (psychology).

Still, some principles of this general physics are strictly universal, for instance the propositions 'Substance is permanent' and 'Everything that happens is determined by a cause according to constant laws'. These really are universal laws of nature that we can know *a priori*. So pure natural science does exist, and we have to ask: How is it possible?

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I now want to use the word 'nature' in a broader sense, its material sense, in which it refers to every aspect of the totality of all objects of possible experience, i.e. the whole

perceivable world. Up to this point I have been using 'nature' in its narrower sense, making it refer only to •the way all things fall under the system of laws.

The *perceivable* world is all we have to concern ourselves with. If we tried to learn about things that *couldn't* be objects of experience, we would have to think about them through concepts that couldn't be illustrated or cashed out in terms of any possible experience. Such concepts would be empty; we could play around with them in our minds, but we could never know whether they applied to anything rather than being mere fictions contrived by us. Knowledge of something that couldn't be an object of experience would be supernatural—in the quite literal sense of being above nature—and the supernatural is no part of our present concern. The knowledge that we care about is the sort which, although it •precedes experience rather than •arising out of it, can •be confirmed by experience.

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It has just been shown that the laws of nature can never be known *a priori* of objects considered in themselves (rather than in terms of possible experience of them). But we aren't concerned here with things in themselves; their properties don't interest us. Our concern is with things considered as objects of a possible experience, and the totality of these things is what we here call 'nature' in the broad sense. Now, we are going to enquire into what enables us to have *a priori* knowledge of nature, and we have to choose between two ways of framing our problem.

- How can we know *a priori* that experience itself must conform to law?
- How can we know *a priori* that things (considered as objects of experience) must conform to law?

The two questions turn out to be equivalent. The laws that

govern our •ways of knowing also govern •the objects that we know, as long as these are considered as objects of experience and not as they are in themselves. There are two things we can say:

- (1) A judgment of perception can't count as valid for *experience* unless the mind in which it occurs conforms to the following law: When any event is observed to happen, it is connected with some earlier event that it follows according to a universal rule.
- (2) Everything that we experience as happening must be caused to happen.

It makes no difference which we say: they come down to the same thing.

Still, we'll do better if we start with (1). We can make *a priori* discoveries about what the conditions are under which experience is possible, but we can't make such discoveries about laws that apply to things in themselves independently of our experience of them. So our only way of studying •the nature of things *a priori* is by studying •the conditions under which experience is possible, including the universal laws of the mind that make it possible. •What I am saying, in effect, is that we should tackle (2) *by* tackling (1). If I chose to start with (2), I would risk falling into error by imagining that I was talking about nature *in itself*. That would set me whirling around in endless circles, trying in vain to discover laws governing things that aren't *given* to me •as things are *given* to me in experience.

So our only concern here will be with experience and with what universal conditions have to be satisfied for experience to be possible—conditions that we can know about *a priori*. On that basis we are to establish the characteristics of nature as the whole object of all possible experience. You will understand, I think, that I am not talking about •rules that we learn by observing a nature that is already given,

for such rules already presuppose experience; so I am not talking about how through experience we can study the laws of nature, for laws learned in that way wouldn't be laws *a priori*, and wouldn't supply us with a *pure* natural science. Rather, my topic is the question of how •the conditions that we can know *a priori* have to be satisfied if experience is to be possible are at the same time •the sources from which all the universal laws of nature must be derived.

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The first thing to make clear is this: although all *judgments of experience* are *empirical* (i.e. have their ground in immediate sense-perception), the converse doesn't hold: not all empirical judgments are judgments of experience. That's because a judgment of experience must contain more than merely an empirical component, given through sensory •intuition. It must also involve particular •concepts that •don't come from sense-experience, but •originate *a priori* in the pure understanding—concepts under which every •perception must first be brought and then by means of them changed into •experience.

Empirical judgments fall into two kinds: •judgments of experience and •judgments of perception. The former are objectively valid. They are based on immediate sense perception, but they *add* to it: when something is given to sensible intuition, a •judgment of experience applies to it certain special concepts that pure understanding gives rise to, completely independently of experience. *Perceptions* are turned into *experience* by being brought under these concepts. •Judgments of perception are only subjectively valid: all they need is that the perceptions hang together in the right way in mind of the person concerned (the *subject*); they don't involve any of the pure concepts of the understanding.

All our judgments start out by being judgments of

perception, and thus as valid only for us (i.e. for our *subject*). Later on we make them refer to an *object*, and mean them to be valid for all people and for ourselves at all times. A judgment's being about an object connects with its being universally valid, and the connection runs both ways. On the one hand: if my judgment is about an object, then anyone else's judgment about that same object should agree with mine, which is to say that mine must be universally valid. On the other hand: if a judgment of mine is universally valid, agreeing with the judgments of all others, this agreement has to be explained. The explanation must be that the judgments agree with one another because they all refer to the same object.

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So something's being true of an object is equivalent to its having to be the same for everyone: •objective validity and •necessary universal validity stand or fall together. When we regard a judgment as universally valid and necessary, we mean by this that it is objectively valid, even though we don't know the object in itself. We know the object through this judgment—i.e. through the judgment that anyone who has perceptions of kind F with respect to the object *must* also have perceptions of kind G. So judgments of experience get their objective validity not from immediate knowledge of the object but from how perceptions are connected with one another; and these connections come not from anything empirical but from pure concepts of the understanding. •They can't have an empirical basis because they involve necessity; the judgments in question say that certain perceptions *must* be associated with certain others; and experience never tells us what must be the case. •The object in itself always remains unknown; but it gives us perceptions through our sensibility, and these are connected; and when a concept of

the understanding settles it that the connection is universally valid, the result is an objective judgment—something that doesn't merely report on perceptions but says things about an object.

