

Introduction

The Introduction is substantially changed from A to B. In A, Kant simply defined his key distinctions – a priori/aposteriori and analytic/synthetic – and moved onto the transcendental aesthetic, leaving the details to take care of themselves. In B, we get a much more detailed exposition, much of it inevitably premature, esp. as concerns mathematics.

Intro. B1-6

I. Pure vs. Empirical Knowledge

Thesis 1: "In the order of time, ...we have no cognition antecedent to experience, and with experience all our knowledge/cognition begins."

All cognition begins with experience, since objects must affect the senses in order for our cognitive faculty to be wakened to action. The understanding **compares** representations, **connecting** and **separating** them, thereby working the **raw material** of **sense impressions** into a **cognition of objects (= experience)**. [**cognition = representation** (concepts/thought or intuitions/perception) insofar as it has an *objective* reference (significance, sense); our representation need not be *true* to be objective, but it cannot even be so much as false of objects if it does not have **objective sense, the ability to be made true or false by how things stands with the world, reality, objects.**

Sense; Perception; Experience: the three elements

Thesis 2: Not all cognition **originates** (*entspringt*) from experience, even if all of it **begins** (*anhebt*) with it; thus, not all the content of empirical cognition is *received* – some of it is contributed by the **cognitive faculty** itself. Experience is thus only the *occasion*, not the *source*, of all our cognition of objects. Implicit here is the thesis that the acts of the mind involved in working up the raw material into cognition of objects (i.e. the synthesis of imagination in intuition and the synthesis of judgment in concepts) *themselves* contribute a **content** indispensable to the possibility of perception and experience. Sensations are indeed a *prerequisite* for the mind to go to work, to awaken it to action; but the mind must contribute its own special contents (space, time, and the categories) before sensation can be turned into perception or perception into experience.

That the representing subject contributes non-empirical content to cognition is not something that we should expect to be straightforwardly evident. On the contrary, Thesis 3: "If our faculty of cognition makes any such addition, it may be that we are not in a position to distinguish it from the raw material, until with long practice of attention we have become skilled in separating it." (B1-2) Such cognition alone would deserve to be termed **a priori**: no consciousness of sense impressions (**perception**) nor comparison/combination of perceptions presupposed (**experience**).

Kant then warns us not to confuse this **pure** a priori with the merely *relative* a priori, where, on the basis of principles themselves founded on or presupposing experience, we make positive judgments about objects: e.g. undermining the foundations of a building will, we know “a priori”, result in the building’s collapse. This knowledge is not pure because one “had first to learn through experience that bodies are heavy, and therefore fall when their supports are withdrawn.” A person brought all of a sudden into the world could not know that the removal of its supports would collapse the building because he could not know until he has experience of buildings that they are made of materials which have weight; it is possible, a priori, that building materials were weightless and so did not collapse when their supports were removed.

Pure knowledge, therefore, would seem to be a very very limited, narrow sphere: for how much, if indeed anything at all, can we know about the world entirely without benefit of experience of it? As Hume remarked, we could not know that bread nourishes, that objects fall when dropped, that colliding billiard balls move on the same plane instead of burrowing through the table, that we have the power to flex our arm muscles but not our digestive muscles, that we can form an image in our minds of a Tahitian Isle but not sensations of it, etc. What if anything can we know about reality without any benefit of experience at all?

But that is not the whole of it; the notion of the pure not only deprives our judgments of all empirical evidence, but also of empirical concepts to use in our judgments. We have already crossed beyond the pure to the impure a priori when we introduce concepts in our judgments that we could not have obtained except from experience. Thus, Kant offers the judgment “Every alteration has a cause” as an example of the impure a priori; for although it meets some of the criteria of an a priori judgment – it holds universally and necessarily – it fails to be completely pure because the concept of ‘alteration’ can only be acquired through experience. Other examples of the impure a priori are all propositions involving the notion of ‘body’, of corporeal reality; since according to Kant, whereas the idea of space can be obtained completely a priori, the ideas of filled and empty space cannot: only sensuous experience can furnish us with this concept (here he agrees with Locke). *Thus Kant’s metaphysics of nature is all impure a priori: see A848 and A172.*

