III

ON THE FORM AND PRINCIPLES OF THE SENSIBLE AND INTELLIGIBLE WORLD.

A DISSERTATION
FOR THE PROPER OBTAINMENT OF THE POST
OF ORDINARY PROFESSOR OF LOGIC AND METAPHYSIC
WHICH, ACCORDING TO THE REQUIREMENT OF
THE STATUTES OF THE UNIVERSITY,
WILL BE PUBLICLY DEFENDED
BY

IMMANUEL KANT

THE FUNCTION OF RESPONDENT WILL BE
UNDERTAKEN BY

MARCUS HERTZ,

OF BERLIN, OF JEWISH DESCENT
A STUDENT OF MEDICINE AND PHILOSOPHY,
AGAINST OPPONENTS

GEORG WILHELM SCHREIBER

OF KÖNIGSBERG IN PRUSSIA, STUDENT
IN THE FACULTY OF PHILOSOPHY,

JOHANN AUGUST STEIN,

OF KÖNIGSBERG IN PRUSSIA,
CANDIDATE IN BOTH LAWS

AND

GEORG DANIEL SCHRÖTER

OF ELBING, CANDIDATE IN
SACRED THEOLOGY

IN THE LARGE LECTURE THEATRE
AT THE USUAL MORNING AND AFTERNOON HOURS
ON 21ST OF AUGUST OF THE YEAR 1770.[1]

KÖNIGSBERG
AT THE SHOP OF THE ROYAL COURT
AND UNIVERSITY PRINTING WORKS.

II 386

TO THE MOST AUGUST,
SERENE AND MIGHTY
PRINCE AND MASTER,
THE LORD FREDERICK,
KING OF THE PRUSSIANS,
MARGRAVE OF BRANDENBURG,
ARCH-CHAMBERLAIN AND ELECTOR OF
THE HOLY ROMAN EMPIRE
SOVEREIGN DUKE OF SILESIA,
ETC. ETC. ETC.
TO THE MOST CLEMENT FATHER
OF HIS COUNTRY,
TO HIS MOST INDULGENT KING AND MASTER,
THESE FIRST-FRUITS OF THE OFFICE
ENTRUSTED TO HIM
ARE OFFERED IN DEVOTION
BY HIS MOST HUMBLE

IMMANUEL KANT

On the notion of a world in general

§1

In a substantial composite, just as analysis does not come to an end until a part is reached which is not a whole, that is to say a SIMPLE, so likewise synthesis does not come to an end until we reach a whole which is not a part, that is to say a WORLD.

In this exposition of the underlying concept, I have, in addition to the marks appropriate to a distinct cognition of the object, also paid some little attention to the *two-fold genesis* of the concept out of the nature of the mind. For since this genesis, by serving as an example, can help us to secure a deeper insight into method in metaphysics, it seems to me that it should not be underestimated. Thus it is one thing, given the parts, to conceive for oneself the *composition* of the whole, by means of an abstract notion of the intellect; and it is another thing to *follow up* this general *notion*, as one might do with some problem of reason, through the sensitive faculty of knowledge, that is to represent the same notion to oneself in the concrete by a distinct intuition. The former is done by means of the concept of *composition* in general, in so far as a number of things are contained under it (in mutual relations to each other), and so by means of ideas of the intellect which are universal. The second case rests upon temporal *conditions*, in so far as it is possible by the successive addition of part to part to arrive genetically, that is by SYNTHESIS, at the concept of a composite, and this case falls under the laws of *intuition*. In a similar way, when a substantial composite has been given we arrive without difficulty at the idea of things which are simple by taking away generally the intellectual notion of *composition*. For the

things which remain when every element of conjunction has been removed are *simple* things. Under the laws of intuitive cognition, it is true, this does not actually happen, that is to say every element of composition is not taken away, unless we go back from the given whole to all its *possible parts whatsoever*, that is unless we proceed by analysis,* which in its
II 388 turn rests upon a temporal condition. But for a composite there must be a *manifold* of parts and for a whole there must be an *allness* of parts. So neither the analysis nor the synthesis will be completed, nor will the concept of a *simple* emerge by means of analysis nor the concept of a *whole* by means of synthesis, unless it should be possible to carry out the respective processes in a finite assignable period of time.

But with a *continuous quantity* the *regression* from the whole to the parts that can be given, and with an *infinite* quantity the *progression* from the parts to the given whole, have in each case *no point at which they stop*, and as a result in the one case complete analysis and in the other case complete synthesis would be impossible. So, in accordance with the laws of intuition, in the first case the whole cannot be thought of completely as regards *composition* and in the second case the composite cannot be thought of completely as regards *totality*. From this it is clear how, since *unrepresentable* and *impossible* are commonly treated as having the same meaning, the concepts both of the *continuous* and of the *infinite* come to be rejected by large numbers of people. For indeed, *according to the laws of intuitive cognition*, any representation of these concepts is absolutely impossible. Now although I am

* A double meaning is commonly assigned to the words 'analysis' and 'synthesis'. Thus synthesis is either *qualitative*, a progression within a series of *subordinates* from the ground to the grounded, or *quantitative*, a progression within a series of co-ordinates, from a given part through its complements to the whole. In a similar way analysis, taken in its first sense, is a regression from the *grounded to the ground*, but in its second sense it is a regression from a *whole* to its *possible* or mediate *parts*, that is to say to parts of parts, and so it is not a division but a *subdivision* of a given composite. Here we use both synthesis and analysis only in their second senses.

not here pleading a case for these notions,*—notions which have been expelled in disgrace from a not inconsiderable number of schools, especially the notion of the continuous—none the less it will be of the greatest importance to have given a warning that the people who use such a perverse II 389 method of arguing are guilty of the gravest of errors. For whatever is *inconsistent with* the laws of the intellect and of reason is undoubtedly impossible. But anything which as being an object of pure reason simply *does not come under* the laws of intuitive cognition is not in the same position. For this lack of accord between the *sensitive* faculty and the *intellectual* faculty—the nature of these faculties I shall explain later—points only to the fact that *the abstract ideas which the mind entertains when they have been received from the intellect very often cannot be followed up in the concrete and converted into intuitions*. And this *subjective* resistance is, as frequently, no true indication of any *objective* inconsistency, and the incautious

* Those who reject an actual mathematical infinite are not performing a very onerous task. For assuredly they construct their definition of the infinite in such a way as to enable them to carve some contradiction out of it. The *infinite* for them is said to be *that quantity than which a greater quantity is impossible*, and the mathematical infinite is expressed for them as, there is a manifold (of a unit which can be given) than which a larger manifold is impossible. In place of '*infinite*' they then substitute '*largest*' and since a largest manifold is impossible they readily conclude against an infinite which they themselves have constructed. Or else they call an infinite manifold an *infinite number*, and declare that an infinite number is absurd. This last is indeed perfectly obvious but it is a case in which the only fight is with shadows in the structure of our minds. But suppose they conceive of the mathematical infinite as a quantity which when related to a measure treated as a unit constitutes *a manifold larger than any number*, then, if they had further noticed that *measurability* here only denotes relation to the scale of the human intellect, a scale through which it is only possible to reach *the definite concept of a manifold* by the successive addition of one to one and the *complete* concept which is called a *number* only by carrying out this progression in a finite time, they would have seen very clearly that things which do not accord with the law fixed for some one subject do not thereby pass beyond all intellection. For there could be given an intellect, though certainly not a human intellect, which might see a manifold distinctly at a single glance without the successive application of a measure.

are easily deceived by it into taking the limits by which the human mind is circumscribed as limits within which the very essence of things is contained.

Moreover in the case of substantial composites, whether given by the testimony of the senses or in any other way, it can easily be shown by proof based upon grounds of the intellect that both simple things and a world are given. But in framing my definition I have also pointed a finger at the causes for this which lie in the character of a subject, so that the notion of a world may not appear purely arbitrary and, as happens in mathematics, constructed only for the purpose of deducing the consequences which follow from it. For the mind which is intent upon the concept of a composite, whether it be engaged in breaking it up or putting it together, demands and adopts for itself boundaries within which it may find peace from either side, the a priori and the a posteriori.

§2

In the definition of a world the following are the moments which require attention:

I. MATTER (in the transcendental sense), that is the *parts*. These are here taken to be *substances*. I was able to remain wholly unconcerned about the agreement or otherwise of my definition with the ordinary meaning of the word. For the only question here concerns a problem arising under the laws of reason, namely how it is possible for several substances to coalesce into one thing, and upon what conditions it depends that this one thing is not a part of something else. But indeed the force of the word 'world' as it is found in common use springs to the mind of its own accord. For no one assigns *accidents* to a *world* as its parts, but only to its *state* as *determinations*. Hence the so-called world *of the ego*, which is completely constituted by a unique simple substance together with its accidents, is not properly called a

world, unless perhaps it is called an *imaginary* world. For the same reason it is wrong to attribute the series of successive things, I mean states, to the world-whole as a part. For modifications are *not parts* of a subject, but are *grounded determinations*. Finally I have not here raised the question of the nature of the substances which constitute the world, namely whether they are *contingent* or necessary. Nor do I II 390
gratuitously store away the determination of this question in my definition, intending subsequently, as often happens, to extract therefrom this very same determination by some fair-seeming method of clever speaking. But I shall later show[2] that the contingency of its substances can be inferred more than sufficiently from the conditions here posited.