Here is an illustration. That the room is warm, sugar is sweet, wormwood is nasty, are merely subjectively valid judgments.¹ In making such judgments, I don't expect that I shall find the room to be warm or sugar sweet or wormwood nasty at all times, or that everyone else will find them to be so. All that such a judgment does is to connect two sensations to a single subject (myself) at a particular time; they aren't intended to be valid of the object. I call them judgments of *perception*. Matters are quite different with judgments of *experience*. What experience teaches me under certain circumstances it must teach me and everybody always; its validity isn't limited to one person or one time; so its judgments are objectively valid. For example, when I say that *air is elastic*, this starts out as a judgment of •perception, which merely connects two of my sensations to one another. But if I mean it as a judgment of •experience, I require that this connection be universally valid, i.e. that I and everybody must always conjoin the same sensations under the same circumstances.

20

So experience is a product of the senses and of the understanding, and we have to discover how these two faculties combine to produce it. One of them is simply intuition of which I am conscious, i.e. perception, which belongs merely to the senses. The second element that goes into experience is judging, which belongs entirely to the understanding.

There are two kinds of judging. **(1)** I may merely compare perceptions and conjoin them in a *consciousness of my state*. **(2)** I may conjoin them in *consciousness in general*. What I have in **(1)** is merely a judgment of perception, a subjectively valid connecting of perceptions in my mind, without reference to an object. People often think that all you need for experience is to compare perceptions and to connect them in your consciousness by means of judgments about them; but they are wrong. That procedure doesn't lead to judgments that are universally valid and necessary, and that's what is needed for objective validity and for real experience.

To turn perception into experience, therefore, we need **(2)** a different kind of judging. An intuition (or perception) must be brought under a pure *a priori* concept of the understanding; this concept settles what kind or form of judgment can be made about this intuition; thus it connects the individual person's intuition with a frame of mind that •anyone must be in when making judgments about such intuitions; and in this way it provides the empirical judgments with •universal validity. Such a concept, I repeat, merely fixes a general way in which judgments can be brought to bear on the intuition. It might be the concept of *cause*, for instance. To bring this to bear on one's intuition (or perception) of air, for example, is to be disposed to make hypothetical judgments of the form 'If air is compressed, then. . . '.

Before a judgment of perception can become a judgment of experience, the perception must be brought under such a concept of the understanding—as when air is brought under the concept of cause, yielding judgments of the form 'If air is. . . , then. . . '. The judgment that air is elastic can become

¹ Actually, *these* judgments of perception could never become judgments of experience, even if a concept of the understanding were added. They refer merely to feeling, which is incurably subjective and can never become objective. Still, they serve my immediate purpose of illustrating judgments that are merely subjectively valid, involving no relation to an object. In the next footnote I shall give an example of judgments of perception that *can* become judgments of experience.

universally valid, and thus be turned into a judgment of experience, because of certain preliminary judgments that bring the intuition of air under the concept of *cause and effect*. (An easier example is: 'When the sun shines on the stone, it grows warm.' This is a mere judgment of perception and contains no necessity, no matter how often I and others may have perceived this. But if I say 'The sun warms the stone', which means that the sun *causes* the stone to become warm, the concept of *cause* is added to the perception and connects the concept of warmth necessarily with the concept of sunshine.)

If all our objectively valid synthetic judgments are analysed, it turns out that they never consist in mere intuitions that are brought together in a judgment through mere comparison. Always, a pure concept of the understanding has been added to the concepts that are abstracted from intuition. This applies even to the judgments of pure mathematics, including its simplest axioms. The principle 'A straight line is the shortest path between two points' presupposes that the line has been brought under the concept of *size*. That concept doesn't come from intuition; it has its seat solely in the understanding, and serves to get the intuition (of the line) ready for quantitative judgments to be made about it.

21

If we are to prove that experience is possible insofar as it rests on pure *a priori* concepts of the understanding, we need a list of these concepts. We arrive at this list through a list of basic kinds of judgments that we can make, because the pure concepts of the understanding run parallel to those judgment kinds. . . .

Logical table of judgments

1	2
QUANTITY	QUALITY
Universal	Affirmative
Particular	Negative
Singular	Infinite
3	4
RELATION	MODALITY
Categorical	Problematic
Hypothetical	Assertoric
Disjunctive	Apodictic

Table of concepts of the understanding

1	2
QUANTITY	QUALITY
Unity (measure)	Reality
Plurality (size)	Negation
Totality (whole)	Limitation
3	4
RELATION	MODALITY
Substance	Possibility
Cause	Existence
Causal interaction	Necessity

Pure physical table of the universal principles of natural science

1	2
Axioms of Intuition	Anticipations of Perception
3	4
Analogies of Experience	Postulates of empirical thinking generally

* * * * *

21a

If we are to grasp all this in a single thought, I must first remind you that our topic isn't *where experience comes from* but *what experience contains*. The former topic belongs to empirical psychology, though even that wouldn't suffice without the latter topic, which belongs to the critique of knowledge and especially of the understanding.

Experience consists of intuitions, which belong to the sensibility, and of judgments, which are entirely a work of the understanding. But the judgments that the understanding forms from sensory intuitions alone are not judgments of experience. They merely connect the perceptions as given in sensory intuition, while a judgment of experience must express what is contained in experience in general, and not merely what is contained in the mere perception (which has only subjective validity). So a judgment of experience must add something to the sensuous intuition and the logical tie-up of that intuition to others in a judgment (after it has been made universal by comparing this intuition with others). It must add something implying that the synthetic judgment is *necessary* and therefore universally valid—not

merely universal in the weak way that comes from comparing intuitions with one another. This added element can only be the concept that represents the intuition as a suitable subject for one form of judgment rather than another.

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Summing up: The business of the senses is to intuit; that of the understanding, to think. Now, thinking is unifying representations in a consciousness, and this can be done either in a contingent and subjective way or in a manner that is necessary and objective. Since thinking is the same as judging, it follows that judgments are of two kinds: a judgment may be merely

- subjective (when representations are inter-related only with respect to one person's consciousness), or it may be
 - objective (when the representations are related with respect to consciousness in general, i.e. with respect to every possible conscious mind).