II. Even the common understanding possesses a priori cognitions: B3-6

Criteria by which to distinguish pure from empirical cognition: experience teaches only that something *is* so, never that it **must** be so and **always** has been and will be so. So, the criteria for a priori objective cognition are **necessity** and **universality**. A priori propositions – judgments, cognition – have admit rule out in advance the possibility of any alternatives and any exceptions. So, whenever we detect a proposition that claims strict necessity and/or strict universality, we can treat these as telltale indicators that the proposition, if true, cannot be in any way derived from or based on past experience.

To get what Kant means by ‘a priori’, it is essential to bear in mind that he is talking not about evidence or justification, or even truth, but the **origin** of a judgment, concept, or other representation.

Representations that originate in experience, that have sense perception as their source, are never necessary or universal. We could not have anticipated such a thing as a tree, or the sun, or a human body without experience of them; nor could we have anticipated that some of these would be found to exist constantly together – fire and smoke, heat and the sun, apples and apple trees, explosions and the vigorous shaking of nitroglycerin compounds – without experience. We establish correlations and on the basis of these correlations predict and explain phenomena. But if experience had shown us different things, or these same things in different combinations, then we would have quite different notions than those we do. There is no saying *how* different things could have been since there is no limit to the possibilities of the different things and combinations of things with which experience *might* have presented us. So long as that is admitted – that we remain in the leading-strings of experience – experience will prevent us from declaring anything it present to us – thing or combination of things – to be necessary to experience and universal to all experience. *E.g. water is H₂O, the inverse square law.*

The contrast then is with that which does not originate in experience, but originates rather in ourselves, what we give ourselves irrespective of whatever experience may or may not reveal to us. Such items are necessary and universal for precisely this reason: they will be present, through our own natures, irrespective of what experience does or does not reveal to us. These items are not to be thought of as *inputs*, but as necessary *givens*, thing we have to have in order to have any experience at all, however varied it might be from the experience we actually have. Such an item, in Kant's view, is the concept of **cause**: this cannot come from experience, but rather is something that must be in our possession if ever we are to have an experience at all, to begin with. Such a concept, a condition for any possible experience, must originate in ourselves; it cannot be obtained from experience since we could not have any experience in the first place without it. **Such representations are pure because they originate in us, and necessary and universal because, as conditions for having any experience at all [or, as derivable from representations that are such conditions], it is impossible for there to be even a single experience without them, or to which they fail to apply.**

It is Kant's view that all the representations of **mathematics** belong to this class: they originate in us, and are derived from representations on which experience itself, its very possibility is dependent; so that the universal and necessary applicability of mathematics to any and every possible experience is certain. So too a priori science of nature and principles of pure understanding.

III. Philosophy needs a science to determine the possibility, principles, and extent of all a priori knowledge

There are certain cognitions which transcend any possible experience and thus appear to extend the scope of judgment (i.e. they purport to be cognitions of objects though no object corresponding to them can ever be given in any experience). **What can confirm and correct**

judgment when experience is no longer in a position to do so? Yet, we commonly repress our doubts about such experience-transcending pretensions because of the excellent and lofty character of putative objects of such cognitions: God, freedom, and the immortal soul. Metaphysics is the putative science of these objects; and its method is dogmatic insofar as it does not preface its inquiry with an "examination of the capacity or incapacity of reason for so great an undertaking." (A3/B7)