II. FORM, which consists in the *co-ordination* of substances, not in their subordination. For *co-ordinates* are related to one another as complements to a whole, while *subordinates* are related to one another as caused and cause, or generally as principle and principled. The first relationship is reciprocal and *homonymous*, so that any correlate is related to the other as determinant and at the same time as determinate. The second relationship is *heteronymous*, being from the one side a relation of dependence only and from the other a relation of causality. This co-ordination is conceived of as *real* and objective, not as ideal and depending upon the mere whim of a subject, whereby you may fashion a whole by making a summation at your pleasure of any manifold whatsoever. For by taking several things together you achieve without difficulty a *whole* of *representation*, but not thereby the *representation of a whole*. Accordingly if there happened to be certain wholes consisting of substances, and these wholes were not bound to one another by any bond, the bringing of these wholes together, whereby the mind forces the manifold into an ideal unity, would not give expression to anything more than a plurality of worlds held together in a single act of thought. But the bond constituting the *essential* form of a world is seen as the principle of

the *possible influxes* of the substances which constitute the world. For actual influxes do not pertain to the essence but to the state, and the transeunt forces themselves, which are the causes of the influxes, suppose some principle by which it may be possible that the states of the several things whose subsistence is none the less independent each from the other should be related to one another mutually as grounded determinations. If you depart from this principle you are debarred from positing as possible a transeunt force in the world. And indeed this *form* which is *essential* to a world is for that reason *immutable* and not exposed to any vicissitude. And this is the case in the first place for a *logical reason*. For any change supposes the identity of the subject as the determinations succeed one another. Hence the world, remaining the same world throughout all its successive states, preserves the same fundamental form. For the identity of the *parts* is not sufficient for the identity of the whole, but there is required an identity of characteristic *composition*. But above all the same result follows because of a *real reason*. For the nature of a world, being the first internal principle of each and every one of the variable determinations which pertain to its state, cannot be opposed to itself, and consequently it is by nature immutable, that is it cannot be changed by itself. And so there is given in any world a certain form which must be assigned to its nature, which is constant and
II 391 invariable, as the perennial principle of each and every contingent and transitory form pertaining to the state of that world. Those who consider this investigation superfluous are frustrated by the concepts of *space* and *time*. These they treat as conditions already given in themselves and primitive, with whose help, to be sure, and without any other principle, it would be not only possible but also necessary that a number of actual things should be mutually related to one another as component parts and should constitute a whole. But I shall shortly explain that these notions are not *rational* at all, nor are they objective *ideas* of any bond, but they are *phenomena*, and while they do indeed bear witness to

some common principle constituting a universal bond, they do not expose it to view.

III. ENTIRETY, which is the *absolute* allness of its component parts. For when we consider some *given* composite, although that composite were still to be a part of another composite, yet there is always present a certain *comparative* allness, namely that of the parts pertaining to that quantity itself. But in this case whatever things are related to one another as component parts with respect to any whole *whatsoever*, those things are taken by the intellect as placed in conjunction. This absolute *totality* may bear on the face of it the appearance of an everyday concept and one that is easily met with, especially when it is stated negatively as happens in a definition. Yet when we reflect upon it more deeply it is seen to constitute a crux for the philosopher. For it is hardly possible to conceive how the *never to be completed series* of the states of the universe which succeed one another to *eternity* can be reduced to a *whole* which comprehends absolutely all its vicissitudes. Indeed it necessarily follows from its very infinity that the series has no *point at which it stops*. And so there is not given any series of things in succession except one which is part of another series. It follows that for this same reason comprehensive completeness or *absolute totality* seems here to have departed altogether. For although the notion of a part could be taken universally and whatever things are contained under this notion might constitute a single thing if they were regarded as placed in the same series, yet it seems to be required by the concept of *a whole* that they should all *be taken simultaneously*. And this in the case given is impossible. For since nothing succeeds the whole series, when we set up a series of things in succession there is nothing given which is not followed by something else except the last of the series. This will be something which is last in eternity and this is absurd. The difficulty which confronts the totality of a successive infinite does not apply, perhaps someone may think, in the case of a *simultaneous infinite*, because *simultaneity* seems expressly to avow a

complex *of all things at the same time*. But if a simultaneous infinite were admitted, one must also concede the totality of a successive infinite—for when the latter is denied, the first also is taken away. For a simultaneous infinite provides eternity with unexhausted matter for progressing successively through its innumerable parts to infinity. Yet this
II 392 series when completed with all its numbers would be given actually in a simultaneous infinite and so a series which is never to be completed by successive additions nevertheless could be given *as a whole*. Let him who is to extricate himself from this thorny question note that neither the successive nor the simultaneous co-ordination of several things (since both co-ordinations depend on concepts of time) pertains to the *intellectual* concept of a whole, but only to the conditions of *sensitive intuition*. And so even if these co-ordinations were not to be sensitively conceivable, they do not thereby cease to be intellectual. It is sufficient for this concept that co-ordinates should be given, no matter how, and that they should be all thought of as pertaining to one thing.

SECTION II

On the distinction between sensibles and intelligibles in general

§3

Sensuality is the *receptivity* of a subject by which it is possible for the subject's own representative state to be affected in a definite way by the presence of some object. *Intelligence* (rationality) is the *faculty* of a subject by which it has the power to represent things which cannot by their own quality come before the senses of that subject. The object of sensuality is the sensible; that which contains nothing but what is to be cognised through the intelligence is intelligible. In the schools of the ancients the first was called a *phenomenon* and the second a *noumenon*. Cognition in so far as it is subject to the laws of sensuality is *sensitive*, in so far as it

is subject to the laws of the intelligence is *intellectual* or rational.

§4

In this way whatever in cognition is sensitive is dependent upon the special character of the subject to the extent that the subject is capable of this or that modification by the presence of objects and these modifications can differ in different cases according to variations in the subjects. But whatever cognition is exempt from such subjective conditions has regard only to the object. Consequently it is clear that things which are thought sensitively are representations of things *as they appear*, but things which are intellectual are representations of things *as they are*. In a representation of sense there is first of all something which you might call the *matter*, namely the *sensation*, and there is also something which can be called the *form*, namely the *specificity* of the sensibles which arises according as the various things which affect the senses are co-ordinated by a certain natural law of the mind. Moreover just as the sensation which consti- II 393
tutes the *matter* of a sensual representation is evidence at least for the presence of something sensible, but in respect of its quality is dependent upon the nature of the subject to the extent that the latter is capable of modification by the object in question, so also the *form* of the same representation is undoubtedly evidence of a certain respect or relation in the sensa. But properly speaking it is not some adumbration or schema of the object, but only a certain law implanted in the mind by which it co-ordinates for itself the sensa which arise from the presence of the object. For objects do not strike the senses in virtue of their form or specificity. So, for the various things in an object which affect the sense to coalesce into some representational whole there is needed an internal principle in the mind by which those various things may be clothed with a certain *specificity* in accordance with stable and innate laws.

§5

So for sensual cognition the matter which is sensation and through which cognitions are called *sensual*, is as pertinent as the form in virtue of which, even if it were to be found quite apart from any sensation, representations are called *sensitive*. In so far as *intellectual* things on the other hand are concerned, it must above all be carefully noted that the use of the intellect or superior faculty of the soul is two-fold. By the first of these uses the concepts themselves, whether of things or relations, *are given* and this is the REAL USE. By the second use no matter what the source from which they are given the concepts are simply *subordinated* to themselves, I mean the lower to the higher (to common marks) and are compared with one another in accordance with the principle of contradiction, and this use is called the LOGICAL USE. Now the logical use of the intellect is common to all the sciences, but the real use is not common to all. For when a cognition has been given no matter how, it is regarded either as contained under a mark common to several cognitions or as opposed to that mark. This can be either immediately and directly as happens in *judgements* leading to a distinct cognition, or mediately as happens in *reasonings* leading to an adequate cognition.[3] So when sensitive cognitions are given, sensitive cognitions are subordinated by the logical use of the intellect to other sensitive cognitions as to common concepts, and phenomena are subordinated to more general laws of phenomena. But it is of the greatest importance here to have noticed that cognitions must always be treated as sensitive cognitions however extensive may have been the operation of the logical use by the intellect upon them. For they are called sensitive *because of their genesis* and not as a result of *comparing* them in respect of identity or opposition. Hence even the most general empirical laws are none the less sensual, and the principles of sensitive form which are found in geometry (relations determined in space), however much the intellect may operate upon them by reasoning

according to the rules of logic from what is given sensitively (by a pure intuition), none the less do not pass out of the class of sensitive things. But in sensual things and in phenomena that which precedes the logical use of the intellect is called *appearance*, and the reflective cognition which arises when several appearances are compared by the intellect is called *experience*. And so there is no passage from appearance to experience except by reflection in accordance with the logical use of the intellect. The common concepts of experience are called *empirical*, and the objects of experience are called *phenomena*, but the laws both of experience and generally of all sensitive cognition are called laws of phenomena. And so empirical concepts by reduction to a greater universality do not become intellectual in the *real sense*, and do not go outside the species of sensitive cognition, but to whatever point they mount by abstraction, they remain sensitive indefinitely. II 394

