Whether the treatment of that portion of our knowledge which lies within the province of pure reason advances with that undeviating certainty which characterizes the progress of science, we shall be at no loss to determine. If we find those who are engaged in metaphysical pursuits, unable to come to an understanding as to the method which they ought to follow; if we find them, after the most elaborate preparations, invariably brought to a stand before the goal is reached, and compelled to retrace their steps and strike into fresh paths, we may then feel quite sure that they are far from having attained to the certainty of scientific progress and may rather be said to be merely groping about in the dark. In these circumstances we shall render an important service to reason if we succeed in simply indicating the path along which it must travel, in order to arrive at any results—even if it should be found necessary to abandon many of those aims which, without reflection, have been proposed for its attainment.

That Logic has advanced in this sure course, even from the earliest times, is apparent from the fact that, since Aristotle, it has been unable to advance a step and, thus, to all appearance has reached its completion. For, if some of the moderns have thought to enlarge its domain by introducing psychological discussions on the mental faculties, such as imagination and wit, metaphysical, discussions on the origin of knowledge and the different kinds of certitude, according to the difference of the objects (idealism, scepticism, and so on), or anthropological discussions on prejudices, their causes and remedies: this attempt, on the part of these authors, only shows their ignorance of the peculiar nature of logical science. We do not enlarge but disfigure the sciences when we lose sight of their respective limits and allow them to run into one another. Now logic is enclosed within limits which admit of perfectly clear definition; it is a science which has for its object nothing but the exposition and proof of the formal laws of all thought, whether it be a priori or empirical, whatever be its origin or its object, and
whatever the difficulties—natural or accidental—which it encounters in the human mind.

The early success of logic must be attributed exclusively to the narrowness of its field, in which abstraction may, or rather must, be made of all the objects of cognition with their characteristic distinctions, and in which the understanding has only to deal with itself and with its own forms. It is, obviously, a much more difficult task for reason to strike into the sure path of science, where it has to deal not simply with itself, but with objects external to itself. Hence, logic is properly only a *propaedeutic*—forms, as it were, the vestibule of the sciences; and while it is necessary to enable us to form a correct judgement with regard to the various branches of knowledge, still the acquisition of real, substantive knowledge is to be sought only in the sciences properly so called, that is, in the objective sciences.

Now these sciences, if they can be termed *rational* at all, must contain elements of *a priori* cognition, and this cognition may stand in a twofold relation to its object. Either it may have to *determine* the conception of the object—which must be supplied extraneously, or it may have to *establish* its reality. The former is theoretical, the latter practical, rational cognition. In both, the *pure* or *a priori* element must be treated first, and must be carefully distinguished from that which is supplied from other sources. Any other method can only lead to irremediable confusion.

*Mathematics* and *physics* are the two theoretical sciences which have to determine their objects *a priori*. The former is purely *a priori*, the latter is partially so, but is also dependent on other sources of cognition.

In the earliest times of which history affords us any record, *Mathematics* had already entered on the sure course of science, among that wonderful nation, the Greeks. Still it is not to be supposed that it was as easy for this science to strike into, or rather to construct for itself, that royal road, as it was for logic, in which reason has only to deal with itself. On the contrary, I believe that it must have remained long—chiefly among the Egyptians—in the stage of blind groping after its true aims and destination, and that it was revolutionized by the happy idea of one man, who struck out and determined for all time the path which this science must follow, and which admits of an indefinite advancement. The history of this intellectual revolution—much more important in its results than the discovery of the passage round the celebrated Cape of Good Hope—and of its author, has not been preserved. But Diogenes Laertius, in naming the supposed discoverer of some of the simplest elements of geometrical demonstration—elements which, according to the ordinary opinion, do not even require to be proved—makes it apparent that the change introduced by the first indication of this new path, must have
seemed of the utmost importance to the mathematicians of that age, and it has thus been secured against the chance of oblivion. A new light must have flashed on the mind of the first man (Thales, or whatever may have been his name) who demonstrated the properties of the isosceles triangle. For he found that it was not sufficient to meditate on the figure, as it lay before his eyes, or the conception of it, as it existed in his mind, and thus endeavour to get at the knowledge of its properties, but that it was necessary to produce these properties, as it were, by a positive *a priori* construction; and that, in order to arrive with certainty at *a priori* cognition, he must not attribute to the object any other properties than those which necessarily followed from that which he had himself, in accordance with his conception, placed in the object.