In a criticism of pure reason, there can be no "making use of any cognition that we possess without first determining whence it has come, and no trusting to principles without knowing their origin. It is natural, in other words, that the question should first be considered, how the understanding can arrive at all this cognition a priori, and what extent (*Umfang*), validity, and worth (*Wert*) it may have." Why has this never been done? Mathematics has instilled confidence in the power of understanding to cognize objects a priori; and experience, if it cannot support the claims of the metaphysician, it also cannot contradict them. It is overlooked that the objects with which mathematics deals always allow of being exhibited in intuition; and that without any intuition, a pure concept's potential objective employment must remain in doubt. Thus, the "light dove, cleaving the air in her free flight, and feeling its resistance, might imagine that its flight would be still easier in empty space. It was thus that Plato left the world of the senses, as setting too narrow limits to the understanding, and ventured out beyond it on the wings of the ideas, in the empty space of the pure understanding." (A5/B8f.) Speculative structures are eagerly completed before any thought is given to whether their foundation is adequate to support them. Analysis is assumed to yield real insight, by making clear to us what was already present to us only confusedly [*Leibniz*]. But reason fails to realize that, amidst these analyses, propositions are presupposed which link concepts that cannot be related by mere analysis, and which moreover link them entirely a priori [*Hume*]. Yet, no one thinks to ask whether reason is competent to make such pronouncements.

IV. Analytic and Synthetic Judgments

Now we get the distinction between analytic and synthetic judgments.¹ A predicate **B** may either belong to the subject **A** (i.e. be covertly contained therein) = **Analytic Judgment**; or it may lie outside the concept, though in connection (*Verknüpfung* – cause?) with it = **Synthetic Judgment**. In analytic judgments, the relation in which the predicate stands to the subject is **identity**; truth is identity/containment (= A contains marks a,b,c,d,e,f,g, and h, etc. and B = e [*Merkmal* = character, mark]), and falsehood **contradiction** (= A contains marks a,b,c,d,e,f,g, and h, etc. and B = ~e). I.e. if 'A is B' is analytic, then truth = identity and falsehood = contradiction.

In synthetic judgments, the relation of the predicate to the subject cannot be thought through identity. Analytic judgments are therefore purely **explicative**: that is, they add nothing to the subject-concept that had not already been thought in it simply in framing it for purposes of judgment (its

¹"The analytic method, insofar as it is opposed to the synthetical, is very different from an aggregate of analytic propositions. It signifies only that we start from what is sought, as if it were given, and ascend to the only conditions under which it is possible. In this method we often use nothing but synthetic propositions, as in mathematical analysis, and it would be better to term it the regressive method, in contradistinction to the synthetic or progressive method." (*Proleg.* 21/276n.)

explicative utility consists in making *clearly evident* to us what we may have only been confusedly aware of having already thought simply in framing the concept for judgment). When a predicate is added to the subject-concept which has not already been thought in framing it for judgment, the judgment is **ampliative**, as **adding to the subject-concept a new mark (constituent concept) that cannot have been obtained through any amount of explicative analysis of the subject-concept**.

Example: in "All bodies are extended", 'extension' must be thought simply in order to frame the concept 'body' for any judgment we wish to make concerning it, and therefore before any predicate can be attached to it. If I am not clearly aware of having already thought extension in my concept of body, the analytic judgment – so-called because it is merely an analysis of the concept – will make it clear to me. In the judgment "All bodies are heavy", on the other hand, the predicate is not already thought in framing the concept, and no amount of analysis could ever hope to turn it up; it lies outside the concept of a body in general, as something I discover through experience of bodies; this predicate has therefore to be brought to the concept from outside, i.e. *synthesized* with it by means of their correlation in experience.

An example of explicative: "The wicked will be punished if there is perfect justice": here punishing the wicked is part of the thought of perfect justice, but it is far from immediately obvious that this is so, at least for most of us, given the generally confused state of our thought about such matters. Introspection is not the sole criterion here, but it must be some method of determining what is, as a matter of fact, present to consciousness in thinking the subject-concept and what is not. (Analytic judgments have interests precisely insofar as introspection will not suffice to settle it; but logical techniques à la Frege are irrelevant, only techniques for determining what is actually on our minds, whether we are introspectively aware of it or not.)

It is impossible to have the concept 'body' without 'extension' as part of it. But this is not to say that extension belongs to the essence of body; as with Locke, there are no essences but nominal essences or the real essence corresponding to them in physical things (which itself concern mere appearance for Kant). Cf. water is H₂O take to be necessary: completely misses the experience-dependent contingencies involved in the proposition; it could hold as an analytic necessity but never as a synthetic one.