§6

In so far as intellectual things strictly as such are concerned, where the *use of the intellect* is *real*, such concepts whether of objects or relations are given by the very nature of the intellect and they have not been abstracted from any use of the senses nor do they contain any form of sensitive cognition as such. But it is necessary here to notice the extreme ambiguity of the word *abstracted*, and I think this ambiguity must preferably be wiped clean away beforehand lest it mar our investigation into things intellectual. I mean that it would be proper to say: *to abstract from some things*, but not: *to abstract something*. The first expression indicates that in a certain concept we should not attend to other things bound to it no matter how, while the second expression indicates that it would only be given concretely and in such a way that it is separated from the things joined to it. Hence an intellectual concept *abstracts* from everything sensitive, but is *not abstracted* from things which are sensitive, and perhaps it

would more rightly be called *abstracting* rather than *abstract*. Accordingly it is more advisable to call intellectual concepts *pure ideas*, and concepts which are only given empirically *abstract* concepts.

§7

From this one can see that the sensitive is badly described as what *is more confusedly* cognised and the intellectual as that of which there is a *distinct* cognition. For these are only logical distinctions and ones which *do not touch* at all the things *given* which underlie every logical comparison. Thus sensitive things can be very distinct and intellectual things
II 395 extremely confused. We notice the first case in the prototype of sensitive cognition, *geometry*, and the second case in the organon of all intellectual things, *metaphysics*. And it is obvious how much effort is devoted by metaphysics to dispelling the clouds of confusion which darken the common intellect, although it is not always so happily successful as geometry is. None the less each and every one of these cognitions preserves the sign of its ancestry, so that the first group, however distinct they be, are called sensitive because of their origin, while the second group, even though confused, remain intellectual, as for example is the case with *moral* concepts which are cognised not by experiencing them but through the pure intellect itself. But I am afraid it may be that the illustrious WOLFF has, by this distinction between things sensitive and things intellectual, which for him is only a logical distinction, completely abolished, to the great detriment of philosophy, that noble institution of antiquity, the discussion of the *character of phenomena and noumena*, and has turned men's minds away from the search into those things to what are very often only logical minutiae.

§8

Now the philosophy which contains the *first principles* of the use of the *pure intellect* is METAPHYSICS. But its propaedeutic

science is that science which teaches the distinction of sensitive cognition from intellectual cognition, and it is of this science that I am offering a specimen in my present dissertation. Since, then, empirical principles are not found in metaphysics, the concepts met with in metaphysics are not to be sought in the senses, but in the very nature of the pure intellect, and that not as concepts *born with it*, but as concepts abstracted out of the laws planted in the mind (by attending to its actions on the occasion of an experience), and so as *acquired* concepts. To this genus belong possibility, existence, necessity, substance, cause etc., together with their opposites or correlates. These never enter any sensual representation as parts and so could not be abstracted from it in any way at all.

§9

The use[4] of things intellectual is pre-eminently two-fold. The first is *elenctic*, whereby they are of value negatively, namely when they keep things conceived sensitively away from noumena, and although they do not advance science by the breadth of a fingernail, yet they keep it safe from the contagion of errors. The second is *dogmatic* and in accordance with it the general principles of the pure intellect, such as are displayed in ontology or in rational psychology, issue into some exemplar only to be conceived by the pure intel- II 396
lect and which is a common measure for all other things in so far as they are realities. This exemplar is NOUMENAL PERFECTION. This perfection is what it is either in a theoretic sense* or in a practical sense. In the first sense it is the highest being, GOD, in the second sense it is MORAL PERFECTION. So *moral philosophy*, in as much as it supplies the first *principles of critical judgement*, is only cognised by the pure

* We consider something theoretically to the extent that we attend only to those things which are appropriate to a being, but we consider it practically if we look separately at those things which ought to be present in it.[5]

intellect and itself belongs to pure philosophy. And the man who reduced its criteria to the sense of pleasure or pain, Epicurus, is very rightly blamed, together with certain moderns who have followed him to some extent from afar, such men as Shaftesbury and his supporters. In any genus of things whose quantity is variable it is the *maximum* which is the common measure and principle of cognising. The *maximum* of *perfection* is at the present time called the ideal, while for Plato it was called the idea (as in the case of his idea of the State). It is the principle of all the things which are contained under the general notion of some perfection, in as much as the lesser grades, it is held, can only be determined by limiting the maximum. But God, since as the ideal of perfection he is the principle of cognising, is at the same time, as existing really, the principle of the coming into being of all perfection whatsoever.

§10

There is not given (to man) an *intuition* of things intellectual, but only a *symbolic cognition*, and intellection is only allowable for us through universal concepts in the abstract and not through a singular concept in the concrete.[2] For all our intuition is bound to a certain principle of form under which form alone can something be *discerned* by the mind immediately or as *singular*, and not merely conceived discursively through general concepts.[3] But this formal principle of our intuition (namely space and time) is the condition under which something can be the object of our senses, and so, as the condition of sensitive cognition, it is not a means to intellectual intuition. Moreover while it is only by the senses that all the matter of our cognition is given, the noumenon as such is not to be conceived by means of representations drawn from sensations. So the concept of the intelligible as such has been forsaken by all *things given* in human intuition. Indeed the *intuition* of our
II 397 mind is always *passive*. And so it is only possible to the extent

that something can affect our senses. But divine intuition, which is the principle of objects and not something principled, since it is independent, is an archetype and for that reason perfectly intellectual.

§11

Now although phenomena are properly species of things and are not ideas, nor do they express the internal and absolute quality of objects, none the less cognition of them is most veridical. For first of all, in as much as they are sensual concepts or apprehensions, they are witnesses, as being things caused, to the presence of an object, and this is opposed to idealism. Then consider judgements about things cognised sensitively. Truth in judging consists in the agreement of a predicate with a given subject. But the concept of a subject, in as much as it is a phenomenon, would only be given[6] through its relation to the sensitive faculty of cognising, and it is in accordance with the same relation that predicates would be given which were sensitively observable. Accordingly it is clear that representations of a subject and a predicate arise according to common laws, and so provide a handle for a most veridical cognition.

§12

Whatever things are referred to our senses as objects are phenomena. But things which, since they do not touch the senses, contain only the singular form of sensuality pertain to pure intuition (that is an intuition which is empty of sensations, but for that reason not intellectual). Phenomena are reviewed and set out, *first* those of external sense, in PHYSICS, *then* those of internal sense, in empirical PSYCHOLOGY. But pure (human) intuition is not a universal or logical concept *under which*, but is a singular concept *in which*, sensibles no matter what are thought, and so it contains the concepts of space and time. These concepts, since

in the case of things sensible they determine nothing as to their *quality*, are not objects of science except in respect of *quantity*. Hence PURE MATHEMATICS deals with *space* in GEOMETRY, and *time* in pure MECHANICS. In addition to these concepts there is a certain concept which in itself indeed is intellectual, but whose actuation in the concrete requires the assisting notions of time and space (by successively adding a number of things and setting them simultaneously beside one another). This is the concept of *number*, which is the concept treated in ARITHMETIC. So pure mathematics, giving expression to the form of all our
II 398 sensitive cognition, is the organon of each and every intuitive and distinct cognition. And since its objects themselves are not only the formal principles of every intuition, but are themselves *original intuitions*, it provides us with the most veridical cognition and at the same time an exemplar of the highest kind of evidence in other cases. *And so there is given a science of things sensual*, although, as they are phenomena, there is not given a real intellection of them but only a logical intellection. Hence the sense is clear in which we are to suppose that science was denied in the case of phenomena by those who drew their inspiration from the Eleatic school.