The basic kinds of judgment are simply *possible ways of unifying representations in a consciousness*; and when they serve as concepts, they are concepts of the *necessary* unifica-

tion of representations in *any* consciousness, which means that the judgments that involve them are objectively valid. In experience, perceptions are synthetically but necessarily connected in a consciousness; for them to be connected in this manner, they must be brought under pure concepts of the understanding; so these concepts are required if any judgments of experience are to be made.²

23

•Judgments can be seen as ways of unifying representations in a consciousness. Looked at in this way, they are •rules. When they represent the perceptions as necessarily united, they are *a priori* rules; and when they stand on their own feet, not being derived from something more fundamental, they can be called ‘principles’. The broad kinds of judgment that bring intuitions under pure concepts of the understanding aren’t derived from anything; they stand on their own feet. So they’re the *a priori* principles of possible experience.

Now the •principles of possible experience are at the same time •universal laws of nature, which can be known *a priori*. This solves the problem raised by our second question, ‘How is pure natural science possible?’ Here is how. Logic offers us only one set of basic kinds of judgment (and thus one set of basic rules); no other is possible. These constitute a *logical system*. The concepts that emerge from it, which make synthetic necessary judgments possible, constitute a *transcendental system* [meaning, roughly, ‘a system that has to

do with grounds for *a priori* knowledge’.] And, lastly, the principles according to which these concepts are applied to all appearances constitute a *physical system*, i.e. a system of nature. This system precedes all empirical knowledge of nature, and is what first makes such knowledge possible; so it can properly be called *universal and pure natural science*.

24

Of the physical principles listed in section 21, the first brings all phenomena, as intuitions in space and time, under the concept of *quantity*, which makes it a principle governing the application of *mathematics* to experience. The second principle takes up the genuinely empirical element, namely sensation, which signifies what is real in intuitions. It doesn’t bring sensation directly under the concept of quantity, because sensation isn’t an intuition that *contains* either space or time, though it places the sensed object in both space and time. But still there’s a quantifiable difference between sense-representation and a total absence of intuition in time, the difference between *reality* and *zero*. For we can conceive of intermediate degrees separating

any given degree of •light from darkness,
any degree of •heat from absolute cold,
any degree of •weight from absolute lightness,
any degree of •fullness of space from total vacuum;

just as there are intermediate degrees—as small as you like—separating

²But how does this proposition that *Judgments of experience require that perceptions be brought together necessarily* square with my often-made statement that *Experience as a posteriori knowledge can only provide contingent judgments*? When I say that experience teaches me something, I mean only that I learn something from the perception that lies *in* experience—for example, that

Heat always follows the shining of the sun on a stone

—and to that extent the proposition of experience is always accidental ·or contingent·. The proposition that

This heat *necessarily* follows the shining of the sun

is indeed contained *in* the judgment of experience (by means of the concept of cause), but it is not a fact learned *from* experience. On the contrary, this addition of the concept of cause to perception is what creates experience in the first place.

•consciousness from total unconsciousness (psychological darkness).

So there's no perception that can prove an absolute absence; for instance, there's no psychological darkness that can't be considered as a kind of consciousness, which is merely relatively dark, by comparison with some other stronger consciousness—and that's how it is in all cases of sensation. Sensation is what gives each empirical representation (each appearance) its own particular flavour. It might be thought to be all *content*, with no *form*, and so not to be something that the understanding could say anything about in advance. But the account I have been giving shows how the understanding can •anticipate even sensations—i.e. •say something about them in advance of their actually occurring—by means of the principle *Every sensation has a degree*, from which it follows that what's real in all phenomena has a degree. This is the second application of mathematics to natural science.

In discussing those two (sets of) principles of natural science, I have been implicitly discussing the corresponding (sets of) concepts, listed just before the list of principles in section 21. In the next section I shall take up the other two sets of concepts, and their associated principles.

25

In the table of the concepts of the understanding, one of the headings is Relation. This refers not to mathematical relations, but rather to dynamic ones (relations having to do with how things exist in time). Firstly, appearances must be brought under the concept of •*substance*; this is the concept of a *thing*, and any judgment about what exists must involve it. Secondly, when appearances involve events following one another in time, they must be brought under the concept of •*cause and effect*. Thirdly, judgments of experience about

things that exist together must involve the concept of •*two-way causal interaction*. [Kant's word for this is *Gemeinschaft*, which is usually but unhelpfully translated by 'community'.] Thus *a priori* principles are involved in objectively valid though empirical judgments; they are needed if we are to have real experience, which connects objects in nature. These principles are the real laws of nature, and can be called 'dynamic'.

Finally, judgments of experience include •ones expressing knowledge of correspondences and connections; but their topic isn't how appearances relate to *one another in experience*, but rather how they relate to *experience in general*. This has to do with

•whether they satisfy the formal conditions that the understanding recognizes,

or with

•whether they fit with the materials of the senses and of perception,

or

it •brings both of those considerations together under a single concept.

So it has to do with •possibility, •actuality, and •necessity according to universal laws of nature.

26

My third table on page 30—the table of principles that the critical method has extracted from the nature of the understanding itself—has a *completeness* that raises it far above every other table that anyone ever did or ever will offer in a vain attempt to extract principles by non-critical methods *from things themselves*. What makes my table complete is this: so far as the understanding is concerned, the essence of experience lies in the •judgments that can be made about it, and I have used •properties of the faculty of •judgment as a single guiding rationale for what is included in my table of

principles, namely *all* the synthetic *a priori* principles. So we can be certain that there are no more principles of that sort, and that certainty affords a satisfaction that the dogmatic method can never achieve. [Kant's use of 'dogmatic' is explained in a note on page 12.] Yet this is not all: my table of principles has another much greater merit ·that I shall now explain·.

We must carefully bear in mind the premise •that enables us to infer that there can be *a priori* knowledge ·such as the table of principles involves·, and •that at the same time subjects all such principles to the constraint that they are only about the conditions of possible experience in general so far as it conforms to laws *a priori*. If we lose sight of this constraint, we risk the principles' being misunderstood, and their being extended in use beyond the original sense that the understanding attaches to them. So I don't say

that things in themselves have a quantity,
that their actuality has a degree,

that their existence has a connection of qualities in a substance,

or the like. Nobody could prove any of those propositions, because they are synthetic—·connecting things with quantity, degree-of-actuality, and so on—·and it is utterly impossible to prove such synthetic propositions on the basis of mere concepts, ·because what is proved from mere concepts is always analytic·. The above propositions have only concepts to work with, because they purport to be about things in themselves; that prevents them from referring to how sensory intuitions are inter-connected in a possible experience,

which is the basis on which synthetic propositions can be proved *a priori*. So the essential constraint on the concepts used in these principles is: It is only as *objects of experience* that things necessarily *a priori* satisfy the conditions laid down in the principles.