*Judgment, for Kant, is a mental act and so must be analyzed as involving three terms, not two (as with more modern ones): (i) the subject-concept; (ii) the predicate-concept; and (iii) the judger, i.e. the judging **consciousness** (cf. B131 n.). Actually, it will turn out to be four terms, insofar as the copula is distinct; but then again the copula turns out to be the judging subject, its presence in the judgment itself!*

The only criterion for analytic judgment Kant will recognize is that the predicate is united with the subject in consciousness by identity; i.e. the consciousness of the one is already, necessarily, a consciousness of the other. A judgment is synthetic if the consciousness of the subject-concept is not already, necessarily, a consciousness of the predicate; so that if the predicate still belongs to the subject-concept by necessity, that necessity must reside in the determination of intuition, or something extra-conceptual. That is, Kant will not equate the necessity of a judgment with its being

analytic; analyticity is determined by consciousness of the concept alone; and concepts do not have their contents given to them, they have to be put there by consciousness. I.e. all analysis presupposes synthesis: no concept has synthetic necessity, none can have it; all necessity of concepts (analytic necessity) derives from what we, the judging consciousness, think into the concept. There can be disputes about what does and does not belong "essentially" to the concept, but this only means that concepts aren't isolated constructs, but are formed out of systems of relationships, i.e. they result from a perhaps arbitrary limitation of the sum-total of possible Merkmale, and it is often difficult to know quite what we mean in the case of complex concepts like 'right', i.e. what we mean to include in them and what belongs to their implications.

Continuation in A: "in synthetic judgments I must have besides the concept of the subject something else (X) upon which the understanding may rely, if it is to know that a predicate, not contained in this concept, nevertheless belongs to it." In an analytic judgment, the subject-concept alone is sufficient ground for attributing the predicate; in a synthetic judgment, some other ground (=X) is necessary which enables the understanding to connect this predicate with the subject-concept. This X is unproblematic in the case of empirical judgments: it is the complete experience of the *object* I think under the *concept* A, for it is from this experience that I have derived this concept, i.e. the concept is a partial representation of the complete experience of this object. Other parts of that experience can reveal combinations that are not thought already in the first partial representation; e.g. the *constant conjunction* of bodies with weight in experience suffices for me to attach the *concept* 'weight' to that of 'body' in a synthetic judgment.

Continuation in B: **Judgments of experience** are one and all synthetic. For why should one resort to experience if there is no need to go beyond the concept and simple analysis will do? **Analytic judgments** contain within them all the conditions required for making the judgment (the connection is internal, not empirical), and are therefore always a priori.

In "All bodies are heavy", on the other hand, the predicate is not contained in the subject-concept. Yet, the subject-concept contains a part which immediately designates an object of experience, and, in consulting this experience, we find parts that can be added to this part and so be said to belong together with the concept: in adding this predicate to the concept I am doing nothing more than adding other parts of the same experience to the concept.

In analytic judgment, other parts of the same concept are added to the concept (the connection is internal to the concept); in synthetic judgment, concepts of other parts of the same experience from which the concept is derived are added to the concept (the connection is external to the concept but internal to the experience).

The problem is to explain **synthetic a priori judgments**. Here resort to experience is impossible since the judgment does not originate there. Yet, since the predicate is not a part of the subject-concept, not internally related to it, there is a need to go outside the concept to some X, other than experience. An example: "All that happens has its cause". (i) The concept that something happens involves the conception of an existence (*Dasein*) which is preceded by a time in which it was not. (ii) But its cause is not contained in its concept; a cause is by definition something distinct from

the effect, not contained in it. (iii) So it is necessary to go outside the concept of the happening to find a cause of its happening; but this means (iv) that its being determined as the effect of some cause is not something contained in its concept, and therefore nothing forces us to have to think the happening as something caused, as the effect of something distinct from it. *With the X, we can rely on Humean relations like contiguity, precedence, and constant conjunction – which have their roots in human psychology – to render the conception something real for us, something to which probability can be attached. In mathematics, pure intuition; and in transcendental philosophy, the empirical synthesis of intuitions in reproductive imagination – A722/B750 and A156/B195. But that is to get ahead. Kant's question for the moment is simply this: what of the X of non-analytic a priori judgments?*