SECTION III

On the principles of the form of the sensible world

§13

The principle of the form of the universe is that which contains the ground of the universal bond by which all substances and their states belong to the same whole which is called *a world*. The principle of the form of the *sensible world* is that which contains the ground of the *universal bond* of all things in as much as they are *phenomena*. The form of the *intelligible world* recognises an objective principle, that is some cause by which there is a binding together of things which

exist in themselves. But the world in as much as it is regarded as a phenomenon, that is, in relation to the sensuality of the human mind, does not recognise any other principle of form than a subjective one, that is, a fixed law of the mind by which it is necessary that all the things which can be objects of the senses (through the quality of the senses) are seen *necessarily* to belong to the same whole. So whatever be the principle of the form of the sensible world, nevertheless its embrace is limited to *things actual* in so far as they are thought capable of *falling under the senses*. And so it embraces neither immaterial substances, which as such are already by definition altogether excluded from the external senses, nor the cause of the world. For since it is by it that mind itself exists and is active by means of any of its senses, this cause cannot be an object of the senses. These formal principles of the *phenomenal universe*, absolutely primary, catholic and moreover as it were schemata and conditions of anything sensitive in human cognition, I shall now show to be two, namely space and time.

§14

On time

1. *The idea of time does not arise from but is supposed by the senses.* For it is only through the idea of time that it is possible for the things which come before the senses to be repre- II 399
sented as being simultaneous or coming after one another. Nor does succession generate the concept of time, but it makes appeal to it. And so the notion of time regarded as though acquired through experience is very badly defined, when it is defined by means of the series of actual things which exist one *after* the other. For I do not understand the meaning of the little word *after*, except by means of the already previous concept of time. For those things come *after* one another which exist at *different times*, just as those things are *simultaneously* which exist *at the same time*.

2. *The idea of time is singular* and not general. For no time is thought of except as a part of the same one boundless time. If you think of two years you cannot represent them to yourself except in a determined position in relation to each other, and, if they should not follow one another immediately, except as joined to one another by some intermediate time. But among different times the time which is *earlier* and the time which is *later* cannot be defined in any way by some marks conceivable to the intellect, unless you were willing to enter upon a vicious circle, and the mind only discerns the distinction between them by a singular intuition. Moreover you conceive of all actual things as situated *in* time and not as contained *under* its general notion as under a common mark.

3. *The idea* therefore *of time is an intuition* and since it is conceived before every sensation, as the condition of relations met with in things sensible, it is not a sensual intuition but a *pure intuition*.

4. *Time is a continuous quantity* and is the principle of the laws of the continuous in the changes of the universe. For the continuous is a quantity which is not composed of things simple. But through time only relations are thought, without any entities being given in relation to one another, and so in time as a quantity there is composition and should this composition be conceived as wholly abolished it leaves nothing at all behind it. But if nothing at all is left of a composite when all composition has been abolished, then that composite is not composed of simple parts. Therefore, etc.[7] So any part at all of time is itself time, and the things which are in time, being simple things, I mean *moments*, are not parts of time, but *boundaries* with time between them. For when two moments are given, time is not given except in so far as in those moments actual things succeed one another. Therefore in addition to a given moment there must be given a time in whose later part there may be another moment.

Now the metaphysical law of *continuity* is as follows: *All*

changes are continuous or flow, that is opposite states do not succeed one another except through an intermediate series of different states. For two opposite states are in different moments of time, but between the two moments there would always be some time intervening and in the infinite series of moments of that time the substance is not in one of the given states nor in the other and yet it is not in no state. And so the substance will be in different states and moreover it will be so to infinity. II 400

The celebrated Kaestner, intending to subject this law of Leibniz to examination, challenges its defenders* to show that *the continuous movement of a point over all the sides of a triangle is impossible*, this being something which, if the law of continuity is granted, would unquestionably require proof. Here then is the demonstration asked for. Let the letters *abc* denote the three angular points of a rectilinear triangle. If something moveable passes in continuous motion over the lines *ab*, *bc*, *ca*, that is over the whole perimeter of the figure, it necessarily follows that it moves through point *b* in the direction *ab* and also through the same point *b* in the direction *bc*. But since these movements are diverse they cannot exist *simultaneously*. Therefore the moment of the presence of the moveable point at the vertex *b* in so far as it is moving in the direction *ab* is different from the moment of the presence of the moveable point at the same vertex *b* in so far as it is moving along direction *bc*. But between the two moments there is a time. Therefore the moveable point is present at the same point through some time, that is *it is at rest* and so does not proceed in continuous motion. And this is contrary to the hypothesis. The same demonstration is valid for motion along any straight lines enclosing an angle that can be given. Therefore, according to the doctrines of Leibniz, a body does not change its direction in a motion which is continuous, except along a line no part of which is straight, that is a curve.

5. *Time is not something objective and real*, nor is it a sub-

* *Höhere Mechanick*, p. 354.[8]

stance or an accident or a relation, but it is the subjective condition necessary by the nature of the human mind for co-ordinating with each other by a fixed law whatsoever things are sensible, and it is a *pure intuition*. For it is only through the concept of time that we co-ordinate alike substances and accidents whether according to their simultaneity or their succession. And so the notion of time, as being the principle of form, is older than the concepts of substance and accident. As for relations or respects of any kind, in so far as they confront the senses, I mean the question whether they are simultaneously or come after one another, these involve nothing else but positions to be determined in time either at the same point thereof or at different points.

Those who assert the objective reality of time either conceive of time as some continuous flux within existence, yet without anything existing (a most absurd fabrication!) as above all the philosophers of the English, or else they conceive of it as something real abstracted from the succession of internal states as is maintained by *Leibniz* and his fol-
II 401 lowers. Now the falsity of the latter opinion clearly betrays itself by the vicious circle in the current definition of time. Moreover it completely neglects *simultaneity*,* the most important consequence of time. Consequently it thus throws into confusion all use of sound reason, because it does not

* *Simultaneous things* are not so because they do not succeed one another. For when succession is removed there is indeed abolished some conjunction which there was because of the series of time, but there does not immediately arise therefrom *another* true relationship such as is the conjunction of all of them at the same moment. For simultaneous things are joined together at the same moment of time just as successive things are joined together by different moments. So, though time be of one dimension only, yet the *ubiquity* of time (to speak with Newton), whereby *all* things sensitively thinkable are at *some time*, adds a further dimension to the quantity of actual things in as much as they hang as it were upon the same point of time. For if you were to describe time by a straight line produced to infinity and if you were to describe things simultaneous at any point of time by lines joining at right angles, the surface which is thus generated will represent the *phenomenal world* both as substance and as accidents.

postulate the determination of the laws of motion according to the measure of time, namely movement,[9] but postulates the determination of time itself, as regards its own nature, by means of things observed in motion or in any series of internal changes. And thereby all certitude of rules is utterly abolished. As for the fact that we could not estimate the *quantity* of time except in the concrete, namely either by *motion* or by *the succession of thoughts*, this fact arises because the concept of time rests only on an internal law of the mind and is not a certain intuition born with us. And so the action of the mind when it co-ordinates its own sensa would not be elicited without the help of the senses. Indeed so far is it from being the case that anyone has ever yet deduced from elsewhere and explained the concept of time with the help of the reason, that rather the principle of contradiction itself has the same concept as a premise and bases itself on the concept as its condition. For *A* and *not-A* are not *inconsistent* unless they are thought *simultaneously*, (that is at the same time) about the *same thing*. For *after one another* (that is at different times) they *can apply* to the same thing. Hence it is only in time that the possibility of changes is thinkable, and time is not thinkable because of changes but vice versa.

6. Now although *time* posited in itself and absolutely would be an imaginary entity, yet, in as much as it pertains to the immutable law of sensibles as such, it is a most veridical concept and a condition of intuitive representation extending to infinity over all possible objects of the senses. For since simultaneous things as such cannot come before the senses except with the help of time and changes are only thinkable through time, it is clear that this concept contains the universal form of phenomena. And so it is clear that all observable events in the world, all movements and all internal vicissitudes necessarily accord with the axioms to be known about time and which in part I have already II 402 expounded. For *it is only under these conditions that they can be objects of the senses and can be co-ordinated.* Accordingly it is contradictory to wish to arm reason against the first postu-

lates of pure time, for example continuity, etc. For they are the consequences of laws than which nothing prior and nothing older is found, and reason itself in using the principle of contradiction cannot dispense with the assistance of this concept, to such an extent is the concept primitive and original.

7. Time therefore is the *formal principle of the sensible world* which is absolutely first. For all things which are sensible, no matter how, cannot be thought unless either as simultaneous or as placed one after the other, and so as enfolded as it were by a period of unique time and related to one another by a determinate position. As a result there necessarily arises through this concept, which is primary to everything sensitive, a formal whole which is not a part of something else, that is the *phenomenal world.*

§15

On Space

A. *The concept of space is not abstracted from external sensations.* For I may not conceive of something as placed outside me unless by representing it as in a place which is different from the place in which I myself am, nor may I conceive of things outside one another unless by locating them in different places in space. Therefore the possibility of external perceptions as such *supposes* the concept of space and does not *create* it. In the same way also things which are in space affect the senses but space itself cannot be derived from the senses.