From this it also follows that the proof of these principles has a unique feature: namely that they aren't directly concerned with *appearances and their inter-relations*, but with *the possibility of experience*. Appearances ·on their own aren't the whole story; they· constitute only the *matter* of experience, not its *form*. That is, the principles I'm talking about are concerned with objectively and universally valid synthetic propositions, in ·the context of· which we distinguish judgments of *experience* from judgments of *perception*. ·I shall now add a little detail about how this happens—how the principles are proved—in connection with three of the four groups of principles listed on page 30·.

(1) ·Re the Axioms of Intuition·: Appearances, as mere intuitions *occupying a part of space and time*, come under the concept of quantity, which can be used in a rule-guided way in synthetic *a priori* propositions which generalize over these intuitions.

(2) ·Re the Anticipations of Perception·: Insofar as a perception contains not only intuition but sensation (which always differs from its own total absence by ever-smaller differences), the reality of appearances must have a degree. Now, sensation *doesn't itself occupy any part of space or of time*,³ but it takes time to get from empty space or time to

³ Small areas of heat and light can be just as great in degree—that is, just as intense—as large ones; similarly, brief pains or other states of consciousness can be equal in degree ·or intensity· to long-lasting ones. ·Where degrees of intensity are concerned·, the quantity at a point in space and at a moment in time can be just as great as in any space or time of whatever size or duration. So degrees are quantities, but what is quantified is not •an intuition but rather •the mere sensation which is the intuition's content. The only way to measure them, therefore, is through the relation of 1 to 0, that is. by their capability of decreasing by infinite intermediate degrees to disappearance, or of increasing from nothing through infinite gradations to a determinate sensation in a certain time. The quantity of a quality is a degree ·of intensity·.

·something involving· sensation. Thus, although sensation (taken as that quality of empirical intuition that specifically distinguishes it from other sensations) can never be known *a priori*, it can nonetheless be intensively distinguished from any of the same kind as a *quantity of perception* in any possible experience. That's what makes it possible to apply mathematics to nature as regards the sensory intuition through which nature is given to us.

But pay special attention to the mode of proof of **(3)** the principles that occur under •the title of 'Analogies of Experience'. Unlike the principles of applied mathematics, these refer not to the *genesis* of intuitions but to *how they are interconnected*, as they actually occur, in experience; which can only be the story of how they are made to occur in time according to necessary laws—laws that make the conditions objectively valid and thus create experience. So the proof of these principles doesn't turn on connections amongst *things in themselves* but merely amongst *perceptions*; and it doesn't involve the matter or content of the perceptions, but only how they are related to one another in time according to universal laws. . . .

In these preliminaries I can't go on longer about this, except to say one thing to my reader. You have probably been long accustomed to regarding experience as a mere empirical hanging-together of perceptions, and so haven't had the thought that it must go much beyond them, conferring universal validity on empirical judgments and for that purpose requiring a pure and *a priori* unity of the understanding. So I recommend to you that you pay special attention to my distinction between *experience* and a mere *aggregate of perceptions*, and to judge the mode of proof from this point of view.

27

Now we have reached the place where Humean doubt can be removed. Hume rightly said that reason can't give us insight into

- causality, i.e. the notion that the existence of one thing might necessitate the existence of another.

I add that we have equally little insight into the concept of

- substance, i.e. the notion that the existence of things must be based on a subject that cannot itself be a predicate of anything else.

Indeed, we can form no concept of the possibility of such a thing, although we can point to examples of its use in experience. Nor have we any insight into

- two-way causal interaction, i.e. into how substances that have their own entirely separate existences can necessarily depend on one another.

None of these three concepts is supplied by reason; they have—as I have shown—their seat in the understanding. These concepts and the principles drawn from them stand *a priori* before all experience; they are applicable only to experience, but within that domain they have undoubted objective rightness. That doctrine saves me from having to conclude that the concepts in question are borrowed from experience, which would mean that the necessity they involve is fictitious—a mere illusion resulting from long habit.

28

I can't conceive how **(1)** things in themselves could

- exist as substances, or
- be causes, or
- be in two-way causal interaction with others as parts of a real whole.

Still less can I conceive how any of these could be true of **(2)** appearances considered as raw and unprocessed

perceptions or sensory states, not brought under concepts of the understanding. But we can conceive of such connections of **(3)** representations in our understanding. These representations figure in one kind of judgment as

- subject related to predicates,

in a second kind as

- source related to upshot,

and in a third kind as

- parts that are inter-related to make up a knowable whole.

We also know *a priori* that unless we take the representation of an object to be related in one of these ways, we can't have any knowledge that would be valid of the object. Of course if we attend to the object *in itself*, we are lost: there is no possible way for me to recognize that a thing in itself is related in one of those ways, i.e. that it belongs under the concept of •substance or of •cause or (in relation to other substances) under the concept of •two-way causal interaction. But things in themselves aren't my topic. What I am concerned with is how experiential knowledge of things involves those three types of judgment, i.e. how objects of experience can be brought under those concepts of the understanding. I have perfect insight into *that*: I grasp not merely that we *can* bring appearances under these concepts but that we *must* do so, in that way using the concepts as principles of the possibility of experience.