Continuation in A: Had merely the question as to the possibility of synthetic a priori judgments been thought of in ancient times, we would have been spared the various speculative flights of pure reason they have bequeathed us. "What we must do is discover, in all its proper universality, the ground of the possibility of a priori synthetic judgments, to obtain insight into the conditions which make each kind of such judgments possible, and to mark out all this cognition, which forms a genus by itself, not in any cursory outline, but in a system, with completeness and in a manner sufficient for any use, according to its original sources, divisions, extend, and limits."

[Sections V-VII are only in B]

V. Synthetic a priori judgments are contained in all theoretical sciences of reason as principles

Mathematics. Thitherto regarded the judgments of mathematics have been deemed analytic: '=' = identity, '_' = contradiction. A major source of this view was the deducibility of one mathematical proposition from others in proofs: yet "though a synthetic proposition can indeed be discerned in accordance with the principle of contradiction, this can only be if another synthetic proposition is presupposed, and if it can then be apprehended as following from this other proposition: it can never be so discerned in and by itself." (B14) *E.g. 47 is prime; all numbers that conform to condition X are prime; 47 conforms to condition X; hence 47 is prime is analytically entailed by these other propositions, but all the propositions are synthetic. Cf. Socrates is mortal.*

Kant's argument:

i) Mathematical propositions are a priori: their necessity and universality show the impossibility of deriving them from experience.

ii) $7+5=12$. If it were analytic, it would be possible by sheer analysis alone to discover the concept of 12 in the concepts of 5, 7, and the their combination in a some single number. Yet, according to Kant, this is precisely what we cannot discover by dint of analysis alone: it can give us no idea whether the 7-and-5-comprehending number is 12, 50, 0, 10000, etc. *This premise clearly presupposes pure intuition doctrine, and so transcendental ideality of space and time.*

iii) It thus is necessary to go outside the concept of a single number encompassing 5 and 7 to discover what it is and construct the number itself in intuition in order to discover which number it is. For in doing the sum we are in fact constructing the number in intuition; we employ our concepts of 5,

7, and their combination in a single number to prescribe rules to some such constructive operation as putting stones in a box, inscribing strokes on paper, pushing the beads of an abacus, etc. What is essential here is not the outcome of the constructive act (the stones might be stolen or turn to powder without my knowing it, etc.), but the act itself as subjected to those parameters or constraints prescribed by the concepts: by attending exclusively to this, our result holds not only for this particular constructive act for all constructive acts, of whatever kind, everywhere always: it has the necessity and universality validity of a true a priori judgment. Instead of an experiment, an observation, I have a genuine theorem of mathematics: that is, I can say that the sum of 7 and 5 necessarily and universally is 5; no counter-example is possible.

iv) "The shortest line between two points is a straight line" is also synthetic. The concept of the shortest line between two points is simply the concept of a least quantity. What that quantity is, whether such a line even exists, whether there is one or more than one, and so forth, cannot be discovered through any analysis of the concepts concerned. In particular, as a purely **quantitative** concept (with no thought of the quality of the line in it), it can give us no notion of the kind of line, what **quality** of line, will be shortest. It is only by constructing the line in intuition in conformity with these concepts that we can discover the answer. And not by observing, measuring, or what have you; the outcome of our construction is of no interest to us, for that can only inform us of this particular line drawn here and now, not about all lines drawn anywhere under any circumstances whatsoever. This can be achieved only by attending exclusively to the constructive act itself, abstracting from all that is peculiar to the particular case, and actually generating the line in the pure intuition of our imagination that conforms to these concepts. Thus we discover that the quality of such a line is rectilinear; and since we have determined this not with our eye or with a tape-measure but pure imagination, we can assert it with the strict necessity and universality of a proposition of the science of mathematics.