B. *The concept of space is a singular representation* comprehending all things *within itself*, not an abstract common notion containing them *under itself*. For what you speak of as *several places* are only parts of the same boundless space, related to one another by a fixed position, nor can you conceive to yourself a cubic foot unless it be bounded in all directions by the space that surrounds it.

C. *The concept of space is therefore a pure intuition.* For it is a singular concept, not conflated from sensations, but the fundamental form of all external sensation. Indeed it is easy to notice this pure intuition in the axioms of geometry and in any mental construction of postulates or even of problems. That there are not given in space more than three dimensions, that between two points there is only one straight line, that from a given point on a plane surface a circle can be described with a given straight line, etc.— these cannot be concluded from some universal notion of space, but can only be *seen* in space itself as in something concrete. Which things in a given space lie towards one quarter and which things incline towards the opposite quarter are things that cannot be described discursively or reduced to intellectual marks by any mental acuteness. Thus between solids which are perfectly similar and equal but not congruent, in which genus are the left hand and the right hand (in so far as they are conceived solely according to their extension), or spherical triangles from two opposite hemispheres, there is a diversity which makes it impossible for the boundaries of their extension to coincide although they could be substituted for one another as far as concerns all the things which may be expressed in marks intelligible to the mind in speech. And so it is clear that in these cases the diversity, I mean the discongruity, can only be noticed by a certain act of pure intuition. Hence geometry uses principles which are not only indubitable and discursive but come before the gaze of the mind, and the *evidence* in demonstrations (which is the clarity of certain cognition in so far as it is assimilated to sensual cognition) is not only greatest in geometry but is also the only evidence which is given in pure sciences and is the *exemplar* and means of all *evidence* in other sciences. For since geometry contemplates *relations of space* and the concept of space contains in itself the very form of all sensual intuition, nothing can be clear and perspicuous in things perceived by the external sense unless it be by the mediation of the same intuition the contem-

plation of which is the function of the science of geometry. But geometry does not demonstrate its own universal propositions by thinking an object by means of a universal concept as happens with things rational, but by subjecting it to the eyes by means of a singular intuition as happens with things sensitive.*

D. *Space is not something objective* and real, nor is it a substance or an accident, or a relation, but it is *subjective* and ideal and proceeds from the nature of the mind by an unchanging law, as a schema for co-ordinating with each other absolutely all things externally sensed. Those who defend the reality of space either conceive of it to themselves as an *absolute* and boundless *receptacle* of possible things, an opinion which finds favour with most geometers, following the English, or else they contend that it is the relation *itself* which obtains between existing things, which vanishes en-
11 404 tirely when the things are taken away and can only be thought among things actual, as, following Leibniz, most of our own people maintain. As for that first empty fabrication of the reason, since it invents an infinite number of true relations without any entities related to one another, it pertains to the world of fable. But those who go off after the second opinion fall because of a far worse mistake. For the first group of people only set up a slight obstacle in the way of certain concepts which are rational or pertain to noumena and which are otherwise especially obscure to the intellect, for example questions about the spiritual world, about omnipresence, etc. But the second group are in

* It is easy to demonstrate that space must necessarily be conceived of as a continuous quantity and I here pass it over. But the result of this is that the simple in space is not a part but a boundary. Now a boundary is in general that in a continuous quantity which contains the ground of its limits. A space, which is not the boundary of another space, is *complete*[10] (*solid*). The boundary of a solid is *a surface*, of a surface a *line*, of a line *a point*. Therefore there are three sorts of boundaries in space, according as there are three dimensions. Of these boundaries two (surface and line) are themselves spaces. The concept of a *boundary* does not enter any other quantity but space or time.

headlong conflict with phenomena themselves and the most faithful interpreter of all phenomena, geometry. For without my bringing forward the obvious circle in the definition of space in which they are necessarily entangled, they throw down geometry from the summit of certitude and thrust it back into the rank of those sciences whose principles are empirical. For if all the affections of space are merely borrowed by experience from external relations, there is only a comparative universality present in the axioms of geometry, of the kind that is obtained by induction, that is, extending as far as it is observed. Nor is there present any necessity except in accordance with the established laws of nature nor any precision except what is arbitrarily constructed, and there is hope, as happens with things empirical, of uncovering sometime a space endowed with different primitive affections and perhaps even a rectilinear figure enclosed by two straight lines.

E. Although the *concept of space* as some objective and real entity or affection be imaginary, none the less *in relation to any things sensible whatsoever* it is not only *most veridical* but is also the foundation of all truth in external sensuality. For things cannot appear to the senses under any species at all except by the mediation of the power of the mind which co-ordinates all sensations according to a law which is stable and is planted in its own nature. Since, then, nothing at all can be given to the senses except in conformity with the primitive axioms of space and its consequences (so geometry teaches), whatever can be given to the senses will necessarily accord with these axioms even though their principle is only subjective. For it only accords with itself, and the laws of sensuality will only be laws of nature, *to the extent that it can come before the senses*. Accordingly nature is meticulously subjected to the precepts of geometry, as far as concerns all the affections of space there demonstrated, not upon an invented hypothesis but upon a hypothesis given intuitively, as the subjective condition of all the phenomena by which nature can ever be revealed to the senses.

Assuredly, had not the concept of space been given originally by the nature of the mind (in such a way that a person who strove to fashion with his mind any other relations than those dictated by this concept would be wasting his effort, because he would have been compelled to use this very con-
II 405 cept to support his own fiction), then the use of geometry in natural philosophy would be far from safe. For then it could be doubted whether this very notion of space derived from experience is sufficiently in accord with nature if perhaps the determinations from which it had been abstracted were denied. And indeed a suspicion of this has even entered the minds of some. *Space* therefore is the *formal principle of the sensible world*, absolutely first, not only because it is only[11] through its concept that the objects of the universe could be phenomena but above all for this reason, that by its essence space is nothing if not unique, embracing all things whatsoever which are externally sensible, and so it constitutes the principle of *entirety*, that is of a whole which cannot be a part of another whole.

Corollary

So here are the two principles of sensitive cognition, not general concepts as with things intellectual, but singular intuitions which are none the less pure. In these intuitions the parts and above all the simple parts do not, as the laws of reason teach, contain the ground of the possibility of a composite, but after the model of sensitive intuition *it is the infinite which contains the ground of each part* that can be thought and finally of the simple or rather of the *boundary*. For it is only when both infinite space and infinite time are given that any definite space and time are assignable by *limiting*. Moreover the point and likewise the moment cannot be thought in themselves, but are conceived of only in a space and time already given, as boundaries of that same space and time. Therefore all the primitive affections of these concepts are outside the barriers of reason and so

cannot be explained intellectually in any way. None the less these concepts are *the substrates of the intellect*[12] when it draws consequences according to logical laws with the greatest possible certitude from primary things given intuitively. Indeed of these concepts *the one* properly concerns the intuition of an *object*, the other its *state*, especially its *representative* state. So space is also applied as a diagram to the concept of *time* itself, in representing time by a *line* and its boundaries (moments) by points. Time on the other hand more nearly *approaches* a *universal* and *rational concept*, by embracing with its own relations absolutely all things, namely space itself and in addition the accidents which are not included in spatial relations as being thoughts of the mind. Moreover time does not indeed dictate laws to the reason but all the same it does *constitute* the main *conditions thanks to which the mind may be able to compare its own notions according to the laws of reason*. So I can only be a judge of what II 406
is impossible when I predicate both *A* and *not-A* of the same subject *at the same time*. And particularly, if we apply the intellect to experience, the relation of cause and caused, at least in external objects, requires relations of space, but in all objects whether external or internal it is only with the assistance of the relation of time that the mind can be instructed as to what is earlier and what is later, that is what is cause and what is caused. And it is not open to us to make intelligible even the *quantity* of space itself unless we should express that space by a number after it has been related to a measure taken as a unity. This number itself only exists should there be a manifold[13] which is distinctly cognised by enumeration, that is by successively adding one to one in a given time.

Finally the question arises for everyone as though of its own accord whether each of the two *concepts* is *born with us* or *acquired*. The latter indeed already seems refuted by the things which have been demonstrated. The former however must not be so lightly admitted since it paves the road for a philosophy of the lazy, a philosophy which by citing the

first cause declares any further research vain. But truly *each of the concepts* without any doubt *has been acquired*, not by abstraction from the sensing of objects indeed (for sensation gives the matter and not the form of human cognition), but from the very action of the mind, an action co-ordinating the mind's sensa according to perpetual laws, and each of the concepts is like an immutable diagram and so is to be cognised intuitively. For sensations excite this act of the mind but do not influence the intuition. Nor is there anything else here born with us except the law of the mind according to which it joins its own sensa together in a fixed manner as a result of the presence of an object.