29

Let us apply all this to Hume's problematic concept, namely the concept of cause. Sheer logic tells me *a priori* that there can be conditional judgments—ones of the form 'If . . . , then . . . '—in which one piece of knowledge is treated as a source and another as an upshot. I may have occasion to make such a judgment, reporting that in my perceptions one kind

of appearance is regularly followed by another, as when I say 'If the sun shines long enough on a body, then the body grows warm'. This doesn't connect the two necessarily, and it doesn't involve the concept of cause; so far, it is merely a subjective connection of *perceptions*. For it to be a proposition of *experience*, it must be regarded as necessary and as universally valid, like the proposition 'The sun through its light is the cause of heat'. The empirical generalization with which I started is now regarded as a law, and as being valid for appearances in a manner that is required if experience is to be possible—for there can't be experience without rules that are universally and therefore necessarily valid. So I do have insight into the concept of cause, as a concept necessarily belonging to the possibility of experience. What about the concept of things ·in themselves· as causes? I have no conception of *that*, because the concept of cause doesn't correspond to anything in •things but only to a •fact about experience, namely that if experience is to be objectively valid knowledge of appearances and of their sequence in time, some appearances must be related to later ones in conditional judgments.

30

Hence the pure concepts of the understanding have absolutely no meaning if they are pulled away from objects of experience and applied to things in themselves (noumena). [Kant uses 'noumenon' (plural 'noumena') to mean 'thing that can only be thought', in contrast to 'phenomenon' (plural 'phenomena'), meaning 'thing that can be experienced'. Things in themselves are noumena because although we can perhaps think about them, we can't possibly experience them.] The role of pure concepts of the understanding is to *spell out* appearances, so to speak, enabling them to be read as experience. When these concepts are applied to the world of the senses, the principles that arise from

this use help our understanding to manage our experience. Beyond the bounds of experience they are arbitrary connections with no objective reality: there is no *a priori* guarantee that they apply to anything, and no examples can be given of their applicability to objects. Indeed, we don't even know what such an example could be like. We have no conception of it, because examples have to be drawn from some possible experience. Possible experience is the proper domain of the pure concepts of the understanding.

So the Humean problem is completely solved, though in a way that would have surprised its inventor. The solution secures an *a priori* origin for the pure concepts of the understanding, and for the universal laws of nature it secures a status as valid laws of the understanding; but it does this in such a way as to limit the use of these concepts to experience only, and it grounds them in a relation between the understanding and experience that is the complete reverse of anything that Hume envisaged—instead of the concepts being derived from experience, that experience is derived from them.

My line of argument yields the following result: *All synthetic a priori principles are simply principles of possible experience*; they can never be applied to things in themselves, but only to appearances as objects of experience. Hence pure mathematics as well as pure natural science can never bear on anything except appearances.

31

Until now, metaphysicians have proceeded boldly enough, but always trampling over everything blindly, without making any distinctions. My work gives us, at last, something definite to rely on as a guide in metaphysical enterprises. It never dawned on the dogmatic thinkers that the goal of their efforts might be so near; nor did it dawn on the philoso-

phers who, proud of their supposedly sound *reason*, set out on their quest for results, equipped with concepts and principles of pure reason (which were legitimate and natural, but fit only for merely empirical use). These philosophers did not and *could* not know any fixed boundaries to the territory within which results might be gained, because they hadn't and *couldn't have* ever reflected on the nature of such a pure understanding or even on its possibility.

Many a naturalist of pure reason (by which I mean someone who thinks he can settle metaphysical questions without any theoretical grounding in the subject) may claim that the prophetic spirit of his sound reason enabled him, long ago, not merely to suspect but to know and understand the doctrine I have been advancing with so much ado (or, as he may prefer to say, with long-winded pomp), namely that *with all our reason we can never reach beyond the domain of experience*. But when he is questioned about his principles of reason individually, he must admit that many of them haven't been *taken from* experience and are therefore *independent of* it and valid *a priori*. But then what basis will he have for putting limits on the dogmatist who uses these concepts and principles beyond all possible experience because he sees them to be independent of it? And even he, this expert in sound reason, in spite of all his assumed and cheaply acquired wisdom, risks wandering inadvertently beyond objects of experience into the domain of fantasies. He is often deeply enough involved in it, though he colours his groundless claims by adopting popular language and announcing everything as 'mere probability', 'rational conjecture', or 'analogy'.

32

Since the earliest times of philosophy, enquirers into pure reason have thought that in addition to the things of the

senses, or appearances (phenomena) of the world of the senses, there are things of the understanding (noumena), and have thought that only the latter are real. That's because they took the former—i.e. appearances—to be illusory; a mistake, but an excusable one in a primitive age.

In fact, when we (rightly) regard the objects of the senses as mere appearances, we thereby admit that they have a thing in itself as their ground—namely, the thing *of* which they are appearances. We don't know what this thing is like in itself; all we know is its appearance, i.e. how this unknown something affects our senses. In accepting appearances, therefore, we also admit the existence of things in themselves: the thought of such noumena, i.e. 'things of the understanding', isn't merely allowed but is unavoidable.

[In this paragraph, Kant refers to the Aesthetic. That's the first part of the *Critique of Pure Reason*, concerning the status of time and space and their relation to sensibility.] My critical deduction limits the principles of the Aesthetic so that they hold good only for objects of possible experience, because extending them to all things would be turning everything into mere appearance; my deduction doesn't at all imply that *there are* no noumena. So these beings of the understanding are allowed, subject to this rule, to which there can be no exceptions: *We don't and can't know anything determinate about these beings of the understanding*. That's because our pure concepts of the understanding and our pure intuitions bear on objects of possible experience—i.e. things of the senses—and on nothing else. As soon as we move away from the senses, those concepts are drained of all their meaning.

33

Indeed, there's something seductive in our pure concepts of the understanding, which tempts us to use them in a *transcendent* manner—that being my label for a use that

goes beyond all possible experience [not = 'transcendental'; see explanation on page 24]. Our concepts of substance, of power, of action, of reality, and others are quite independent of experience, containing nothing of sensory appearance, and so they seem to be applicable to things in themselves (noumena). And this impression is strengthened by the fact that those concepts contain within themselves an element of *necessity* which experience never matches up to. The concept of *cause* implies a rule according to which one state follows another *necessarily*; but experience can only show us that one state of affairs *often or usually follows* another, so it can't provide us with either strict universality or necessity.