v) There are of course analytic propositions used in geometry, and they too admit of being exhibited in constructive acts: e.g. $a=a$, $(a+b)>a$. The difficulty we run into here and elsewhere is this: both analytic and synthetic a priori propositions not only involve necessity, but a necessity inherent in the concepts. However, in the case of synthetic judgments, it is a necessity not intrinsic to the concepts themselves, not part of what we think merely in framing the concept for purposes of judgment, but solely in virtue of *a quite special employment* of these concepts as *rules prescriptive of acts of construction in pure imagination*. So long as we remain oblivious to this use (before the happy thought of that single individual Kant spoke of in the B Preface), or if we lacked a faculty of intuition appropriate for this purpose – if for whatever reasons our concepts lacked this peculiar employment – this necessity would be non-existent (not simply unknown, but non-existent – and, in the latter case, impossible). In the analytic judgment, the necessity is intrinsic: it is not dependent on the possibility of a certain employment the concepts have, but simply in virtue of our ability to think them, to frame them as the subject or predicate of a judgment.

Letter to J. Schultz, 25 Nov., 1788

...I can form a concept of one and the same quantity by means of many different additions and subtractions (notice that both of these processes are syntheses, however). Objectively, the concepts I form are identical (as in every equation). But subjectively, depending on the type of composition that I think in order to arrive at that concept, they are very different. So that at any rate my judgment goes beyond the concept I get from the synthesis, in that the judgment substitutes another concept (simpler and more appropriate to the construction) in place of the first concept, though it determines the same object. Thus I can arrive at a single determination of a quantity by means of $3+5$, or $12-4$, or 2×4 , or 2^3 , namely 8. But my thought ' $3+5$ ' did not include the thought ' 2×4 '. Just as little did it include the concept '8', which is equal in value to any of these...

[I]f I regard $3+4$ as the setting of a problem, namely to find a third number (7) such that the one number will be seen as the completion-to-a-total of the other, the solution is found by means of the simplest operation, requiring no special prescription, namely, by the successive addition that the number 4 proposes simply as a continuation of the counting up to 3. The judgment " $3+4=7$ " does seem to be a purely theoretical judgment, and objectively regarded, that is what it is; but subjectively, the sign '+' signifies the synthesis involved in getting a third number out of two other numbers, and it signifies a task to be done, requiring no instruction or proof. Consequently the judgment is a postulate. Now assuming it were an analytic judgment, I would have to think exactly the same things by ' $3+4$ ' as by '7', and the judgment would only make me more clearly conscious of what I thought. But since $12 - 5$ yields a number (7) that is actually the same number I thought when I was adding $3+4$, it follows, according to the principle 'things equal to the same thing are equal to each other', that when I think '3 and 4' I must at the same time be thinking '12 and 5'. And this does not jibe with my own awareness.

All analytic judgment by means of concepts have this characteristic: they can represent a predicate only as a constituent concept contained in the subject-concept. In the case of definitions, both concepts must be reciprocal. But in an arithmetic judgment, namely, an equation, both concepts must be absolutely reciprocal and objectively identical, for example, the concept ' $3+4$ ' and '7'. In the problem conjoin 3 and 4 in one number, the number 7 must arise not out of an analysis (taking apart) of the constituent concepts but rather by means of a construction, that is, synthetically (putting together). This construction, a single counting up in an a priori intuition [time], exhibits the concept of the conjunction of two numbers. Here we have the construction of the concept of quantity rather than that of a quantum [a whole composed of parts]. For the idea that the conjoining of 3 and 4, as distinct quantitative concepts, could yield the concept of *one* magnitude was only a thought. The number 7 is thus the exhibition of this thought in an act of counting together.