SECTION IV

On the principle of the form of the intelligible world

§16

Those who take space and time for some real and absolutely necessary fastening as it were of all possible substances and states do not think that anything else is required in order to conceive how to a number of existing things there applies a certain original relation as the primitive condition of possible influxes and the principle of the essential form of the universe. For since whatever things exist are in their opinion necessarily somewhere, it appears superfluous to them to enquire why these same things are ready to hand for them in a fixed manner. For this, it seems to them, would be determined in itself by the entirety of a space which includes
II 407 all things. But first of all this concept as has already been demonstrated would belong rather to the sensitive laws of a subject than to the conditions of objects themselves. And apart from that, even if you were to grant reality to the concept to the greatest possible extent, it still only denotes the intuitively given possibility of universal co-ordination. Accordingly the following question remains as intact as

before and only to be solved by the intellect, namely *what is the principle upon which this relation of all substances itself rests, a relation which when seen intuitively is called space.* This then is the point upon which hinges the question about the principle of the form of the intelligible world—to make clear how it is possible *that several substances should be in mutual interaction*[14] and upon this ground belong to the same whole which is called a world. We are not here contemplating the world as regards its matter, that is the natures of the substances of which it consists, as to whether they are material or immaterial, but the world as regards its form, that is how in general a bond obtains between several substances and a totality between all substances.

§17

Given several substances *the principle of the interaction* possible between them *does not consist in their existence alone*, but something else is required in addition whereby their mutual relations may be grasped by the intellect. For simply because of their subsistence they are not necessarily related to anything else unless perhaps the cause of themselves. But the relation of caused to cause is not interaction but dependence. Therefore if any interaction should intervene between them and other things there is needed a peculiar ground determining this interaction precisely.

And just in this consists the *πρῶτον ψεῦδος* (*primary error*)[15] of the theory of physical influx in the vulgar sense of that term, namely that it rashly assumes an interaction of substances and transeunt forces which are cognisable sufficiently by their existence alone and so it is not so much a system but rather the neglect of all philosophical system as superfluous in this argument. If we free this concept from that blemish we have a kind of interaction which is the only one which deserves to be called real and from which the whole constituted by the world deserves to be called real and not ideal or imaginary.

§18

A whole out of necessary substances is impossible. For the existence of each such substance is abundantly established apart from any dependence upon anything else whatsoever, which dependence does not enter into necessary things at all. And
II 408 so it is clear that not only does the interaction of substances (that is, the reciprocal dependence of their states) not follow from their own existence, but as being necessary substances it is absolutely impossible for it to apply to them.

§19

So a whole of substances is a whole of contingents, and the *world, in its own essence, is composed of mere contingents.* Moreover no necessary substance has a bond with the world except as cause with caused, and accordingly not as a part with its complements to the whole (since the bond of coparts is one of mutual dependence which dependence does not enter into a necessary entity). Therefore the cause of the world is an extramundane entity and so is not the soul of the world nor is its presence in the world local but virtual.

§20

Mundane substances are entities from another entity, but not from a diversity of entities—they are entities which are *all from one entity.* For suppose they are the causal dependents of several necessary entities: the effects whose causes are alien to any mutual relation would not be in interaction. Therefore the UNITY *in the conjunction of substances in the universe is a consequence of the dependence of all from one.* Hence the form of the universe is witness to the cause of its matter, and only *the unique cause of all things taken together is the cause of its entirety,* nor is there any *architect* of the world who would not be at the same time its *creator.*

§21

If there were several first and necessary causes with the things caused by them, their products would be *worlds,* not a *world,* since they would not be in any way connected to the same whole. And conversely if there were to be several actual worlds outside one another, then there are given several first and necessary causes, but in such a manner that neither is one world in interaction with the other nor is the cause of one world in any interaction with a world caused by the other cause.

Therefore several actual worlds outside one another *are not impossible simply because of the concept of such worlds* (as Wolff wrongly concluded from the notion of a complex or manifold which he thought was sufficient for a whole as such) but they are impossible only on this condition, namely *if there should exist only one necessary cause for all things.* If indeed several necessary causes were to be admitted, *there will be several worlds* which in the strictest metaphysical sense are *possible outside one another.*

§22

If, as the inference is valid from a given world to the II 409
unique cause of all its parts, so also conversely the argument proceeded similarly from a given cause common to them all to the bond between them and so the form of the world (although I confess that this conclusion does not seem equally clear to me), then the primitive bond of substances would not be contingent but would be necessary because they are all *sustained by a common principle,* and so the harmony proceeding from their very subsistence, founded on their common cause, would proceed according to common rules. Now I call a *harmony* of this kind a harmony *established generally.* For a harmony which has no place except to the extent that any individual states of a substance whatsoever are adapted to the state of another would

be a *harmony established singularly*. And the interaction coming from the first harmony would be real and *physical* while that from the second would be ideal and *sympathetic*. So all the interaction of the substances in the universe is *established externally* (through the common cause of all of them) and is either established generally by a physical influx (in its more correct form) or negotiated for the states of the substances individually. But in this last case it is either founded *originally* through the first constitution of any substance or is impressed *on the occasion* of any change. Of these in turn the first is called *pre-established harmony* and the second *occasionalism*. And so if, as a result of all substances being sustained by one being, the *conjunction* of all substances whereby they form a unity were *necessary*, there will be a universal interaction of substances through *physical influx* and the world will be a real whole. But if not, the interaction will be sympathetic (that is a harmony without true interaction) and the world will only be an ideal whole. For myself, indeed, although it has not been demonstrated, none the less the first of these alternatives has won approval abundantly upon other grounds also.

Scholium

If it were permitted to take even a small step beyond the boundaries of the apodeictic certitude which is appropriate to metaphysics, it seems worth while to investigate certain matters which pertain not only to the laws of sensitive intuition but also to its causes which are to be known only through the *intellect*. For indeed the human mind is not affected by external things and the world is not open to inspection by it to infinity, except *in as much as the mind itself together with all other things is sustained by the same infinite force of one being*. Hence the mind only senses external things
II 410 through the presence of the same common sustaining cause. And so space, which is the sensitively cognised universal and necessary condition of the co-presence of all things, can

be called PHENOMENAL OMNIPRESENCE. (For the cause of the universe is not for that reason present to all and to individual things simply because it is in the places where they are. But there are places, that is, possible relations of substances, because it is present inwardly to all things.) Moreover the possibility of all changes and successions, of which possibility the principle, in so far as it is sensitively cognised, resides in the concept of time, supposes the perdurability of a subject whose opposed states follow in succession, and that of which the states flow on does not endure unless it is sustained by another. And so it is the concept of time as a unique and unchangeable infinite* in which all things are and endure which is the *phenomenal eternity* of the general *cause*. But it seems more advisable to keep close to the shore of the cognitions granted to us by the mediocrity of our intellect rather than to put out into the deep sea of mystical investigations of that kind as Malebranche did. For his view is least distant from the one which is here being expounded, *namely that we intuit all things in God*.[16]

2/3/03
829p

SECTION V

On method in metaphysics concerning things sensitive and things intellectual

§23

In all sciences whose principles are given intuitively, either by a sensual intuition (experience) or at least by an intuition which is sensitive but pure (concepts of space, time and number), that is, in natural science and in mathematics, *it is use which gives the method*, and it is by trying and finding out after the science has been brought to a certain amplitude and orderliness that it becomes clear what path and

* It is not moments of time that appear to succeed one another since then another time again would have to be premised for the succession of moments. But it is actual things which by sensitive intuition seem to descend as it were through the continuous series of moments.

what procedure one must pursue in order that it may be brought to fulfilment and shine the more purely when the blemishes both of mistakes and confused thoughts have been wiped away. Just in this way grammar after a more copious use of speech, and style after elegant examples of poems and orations, provided a handle for rules and discipline. But the
II 411 *use* of the *intellect* in sciences of this kind, whose primitive concepts and axioms are given by sensitive intuition, is only the *logical* use, that is, the use by which we merely subordinate cognitions to one another according to their universality in conformity with the principle of contradiction, and we subordinate phenomena to more general phenomena, and subordinate the consequences of pure intuition to intuitive axioms. But in pure philosophy such as is metaphysics, in which the *use of the intellect* concerning principles is *real*, that is, the primitive concepts of things and of relations and the axioms themselves are given primitively by the pure intellect itself and not being intuitions are not immune from errors, *it is the method* which *comes before all science*, and everything which is attempted before the precepts of this method have been properly hammered out and firmly established is seen to have been rashly conceived and such that it must be rejected as being among the vain playthings of the mind. For since it is the right use of the reason which here sets up the very principles themselves and it is through its character alone that objects first become noticed and also the axioms which are to be thought about the objects, the exposition of the laws of pure reason is the very genesis of science and the distinction of these laws from supposititious laws is the criterion of truth. Hence as the method of this science may not be well known at the present time apart from the kind which logic teaches generally to all the sciences, and the method which is adapted to the singular character of metaphysics may be wholly unknown, it is no wonder that those who have devoted themselves to this research, appear, by rolling their own stone of Sisyphus unceasingly, to have made scarcely any progress at all up

to the present time. Now although I have here neither the intention nor the opportunity of discoursing at greater length on such a distinguished and far-ranging theme, I shall all the same now briefly sketch out those things which constitute a part of this method which is not to be scorned, namely the *contagion of sensitive cognition with intellectual*, not only in as much as it creeps up upon the incautious in the application of principles but in as much as it also produces spurious principles in the guise of axioms.