So the concepts of the understanding *seem* to have content and significance that spreads beyond their empirical use, and the understanding unknowingly builds for itself a much larger addition to the house of experience, and fills it with merely notional entities, without once noticing that *in doing this* it has carried its otherwise lawful concepts beyond the bounds of their *legitimate* use.

34

Because of all this, the *Critique of Pure Reason* had to contain two important though extremely dry investigations. In one of them, contained in the chapter entitled 'The Schematism of the Pure Concepts of the Understanding', I show that what the senses provide for are not *concrete* applications of the pure concepts of the understanding, but only the *schemas* for their use, and that the corresponding object occurs only in experience (as something the understanding makes out of the materials of the senses). In the second indispensable chapter, 'On the Basis for Distinguishing all Objects into Phenomena and Noumena', I show that, although our pure concepts and principles of the understanding are independent of experience, and despite their *seemingly* greater

sphere of use, we still can't use them to have any thoughts whatsoever beyond the domain of experience, because their only role is to fix *the logical forms of judgments that we make about given intuitions*. But as there's absolutely no intuition outside the domain of the senses, these pure concepts have no meaning outside that domain; and all these noumena, together with the intelligible⁴ world that they compose, are nothing but the representation of a *problem*, namely the problem or question: *What are noumena like? What is the intelligible world like?* What the question is *about* is something possible; but answering it in terms of the concepts of our understanding is quite impossible. That's because of the nature of our understanding, whose role isn't to deliver intuitions but to connect intuitions that are given in experience; i.e. it doesn't present us with real particular things, but only enables us to inter-connect particulars that we get from elsewhere, namely from our senses. So experience must contain all the materials to which we apply our concepts; and beyond it no concepts have any significance, as there's no intuition that might offer them something to grip onto.

35

The •imagination may perhaps be forgiven for sometimes wandering, not keeping carefully within the limits of experience; for such roaming gives it life and vigour, and that's an advantage, because it is always easier to moderate the imagination's boldness than to rouse it from lethargy. But the •understanding's job is to *think*, and it can never be forgiven if it *wanders* instead, for it is our only resource for setting limits, when they are needed, to the wanderings of

the imagination.

The understanding begins its misbehaviour very innocently and soberly. First it brings to light the elementary items of knowledge that it contains *in advance of* all experience, though they must never be applied *outside* experience. It gradually discards these limits, and what's to prevent it from doing so when it has quite freely drawn its principles from itself? Then, having dropped the restriction to experience, it proceeds first to newly-thought-up powers in nature, and soon after that to beings outside nature. In short, it proceeds to a non-natural world; and there can be no shortage of materials for constructing such a world, because fertile fiction-making provides them in abundance—and though it isn't *confirmed* by experience it is never *refuted* by it either. This is why young thinkers are so partial to metaphysics of the truly dogmatic kind, devoting to it their time and talents that could be better employed.

But it is no use trying to damp down these fruitless efforts of pure reason by •offering all sorts of reminders of how hard it is to answer such deep questions, by •complaining about how limited our reason is, and by •down-playing our assertions as mere conjectures. The only way to get these fruitless efforts to be completely abandoned is to •show clearly that they are impossible, and to allow reason's *knowledge of itself* to become a true science in terms of which the domain of reason's right use is distinguished with mathematical certainty from that of its worthless and idle use.

36: How is nature itself possible?

This question is the highest point that transcendental philosophy can ever touch. [Reminder: by 'transcendental' Kant means

⁴ Not the *intellectual* world (as the usual expression is). For cognitive •operations of the understanding are intellectual, and some of them are thinkings about the world of our senses. The term 'intelligible' applies to •objects insofar as they can be represented by the understanding all on its own, without our sensible intuitions coming into it in any way. . . .

'having to do with grounds for *a priori* knowledge'.] It is a point that transcendental philosophy *must* reach, because it is its boundary and completion. Really it contains two questions.

First: What makes it possible for there to be nature—in the *material* sense of that word, in which it stands for the totality of appearances? That is to ask: How are space and time and their contents possible in general? The answer is: What makes them possible is •the way our sensibility is—the special way in which it is affected by objects that are in themselves unknown and aren't in themselves spatial or temporal. This answer has been given in the *Critique* (in the Transcendental Aesthetic), and here in the *Preliminaries* through the solution ·in sections 6–13· of the first problem ·raised at the end of section 5·.

Secondly: What makes it possible for there to be nature in the *formal* sense, in which nature involves the totality of rules that must apply to all appearances if they are to be connected by thought in an experience? The answer must be this: What makes nature possible is •the way our understanding works. ·In the background is the crucial fact that· all the representations of the sensibility have to be related to a consciousness; ·for different items to be held in a single consciousness, they must be related to one another in certain ways, and these relations are imposed upon them by the understanding. And so all the representations that we are discussing must fall within the scope of our understanding. And the answer to our question is that there can be a rule-governed *nature* (in the formal sense) because· our understanding demands that items that are thought about be brought under rules. This rule-governedness is what makes *experience* possible; don't mistake this for an insight into the objects in themselves! This answer is given in the *Critique* itself (in the Transcendental Logic), and in these *Preliminaries* in the course of the solution ·in sections 14–

32· of the second main problem ·raised at the end of section 5·.

Why is our sensibility like that? Why is our understanding like that? We cannot address these questions, because we have to *use* our sensibility and our understanding in all the questions we ask and all the thinking we do in looking for answers.

There are many laws of nature that we can know only through experience; but experience can't teach us the general truth that *appearances are connected in conformity with laws*, because the application of such laws is what makes experience possible in the first place.

So the possibility of experience—of *any* experience—is at the same time the universal law of nature, and the principles of the experience are themselves the laws of nature. For we know nature only as the sum-total of appearances, i.e. of representations *in us*, and so the only source from which we can derive

the laws governing •how nature's parts are interconnected

is

the principles governing •how they are connected *in us*,

that is

•the conditions that have to be satisfied if they are to be united in a single consciousness.

If they weren't united into one consciousness there couldn't be any experience.