Time, as you correctly notice, has no influence on the properties of numbers (considered as pure determinations of quantity)... The science of numbers, notwithstanding the succession that every construction of quantity requires, is a pure intellectual synthesis, which we represent to ourselves in thought. But insofar as specific quantities (quanta) are to be determined in accordance with this science, they must be given to us in such a way that we can grasp their intuition successively; and thus this grasping is subjected to the time condition. So that when all is said and done, we cannot subject any object other than an object of a possible *sensible* intuition to quantitative, numerical assessment, and it thus remains a principle without exception that mathematics can be applied only to *sensibilia*. The magnitude of God's perfection, of duration, and so on, could only be expressed by means of the [idea of the] *totality* of reality; it could not possibly be represented by means of numbers, supposing someone wanted to measure even a merely intelligible unity.

“The question [of analytic or synthetic] is to what we must join in thought to the given concept, but what we actually think together with and in it, thought obscurely.” (PFM 269) The joining of the concept can be necessary without our actually thinking the predicate with an in the subject. Thus, Locke came close to anticipating Kant’s distinction when he distinguished judgments true by identity or contradiction (= analytic) and those connections of representations which consist in “the coexistence of representations in a subject.” (PFM 270)

*[One should not focus on the concepts Kant uses in his examples too particularly. It is contingent (dependent on human psychology and what happens to be found) that we have reflected upon experience in such a way as to produce for ourselves the concepts 'body' and 'heavy' as we now have them. These concepts are not handed to us by nature; we reflect on sense perceptions, compare them with an eye to certain relations in accordance with our psychological make-up, and extract concepts from them: the boundary lines might have been drawn quite differently, or more vaguely, sharply, etc., than had our experience, psychology, or education been sufficiently different from what they in fact are. Thus, there could perfectly well be a language in which "All bodies are heavy" is analytic and "All bodies are extended" is synthetic: it all depends on what we do and do not have to **think** when we frame the concept 'body' for judgment. Kant's descriptive categories are purely formal-logical; his examples are meant to exemplify these **forms** and not inform us about the world and the nature of things. The essentials are these: in framing for judgment a subject-concept A, do we or do we not already think the predicate-concept B, such that a thorough analysis of what we think in thinking A (in which we are careful to avoid surreptitiously smuggling in things that can only be known via experience or perception) will turn up B? If not, then the judgment is synthetic. If synthetic, then, without reference to the X (experience, pure intuition, or the empirical synthesis of intuitions), the combination is purely arbitrary: possible, surely; but not in any way probable, much less a priori certain. With the X, we can rely on Humean relations like contiguity, precedence, and constant conjunction – which have their roots in human psychology – to render the conception something real for us, something to which probability can be attached. In mathematics, pure intuition; and in transcendental philosophy, the empirical synthesis of intuitions in reproductive imagination – A722/B750 and A156/B195. But that is to get ahead. Kant's question for the moment is simply this: what of the X of non-analytic a priori judgments?]*

Natural Science, too, according to Kant, contains a priori synthetic judgments as principles. E.g. the conservation of the quantity of matter through all change [*physics must always balance its books – there can never be total creation or annihilation in the field of experience*]. Also: action = reaction [*books must balance not only in respect of matter but forces as well*]. The necessity of both propositions betrays their a priori status. Yet they are also synthetic, since in the concept of matter (= impenetrable lifeless extension, reality as it fills space) the concept of *permanence of quantity* cannot be discerned by any analysis: i.e. there is no contradiction in predicating change of quantity of matter, even though it is known a priori to be impossible (i.e. experience can never falsify this principle: unless I so radically revise my concept of matter – which as we saw is borrowed from experience – that its meaning ceases to prescribe a rule to construction which renders its creation or annihilation

impossible in experience; but if not experience, then what is the X of my synthetic a priori judgment? Kant's answer is: the empirical synthesis of intuition).

Metaphysics. Even if we deem metaphysics a failure, we must admit that it contains synthetic a priori judgments. It would fail in its purpose of advancing our knowledge if it did not go outside what it thinks in a given concept and add to it something external to it.