§24

Every method of metaphysics concerning things sensitive and things intellectual comes back to this precept above all: great care must be taken *lest the domestic principles of sensitive cognition transgress their boundaries and affect things intellectual.* For the *predicate* in any judgement enunciated intellectually *is the condition* without which we assert that the subject is not thinkable and so the predicate would be a principle of cognising. Accordingly if the predicate is a sensitive concept it will only be the condition of a possible sensitive cognition and so it will square especially with the subject of a judgement whose concept is likewise sensitive. But if the predicate II 412
were to be applied to an intellectual concept, such a judgement will only be valid according to subjective laws. Hence the predicate is not to be predicated and stated objectively of an intellectual notion itself, but *only as the condition without which there is no place for the sensitive cognition of the given concept.** But since the illusions of the intellect, through the

* The use of this criterion is fertile and easy, in distinguishing principles which only enunciate laws of sensitive cognition from those which in addition teach something about the objects themselves. For should the predicate be an intellectual concept, its relation to the subject of the judgement, however much the subject be sensitively thought, always denotes a mark which applies to the object itself. But *should the predicate be a sensitive concept*, since the laws of sensitive cognition are not conditions of the possibility of things themselves, it will not be valid of the *intellectually thought subject* of a judgement, and so will be unable to be enunciated

covert misuse of a sensitive concept as an intellectual mark, can be called (on the analogy of the accepted meaning of the term) *a fallacy of subreption*, the permutation of things intellectual and things sensitive will be the *metaphysical fallacy of subreption* (an *intellectuated phenomenon*, if a barbarous expression is pardoned). And so such a *hybrid* axiom which tries to sell things sensitive as being things that necessarily adhere to an intellectual concept is called by me a *subreptic axiom*. And from these spurious axioms indeed have proceeded principles for deceiving the intellect which have disastrously permeated the whole of metaphysics. But in order that we may have a criterion for these judgements which may be ready to hand and cognisable with clarity, and as it were a touchstone[17] by which we may distinguish them from genuine judgements and at the same time, should they perchance appear to be firmly attached to the intellect, a certain docimastic art with whose help a just appreciation could be made of how much pertains to things sensitive and how much to things intellectual, I am of the opinion that this is a question into which we must go more deeply.

§25

Here then is the PRINCIPLE OF REDUCTION for any subreptic axiom: *If of any intellectual concept whatsoever there is predicated generally anything which pertains to the relations of* SPACE AND TIME, *it must not be enunciated objectively and it only*
II 413 *denotes the condition without which a given concept is not cognisable sensitively*. That an axiom of this kind would be spurious and

objectively. So in the well-known popular axiom: *whatever exists is somewhere*, since the predicate contains the conditions of sensitive cognition, it will not be able to be enunciated generally of the subject of a judgement, namely of anything whatsoever which *exists*. And so this formula when it lays down precepts objectively is false. But should the proposition be converted so that the predicate became an intellectual concept, it will emerge as most true, namely: *whatever is somewhere exists*.

if not false at least rashly and precariously asserted is clear from the following: since[18] the subject of the judgement is conceived intellectually it pertains to the object, but the predicate since it contains determinations of space and time pertains only to the conditions of sensitive human cognition. And this cognition since it does not adhere necessarily to every cognition of the same object cannot be enunciated universally of a given intellectual concept. But that the intellect should be so easily subject to this fallacy of subreption results from the following: it is deluded by the authority of a certain other rule which is very true. For we rightly suppose that *whatever cannot be cognised by any intuition at all is thereby not thinkable* and so impossible. But since we cannot by any effort of the mind, not even by inventing it, obtain any other intuition than that which occurs in accordance with the form of space and time, it happens that we treat as impossible every intuition whatsoever which is not bound by these laws (leaving aside a pure intellectual intuition exempt from the laws of the senses, such as that which is divine, which Plato calls an idea). And so we subject all things which are possible to the sensitive axioms of space and time.

§26

But all the illusions of sensitive cognitions passing under the guise of cognitions that are intellectual, from which subreptic axioms arise, can be reduced to three species, for which take these as the general formulas:

1. The same sensitive condition under which alone the *intuition* of an object is possible is the condition of the *possibility* itself of the *object*.

2. The same sensitive condition under which alone *the things given can be collated with one another to form the intellectual concept of the object* is also the condition of the possibility itself of the object.

3. The same sensitive condition under which some *object*

met with can alone be *subsumed under a given intellectual concept* is also the condition of the possibility itself of the object.

§27

The subreptic axiom of the FIRST class is: *whatever is, is somewhere and at some time.** But by this spurious principle all
II 414 entities, even if they were to be cognised intellectually, are bound in their existence by the conditions of space and time. Hence in the case of the places in the corporeal universe of immaterial substances (of which, however, for the same reason no sensitive intuition is given nor any representation under such a form), in the case of the seat of the soul and other cases of that kind empty questions are bandied about, and since things sensitive are improperly mixed with things intellectual like things square with things round, it usually happens that among the disputants one seems to be milking a he-goat and the other to be holding a sieve underneath.[19] But there is a presence of immaterial things in the corporeal world which is a virtual presence though not a local presence (although the latter is improperly but repeatedly asserted to be the case). Now space does not contain the conditions of possible mutual actions except for matter. And what constitutes the external relations of forces for immaterial substances, both relations among themselves and relations to bodies, completely escapes the human intellect, and this also the perspicacious Euler,

*Space and time are conceived as though they comprehend *in themselves* all the things which meet the senses in any way. So there is not given according to the laws of the human mind an intuition of any entity except as contained *in space and time*. With this prejudice one can compare another which properly is not a subreptic axiom but a sport of the phantasy which could be expressed in a general formula as follows: whatsoever exists, *in it is space and time*, that is, every substance is *extended* and continually *changed*. For although people whose concepts are somewhat crass are firmly bound by this law of the imagination, yet they themselves easily see that this only applies to the efforts of the phantasy to adumbrate for itself the species of things and does not apply to the conditions of existence.

in other matters a great investigator and judge of phenomena, acutely noted (in letters sent to a certain princess of Germany[20]). Now when they come to the concept of a surpeme being outside the world, it is impossible to express the extent to which they are deluded by these shadows which flit before the intellect. They fashion for themselves a *local presence* of God and enfold God in the world as though he were comprehended simultaneously in infinite space, intending to compensate for this limitation upon him, forsooth, by means of a locality conceived as it were *eminently*, that is which is infinite. But it is absolutely impossible to be in several places at the same time since different places are outside one another and so what is in several places is outside itself and present to itself externally which is a contradiction. As for time, after they have not only exempted it from the laws of sensitive cognition but have transferred it beyond the boundaries of the world to the extramundane being itself, as a condition of its existence, they involve themselves in an inextricable labyrinth. Hence they torment their spirits with absurd questions, for example why God did not found the world many centuries back. They persuade themselves that it can indeed easily be conceived how God sees things that are present, that is, actual *at the time at which he is*. But how he sees in advance things which are to be, that is, actual *at a time at which he not yet is*, this they II 415 think difficult to understand. (As if the existence of a necessary being were to descend successively through all moments of imaginary time and when a part of his own duration had already been exhausted he were to see in advance the eternity through which he was still to live, together with the simultaneous events of the world.) All these problems vanish like smoke when the notion of time has been rightly discerned.

§28

Prejudices of the SECOND species conceal themselves to a still greater extent. For they impose on the intellect through

sensitive conditions by which the mind is constrained if in certain cases it wishes to reach an intellectual concept. Of these prejudices one is that which affects the cognition of quantity, the other that which affects the cognition of qualities in general. The first is: *every actual manifold can be given numerically*, and so every quantity is finite. The second is: *whatever is impossible contradicts itself.* In each case the concept of time indeed does not enter into the notion itself of the predicate, and is not considered to be a mark of the subject, but all the same it serves as a means for giving form to the concept of the predicate and so as a condition it affects the intellectual concept of the subject in as much as it is only with its help that we reach the latter concept.