The main thesis of this part of the *Preliminaries*, namely that universal laws of nature can be known *a priori*, leads all by itself to this conclusion:

The source of the highest laws of nature lies in ourselves, i.e. in our understanding. Rather than using •experience to find the universal laws of nature in

•nature, we must go in the opposite direction. That is, we must look for •nature itself—as a system that universally conforms to laws—in the features of our sensibility and understanding that make •experience possible.

How else could the laws of nature be known *a priori*, given that they aren't analytic but synthetic?

Why must the principles of possible experience agree with the laws that govern what is possible in nature? We have a choice of two answers: either **(1)** these laws are drawn from nature by means of experience, or conversely **(2)** nature is deduced from the conditions that make experience possible. But **(1)** is self-contradictory, for the universal laws of nature must be known independently of all experience, because all empirical use of the understanding is based on them; so only **(2)** remains.⁵

Empirical laws of nature always rely on particular perceptions. We must distinguish such laws from the pure or universal laws of nature, which aren't based on particular perceptions and simply lay down the conditions that enable perceptions to be unified so as to constitute experience. So far as the laws are concerned, *nature* and *possible experience* are one and the same. •The law-abidingness of possible experience—i.e. the holding of laws that are valid not just for actual but for all possible experience—depends on •the necessary connection of appearances in experience (a connection without which there would be no unified consciousness, and so we wouldn't be able to know any object whatever in the sensible world), and so it depends on •the original laws of the understanding. Because of this, we can

say—though it sounds strange at first—that *The understanding doesn't draw its laws from nature, but prescribes them to nature.*

37

I shall illustrate this seemingly bold proposition by an example that is meant to show that laws that we discover in objects of sensory intuition (especially laws that we know to be necessary) are already held by us to have been placed there by the •understanding, even though they are otherwise just like the laws of nature that we ascribe to •experience. Actually, I shall do rather more than that. I shall show that laws that we are already willing to ascribe to our understanding (namely, those of geometry) *lead to* one of the laws (namely, the inverse-square law of gravitation) that we wouldn't think of as contributed by our understanding unless we had been introduced to my critical philosophy.

38

If we consider the properties of the circle, through which this figure provides a unity for ever so many arbitrary spatial configurations all under a single universal rule, we can't help crediting this geometrical thing with having a constitution. (Analogously, when we think about the properties of *iron*, through which it enters into countless law-governed interactions with all sorts of other kinds of stuff, we can't help crediting *it* with a constitution or inner nature.) For example, take *any* two straight lines that intersect one another and intersect some circle (any circle you like):

The rectangle constructed with the two segments of one of the lines is equal to the rectangle constructed

⁵ Crusius was alone in suggesting a middle way. It could be (he said) that these laws of nature were originally implanted in us by a spirit who can't err or deceive. But there is so much human error—including plenty of it in Crusius' own system!—that it seems very dangerous to rely on this line of thought. Even if some things have been instilled in us by the Spirit of Truth, we have no reliable way of distinguishing these from ones put there by the Father of Lies.

with the two segments of the other.

Now I ask: *Does this law lie in the circle or in the understanding?* That is: Is the basis for this law something *contained in* the figure itself, independently of the understanding, or is the situation rather that the understanding, having constructed the figure according to its concepts (a set of points equidistant from a given point) *introduces into it* this law about the chords cutting one another in geometrical proportion? When we follow the proofs of this law, we soon see that it can only be derived from the equality of the circle's radii, which is the basis for the understanding's construction of this figure. But we can replace the concept on which the circle is based by a more general one that fits every sort of conic section (the circle being just one sort); that will advance the project of unifying various properties of geometrical figures under common laws; and if we take that step we'll find that all the chords that intersect within the ellipse, parabola, and hyperbola, always intersect in such a way that the rectangles of their segments always •bear a constant ratio to one another (the circle is the special case where they •are equal).

If we proceed still further, to the fundamental laws of physical astronomy, we find that the whole of the material world is governed by a physical law of mutual attraction for which the rule is: *The force of attraction decreases inversely as the square of the distance from each attracting point*, i.e. as the spherical surfaces increase over which the force spreads. [Kant's line of thought is as follows. Think of gravity as radiating out from a point, exerting the same total force evenly across the surface of each imaginary sphere with that point as centre. The •surface-areas of the spheres differ with the squares of their radii, i.e. their distance from the central point; **that's simple geometry**. Then •the amount of gravitational force received by an object of a given size will vary with the *proportion* of its sphere-surface that it occupies, which means that it will vary inversely with the square of its distance from the

gravitational source.] The simplicity of the sources of this law, which rest merely on the relation of spherical surfaces of different radii, is matched by what follows from it, namely such a splendid variety and harmony of consequences that not only are all possible orbits of the celestial bodies conic sections, but these orbits are inter-related in such a way that no law of attraction other than the inverse-square one can be *imagined* as appropriate for a cosmic system.

So here's a nature that rests on laws that the understanding knows *a priori*, and chiefly from the universal principles of the geometry of space. Now I ask: •Do the laws of nature lie in space, and does our understanding learn them merely by trying to discover the great wealth of meaning that lies in space; or •do they inhere in the understanding and in its way of configuring space?

Because it is so uniform and so indeterminate in its particular properties, one wouldn't look to *space* for laws of nature. In contrast with that, there's no threat of uniformity in the understanding! What imposes circles, cones and spheres on space is *the understanding*, in its role as provider of the basis for of the constructions of those figures.

So the mere universal form of intuition that we call 'space' is the underlay of all intuitions of particular objects. There's no denying that •space makes the •intuitions possible in all their variety; but the unity of the •objects—or rather the unity among the intuitions that lets them qualify as intuitions *of* objects—comes not from space but from the understanding, in accordance with conditions that lie in its own nature. And so the understanding is the origin of the universal order of nature, in that it brings all appearances under its own laws, and thereby constructs the formal aspects of experience *a priori*, so that nothing can be known by experience except what conforms to the understanding's

laws. The nature of •things in themselves is independent of the conditions of our sensibility and our understanding; but our concern is not with that but rather with •nature considered as an object of possible experience; and here the understanding, by making experience possible, brings it about that the world of the senses either is *nature* (•in my sense, as given in section 14 above•) or is *not an object of experience at all*.