A much longer period elapsed before Physics entered on the highway of science. For it is only about a century and a half since the wise Bacon gave a new direction to physical studies, or rather—as others were already on the right track—imparted fresh vigour to the pursuit of this new direction. Here, too, as in the case of mathematics, we find evidence of a rapid intellectual revolution. In the remarks which follow I shall confine myself to the *empirical* side of natural science.

When Galilei experimented with balls of a definite weight on the inclined plane, when Torricelli caused the air to sustain a weight which he had calculated beforehand to be equal to that of a definite column of water, or when Stahl, at a later period, converted metals into lime, and reconverted lime into metal, by the addition and subtraction of certain elements; a light broke upon all natural philosophers. They learned that reason only perceives that which it produces after its own design; that it must not be content to follow, as it were, in the leading-strings of nature, but must proceed in advance with principles of judgement according to unvarying laws, and compel nature to reply its questions. For accidental observations, made according to no preconceived plan, cannot be united under a necessary law. But it is this that reason seeks for and requires. It is only the principles of reason which can give to concordant phenomena the validity of laws, and it is only when experiment is directed by these rational principles that it can have any real utility. Reason must approach nature with the view, indeed, of receiving information from it, not, however, in the character of a pupil, who listens to all that his master chooses to tell him, but in that of a judge, who compels the witnesses to reply to those questions which he himself thinks fit.

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1I do not here follow with exactness the history of the experimental method, of which, indeed, the first steps are involved in some obscurity.
to propose. To this single idea must the revolution be ascribed, by which, after groping in the dark for so many centuries, natural science was at length conducted into the path of certain progress.

We come now to Metaphysics, a purely speculative science, which occupies a completely isolated position and is entirely independent of the teachings of experience. It deals with mere conceptions—not, like mathematics, with conceptions applied to intuition—and in it, reason is the pupil of itself alone. It is the oldest of the sciences, and would still survive, even if all the rest were swallowed up in the abyss of an all-destroying barbarism. But it has not yet had the good fortune to attain to the sure scientific method. This will be apparent; if we apply the tests which we proposed at the outset. We find that reason perpetually comes to a stand, when it attempts to gain a priori the perception even of those laws which the most common experience confirms. We find it compelled to retrace its steps in innumerable instances, and to abandon the path on which it had entered, because this does not lead to the desired result. We find, too, that those who are engaged in metaphysical pursuits are far from being able to agree among themselves, but that, on the contrary, this science appears to furnish an arena specially adapted for the display of skill or the exercise of strength in mock-contests—a field in which no combatant ever yet succeeded in gaining an inch of ground, in which, at least, no victory was ever yet crowned with permanent possession.

This leads us to inquire why it is that, in metaphysics, the sure path of science has not hitherto been found. Shall we suppose that it is impossible to discover it? Why then should nature have visited our reason with restless aspirations after it, as if it were one of our weightiest concerns? Nay, more, how little cause should we have to place confidence in our reason, if it abandons us in a matter about which, most of all, we desire to know the truth—and not only so, but even allures us to the pursuit of vain phantoms, only to betray us in the end? Or, if the path has only hitherto been missed, what indications do we possess to guide us in a renewed investigation, and to enable us to hope for greater success than has fallen to the lot of our predecessors?