So, to take the case of the first prejudice, since every quantity and series whatsoever is only cognised distinctly through successive co-ordination, the intellectual concept of a quantity and a manifold arises only with the help of this concept of time, and it never reaches completion, unless the synthesis could be achieved in a finite time. Hence it is that an *infinite series* of co-ordinates could not be comprehended distinctly according to the limits of our intellect and so by the fallacy of subreption such a series would appear impossible. Certainly according to the laws of the pure intellect any series of things caused has its own *principle*, that is, there is not given in the series of things caused a regress which is without a boundary. But according to the sensitive laws any series of co-ordinates has its own assignable *beginning*. And these propositions, of which the second involves the *measurability* of the series and the first the *dependence* of the whole, are wrongly treated as identical. In like manner, to the *argument of the intellect* by which it is proved that given a substantial composite there would be given principles of composition, that is, things which are simple, there is added something *suppositious* covertly drawn from sensitive cognition, namely that in such a composite the regress in the composition of the parts would not be given to infinity, that is, that a definite number of parts would be given in any com-

posite whatsoever. And the sense of this second proposition is certainly not a twin to that of the first, and so it is rash to substitute it for the first. Therefore that the quantity of the world is limited (not the highest quantity), that it recognises a principle for itself, that bodies are composed of simple things, these can be known by a sign of the reason that is perfectly certain. But that the universe in its mass is mathematically finite, that its past duration can be given according to a measure, that there is a definite number of simple things constituting any body whatsoever, these are propositions which openly proclaim their source in the nature of sensitive cognition, and however much they can be treated as true in other respects, they suffer none the less from the undoubted blemish of their origin. II 416

But as for what concerns the *second subreptic axiom*, that axiom arises by the rash conversion of the principle of contradiction. But the concept of time adheres to this primitive judgement to the extent that, when contradictory opposites are given *at the same time* about the same thing, there would clearly emerge an impossibility which is enunciated as follows: *whatever simultaneously is and is not is impossible.* Here since something is predicated by the intellect in a case which has been given according to sensitive laws, the judgement is especially true and most evident. But on the other hand if you were to convert the same axiom so that you were to say: *everything impossible simultaneously is and is not* or, involves a contradiction, you are predicating something generally, by virtue of sensitive cognition, about an object of the reason and so you are subjecting an intellectual concept about the possible or the impossible to the conditions of sensitive cognition, namely the relations of time. This indeed is most true for the laws by which the human intellect is constrained and limited but cannot in any way be conceded objectively and generally. For our intellect, at least, *does not notice an impossibility*, except when it can note a simultaneous enunciation of opposites about the same thing, that is only when a contradiction occurs. Therefore wherever such a condition

does not present itself, there no judgement about impossibility is open to the human intellect. But by treating the subjective conditions of judging as objective it is rashly concluded that for that reason it would not be permitted to any intellect at all and so, that *whatever does not involve a contradiction would be therefore possible.* Hence so many vain fabrications of *forces* I know not what invented at pleasure, which freed from the obstacle of inconsistency burst forth in a horde from any spirit which is architectonic or if you prefer it with a proclivity for chimaeras. For since a *force* is nothing else but the *relation* of a substance *A* to *something else B* (an accident) as of the ground to the grounded the possibility of each force *does not rest upon the identity* of cause and caused or of substance and accident. And so also the impossibility of falsely fabricated forces *does not depend upon contradiction*
II 417 *alone.* So it is not permitted to take any *original force* as possible unless *it has been given by experience*, nor can its possibility be conceived a priori by any perspicacity of the intellect.

§29

Subreptic axioms of the THIRD species issuing from conditions proper to a *subject*, from which conditions they are rashly transferred to *objects*, do not proliferate in such a way that (as happens with those which are of the second class) it is through *things given sensitively* that the sole way lies open to the intellectual concept, but they proliferate because it is only with their help that an intellectual concept can *be applied to a case given* by experience, that is, it can be cognised whether something is contained under a fixed intellectual concept or not. Of this kind is the trite saying in certain schools: *whatever exists contingently, at some time did not exist.* This supposititious principle arises from the poverty of the intellect which usually sees clearly the *nominal* marks of contingency or necessity, but rarely the *real* marks. Hence whether the opposite of some substance is possible, since it can

hardly be seen clearly by marks secured a priori, will not be known from any other source except *it be established that at some time the substance was not in existence.* And changes are truer witnesses of contingency than contingency is of changeability so that if we met with nothing in the world which was fluid and transitory it would be with difficulty that any notion of contingency would arise for us. And so although the direct proposition is most true, that *whatever at some time was not is contingent*, its inverse only indicates the conditions under which alone it is permitted to discern whether something exists necessarily or contingently. And so should it be enunciated as a subjective law (which it really is), it ought to be expressed as follows: *when it is not established that something has at some time not been in existence sufficient marks of its contingency are not given by common intelligence.* This in the end tacitly passes into an objective condition as though without this being added there would be no place for contingency at all. This done, there arises an axiom which is counterfeit and erroneous. For this world, although existing contingently, *is sempiternal*, that is, simultaneous with every time, so that it is therefore wrong to assert that there has been some time at which it did not exist.

§30

There are also certain other principles in addition to the subreptic principles, and with a great affinity to them. These indeed do not rub off any taint of sensitive cognition onto a given intellectual concept but all the same the intellect is so deluded by them that it takes them for arguments II 418
drawn from an object, although they are only commended to us by their *convenience* with[21] the free and ample use of the intellect according to its singular nature. And so, just as the principles which have been enumerated by us above, they rest upon *subjective* grounds, not in truth on the laws of sensitive cognition, but on the laws of intellectual cognition itself, namely the conditions under which it seems to the

intellect easy and practicable to use its own perspicacity. Let me insert some mention of these principles here in place of a conclusion, principles which, so far as I know, have not yet been distinctly expounded elsewhere. Now I call *principles of convenience*[21] those rules of judging to which we gladly submit ourselves and to which we cling as axioms, for the sole reason that *if we depart from them scarcely any judgement about a given object would be permitted to our intellect.* In this group come the following. The FIRST is that by which we suppose that *all things in the universe take place in accordance with the order of nature.* This principle indeed Epicurus professes without any restriction, but all philosophers profess it with one voice, subject only to the rarest exceptions and ones only to be admitted under extreme necessity. But we so decide not because we possess such ample cognition of the events in the world according to the common laws of nature nor because either the impossibility or the very slight hypothetical possibility of things supernatural was apparent to us, but because, if you depart from the order of nature, the intellect would have no use at all, and the ill-considered citation of things supernatural is the couch upon which reclines a lazy intellect. For the same reason, *comparative miracles*, namely influxes of spirits, we carefully keep out of the exposition of phenomena. For since their nature is to us unknown the intellect would be turned aside to its own great detriment, away from the light of experience by which alone it has the opportunity of procuring for itself the laws of judging, towards shadows of species and causes to us unknown. The SECOND principle *is* that *leaning towards unity* which is proper for the philosophical spirit and from which has flowed that very well-known canon: *principles are not to be multiplied beyond what is absolutely necessary.* To this we give our vote not because either by reason or experience we clearly see a causal unity in the world, but we pursue that very unity driven on by our intellect which seems to itself to have been successful in the explanation of phenomena only to the degree that it has received permis-

sion to descend from the same principle to the very large number of things grounded. The THIRD of the principles of this kind is: *No matter at all comes into being or passes away* and all the vicissitudes of the world concern its form alone. This postulate, at the instigation of the common intellect, is spread abroad through all the schools of philosophers, not because it has been taken as discovered or demonstrated by arguments a priori, but because, if you admit matter itself II 419
as in flux and transitory, nothing at all would be left which was stable and durable which might more fully promote the explanation of phenomena according to universal and perpetual laws and in this way promote the use of the intellect.

So much on method, especially concerning the distinction between sensitive and intellectual cognition. If some day this method is given an exact expression by a more careful investigation, it will serve as a propaedeutic science which will be of immense service to all who intend to penetrate the very recesses of metaphysics.

NOTE. Since in this last section it is the search for a method which occupies every page and since the rules which teach us the true form of arguing about things sensitive shine with their own light and do not borrow it from examples brought forward for the sake of illustration, I have inserted a mention of these examples only as it were in passing. Accordingly it is not strange that to the majority of people some things there will seem to have been asserted with more audacity than truth, and when on some occasion it is permissible to be more prolix they will certainly demand for themselves a greater weight of arguments. Thus what I have adduced in §27 on the locality of immaterial things needs explanation, which please seek in Euler, l.c., vol. II, pp. 49–52.[22] For the soul is not in interaction with the body because it is detained in a certain place in the body, but there is attributed to it a determined place in the universe because it is in mutual interaction with a certain body, and when this interaction is broken off all its position in space is destroyed. And so its *locality* is *derivative* and is bestowed

upon it contingently and is *not a primitive* and necessary condition adhering to its existence. For all things which in themselves cannot be objects of the external senses (such senses as man possesses), that is, *immaterial things*, are absolutely exempted from the universal condition of *things sensible externally*, namely space. Hence the absolute and immediate locality of the soul can be denied and yet a hypothetical and mediate locality assigned to it.