VI. The General Problem of Pure Reason

Kant sums up all these considerations as a single investigative query: how are synthetic a priori judgments possible? The fate metaphysics hangs in the balance. He again remarks that Hume came closest to formulating it but, having restricted himself to causality, failed to realize that since mathematics too contains synthetic a priori judgments, its fate too is staked on the answer to Kant's question. Since mathematics, together with the a priori principles on which the natural sciences are founded (conservation of matter and energy), clearly are possible since they exist as science, the question is not *whether* but *how* synthetic a priori judgments are possible: *identifying and certifying the universal, necessary conditions and grounds of their possibility*.

Kant then divides the question regarding the possibility of metaphysical synthetic a priori judgments into two: how is metaphysics as *natural disposition* possible? and: how is metaphysics as *science* possible? For while we may not yet know whether the science exists, the natural disposition certainly does. For "in all men, as soon as their reason has become ripe for speculation, there has always existed and will always continue to exist some kind of metaphysics." The possibility of the science of metaphysics turns on whether it is "possible for reason to attain to certainty whether we know or do not know the objects of metaphysics, that is, to come to a decision either in regard to the objects of its enquiries or in regard to the capacity or incapacity of reason to pass any judgment upon them." (B22) This is the question which Kant's criticism of reason is intended to settle. However, as is now evident, to do this, it is not enough for it simply to analyze the concepts of pure understanding; for this can only tell us what metaphysical knowledge we suppose ourselves already to have, not how we have been able to come by it in the first place. The problem of the possibility of metaphysics therefore hinges on a proper account of the *genesis* of its concepts: whether they are innate or if acquired, how; is their connection to perception and experience only coincidental or is it something intrinsic, and if the latter, how does this not compromise their either their purity or their purely intellectual character? Only by answering the question of the genesis of the concepts of the metaphysics can we hope to determine what conditions must be met before they can have application to objects; only then can we know with certainty whether and how metaphysics as a science is possible.

VII. Idea and Division of the science of the criticism of pure reason

Here Kant defines **reason** as "the faculty which supplies the principles of a priori cognition." (A11/B24) **Pure reason** is then the faculty of absolutely a priori cognition, cognition with no admixture whatsoever of sensation or experience. **Transcendental cognition** he defines as that

which is not concerned directly with the objects of cognition but with the possibility of cognizing an object a priori: it is, in other words, the possibility of synthetic a priori judgments bearing on the real (which excludes pure mathematics and pure space and time as well; it does, however, include the possibility of the application of space, time, and mathematics to the world insofar as the possibility of such an application can be cognized a priori). The critique of pure reason is a **transcendental philosophy** since it includes, in *systematic* form, the *sum-total* of all those concepts which figure in our a priori knowledge of objects (space and time are included not for their own sake but because they play a role in understanding how these concepts apply to objects a priori – this is why a Transcendental Aesthetic has to be included in Kant's transcendental philosophy).

Prolegomena Preamble

Sciences may be distinguished from one another by: i) their different objects, ii) their different sources of cognition (experience or non-empirical), and/or iii) the kind of cognition (sensible or purely intellectual).

Had Hume but recognized that pure mathematical propositions are not analytic, "that acute man would have been led into considerations which must needs be similar to those that now occupy us, but which would have gained inestimably from his inimitably elegant style." (16/273)

"Metaphysical judgments, properly so-called, are all synthetic. We must distinguish judgments belonging to metaphysics from metaphysical judgments properly so-called." The former may be analytic if there are concepts belonging to metaphysics capable of analysis. But these are no different from analytic judgments involving any concepts whatsoever: purely formal identities and non-identities.

The division of judgments into analytic and synthetic is of crucial importance for the criticism of reason, but of little use in any endeavor. (17/270) [*Linguistic analysis?*]

The *Prolegomena* is not intended to show that metaphysics is possible but only "to point out what must be done in order to make a science actual if it is possible." (19/274)

Years of work (278) were necessary to solve this most difficult of problems: how are synthetic a priori propositions possible? Only this can set metaphysics on the path to science (it also explains mathematics and natural science but they do not have need of it in order to be set on the path of science).