39: Appendix to the pure science of nature: the system of the Categories

Nothing can be more desirable for a philosopher than to take the multitude of concepts or principles that he has found himself applying in particular cases, and to derive them *a priori* from a single principle, thus uniting them all into a single cognition. Before that, all he had was the belief that he had gathered together all •the concepts or principles• that remained after a certain abstraction and seemed to resemble one another enough to constitute a specific *kind* of knowledge; but what he had gathered was only an aggregate—a disorderly heap•. Now, •after his derivation from a single principle•, •he knows that this kind of knowledge involves *just these* •concepts or principles•, neither more nor less, •he understands that his classification of them is necessary, and, at last, •he has a *system*.

You don't need harder thought or more insight to

search out in our daily knowledge the concepts which, though they don't rest on any particular experience, occur in all experiential knowledge of which they are (as it were) the mere form of connection,

than you do to

search out in a language the general rules of the actual use of words, and thus collect elements for a grammar.

In fact the two researches are very closely related. Though •a difference between them arises from the following fact•: we can't give a reason why each language has just this and no other grammatical structure, let alone why its formal rules are *just these*, neither more nor less.

Aristotle collected ten pure elementary concepts under the name of 'categories' and also 'predicaments'. He then found that he had to add to his list five 'post-predicaments' (though some of them were already contained in the first ten); but this random collection should be applauded more as a hint for future enquirers than as an idea developed according to a rule; which is why in philosophy's present more advanced state it has been rejected as quite useless.

In my research into the elements of human knowledge that are pure (contain nothing empirical), my first success—achieved after long thought—was to distinguish and separate the pure elementary concepts of *sensibility* (space and time) from those of the *understanding*. Thus Aristotle's categories of time, space, and place had to be excluded •because they pertain to sensibility, not understanding, and so are not categories•. And the others on his list were useless to me, because •associated with them• there was no principle on the basis of which the understanding could be surveyed in its entirety, making possible a complete and precise account of all the things it can do from which arise its pure concepts—its categories•.

Wanting to discover such a principle, I looked about for •an act of the understanding that contains all its other acts. With the help of that •one kind of act I could bring all the variety of representations into a unified theory of thinking in general. The desired •act of the understanding turned out to be: *judging*. Then I availed myself of the work of the logicians, imperfect though it was. With its help I was able to present a complete list of the pure functions of the understanding [=

'basic kinds of thing the understanding can do'], considered ·at first· without any reference to any object to which they might be applied. The last step was to relate these functions of ·the understanding—i.e. these ways of·—judging, to the conditions that settle whether a given judgment is objectively valid. And so there arose the *pure concepts of the understanding*, concerning which I could make certain that just exactly *these* ·on my list·—neither more nor less—settle what knowledge of things we can have on the basis of pure understanding. It was all right for me to call them by their old ·Aristotelian· name, *categories*. . . .

What distinguishes this system of categories from the old unprincipled random collection of concepts, and what alone entitles it to be considered as philosophy, is this essential fact about it: *By means of it the true significance of the pure concepts of the understanding, and the condition of their use, could be precisely determined.* For here it became obvious that in themselves •the categories are nothing but •logical functions, ·corresponding to •logical kinds of judgment, such as conditional, negative, universal and so on·; which means that they don't by themselves yield the slightest concept of an object. For *that* they need some sensory intuition as a basis. So their only role is to shape up empirical judgments enabling them to become judgments of experience.

Such an insight into the nature of the categories, which limits them to merely experiential use, never occurred to their first author [Aristotle] or to any of his successors; but without this insight they are quite useless and only a wretched list of names, with no explanation and no rule for their use. If the ancients had ever conceived such a notion, doubtless the whole study of pure rational knowledge, which under the name 'metaphysics' has through the centuries spoiled so many sound minds, would have reached us in quite another shape, and would have enlightened the hu-

man understanding instead of—as has actually happened—exhausting it in obscure and pointless speculations, making it useless for true science.

This system of categories exhausts all the possible actions of the understanding, and so every other concept must fall under them. That puts all treatment of any object of pure reason on a systematic basis, and provides an absolutely reliable pointer or clue to how and through what points of enquiry every metaphysical endeavour must proceed if it is to be complete; for it exhausts *all* the workings of the understanding, under which every other concept must be brought. Similarly with the table of principles: we can know that *it* is complete only through relation to the system of the categories. And even in the classification of the concepts, if it is to get beyond ·the sort of classification that might be based on findings in· the empirical psychology of the understanding, it is always the very same guiding thread, which, as it must always be settled *a priori* by the same fixed points of the human understanding, forms a closed circle every time, leaving no doubt that if we want a *complete* philosophical and *a priori* knowledge of the object of a pure conception either of the understanding or of reason, this is the way to get it. So I couldn't neglect this clue with regard to one of the most abstract ontological divisions, namely all the differences that fall under *the concepts of something and of nothing*, and to construct accordingly a rule-governed and necessary table.

And this system, like any true one based on a universal principle, shows its inestimable value in this, that it •keeps out all foreign concepts that might otherwise slink in among the pure concepts of the understanding, and •assigns to every item of knowledge its proper place. ·Here's an example·. The concepts that I arranged in a table according to the clue of the categories, under the name 'concepts of

reflection', turn up among the pure concepts of the understanding in ontology, without having any permission or right to be there. The pure concepts of the understanding are concepts of *connection*, and thereby of the objects themselves, whereas the concepts of reflection have to do only with the mere *comparison* of concepts already given; so the nature and uses of the two kinds of concept are quite different; and my systematic classification of the concepts of reflection keeps them out of company where they don't belong. But the value of putting the categories in a special table of

their own will be still more obvious when we do—as I shortly shall—distinguish those concepts of the *understanding* from the transcendental concepts of *reason*. The latter are quite different in nature and in origin from the former, so they must have quite another form. This separation, necessary as it is, has never yet been made in any system of metaphysics, which is why the concepts of reason have been jumbled together with the concepts of the understanding, as though they were siblings. This mix-up was inevitable in the absence of a separate system of categories.