It appears to me that the examples of mathematics and natural philosophy, which, as we have seen, were brought into their present condition by a sudden revolution, are sufficiently remarkable to fix our attention on the essential circumstances of the change which has proved so advantageous to them, and to induce us to make the experiment of imitating them, so far as the analogy which, as rational sciences, they bear to metaphysics may permit. It has hitherto been assumed that our cognition must conform to the objects; but all attempts to ascertain anything about these objects a
priori, by means of conceptions, and thus to extend the range of our knowl-
edge, have been rendered abortive by this assumption. Let us then make
the experiment whether we may not be more successful in metaphysics, if
we assume that the objects must conform to our cognition. This appears,
at all events, to accord better with the possibility of our gaining the end
we have in view, that is to say, of arriving at the cognition of objects a
priori, of determining something with respect to these objects, before they
are given to us. We here propose to do just what Copernicus did in at-
tempting to explain the celestial movements. When he found that he could
make no progress by assuming that all the heavenly bodies revolved round
the spectator, he reversed the process, and tried the experiment of assuming
that the spectator revolved, while the stars remained at rest. We may make
the same experiment with regard to the intuition of objects. If the intuition
must conform to the nature of the objects, I do not see how we can know
anything of them a priori. If, on the other hand, the object conforms to the
nature of our faculty of intuition, I can then easily conceive the possibility
of such an a priori knowledge. Now as I cannot rest in the mere intuitions,
but—if they are to become cognitions—must refer them, as representations,
to something, as object, and must determine the latter by means of the for-
mer, here again there are two courses open to me. Either, first, I may assume
that the conceptions, by which I effect this determination, conform to the
object—and in this case I am reduced to the same perplexity as before; or
secondly, I may assume that the objects, or, which is the same thing, that
experience, in which alone as given objects they are cognized, conform to my
conceptions—and then I am at no loss how to proceed. For experience itself
is a mode of cognition which requires understanding. Before objects, are
given to me, that is, a priori, I must presuppose in myself laws of the under-
standing which are expressed in conceptions a priori. To these conceptions,
then, all the objects of experience must necessarily conform. Now there are
objects which reason thinks, and that necessarily, but which cannot be given
in experience, or, at least, cannot be given so as reason thinks them. The
attempt to think these objects will hereafter furnish an excellent test of the
new method of thought which we have adopted, and which is based on the
principle that we only cognize in things a priori that which we ourselves
place in them.\footnote{This method, accordingly, which we have borrowed from the natural philosopher, consists in seeking for the elements of pure reason in that which admits of confirmation or refutation by experiment. Now the propositions of pure reason, especially when they transcend the limits of possible experience, do not admit of our making any experiment with their objects, as in natural science. Hence, with regard to those conceptions and}
This attempt succeeds as well as we could desire, and promises to meta-
physics, in its first part—that is, where it is occupied with conceptions a
priori, of which the corresponding objects may be given in experience—the
certain course of science. For by this new method we are enabled perfectly
to explain the possibility of a priori cognition, and, what is more, to demon-
strate satisfactorily the laws which lie a priori at the foundation of nature,
as the sum of the objects of experience—neither of which was possible ac-
cording to the procedure hitherto followed. But from this deduction of the
faculty of a priori cognition in the first part of metaphysics, we derive a
surprising result, and one which, to all appearance, militates against the
great end of metaphysics, as treated in the second part. For we come to the
conclusion that our faculty of cognition is unable to transcend the limits of
possible experience; and yet this is precisely the most essential object of this
science. The estimate of our rational cognition a priori at which we arrive
is that it has only to do with phenomena, and that things in themselves,
while possessing a real existence, lie beyond its sphere. Here we are enabled
to put the justice of this estimate to the test. For that which of neces-
sity impels us to transcend the limits of experience and of all phenomena is
the unconditioned, which reason absolutely requires in things as they are in
themselves, in order to complete the series of conditions. Now, if it appears
that when, on the one hand, we assume that our cognition conforms to its
objects as things in themselves, the unconditioned cannot be thought without
contradiction, and that when, on the other hand, we assume that our repre-
sentation of things as they are given to us, does not conform to these things
as they are in themselves, but that these objects, as phenomena, conform
to our mode of representation, the contradiction disappears: we shall then
be convinced of the truth of that which we began by assuming for the sake
of experiment; we may look upon it as established that the unconditioned
does not lie in things as we know them, or as they are given to us, but in
things as they are in themselves, beyond the range of our cognition.3

principles which we assume a priori, our only course ill be to view them from two different
sides. We must regard one and the same conception, on the one hand, in relation to
experience as an object of the senses and of the understanding, on the other hand, in
relation to reason, isolated and transcending the limits of experience, as an object of mere
thought. Now if we find that, when we regard things from this double point of view, the
result is in harmony with the principle of pure reason, but that, when we regard them
from a single point of view, reason is involved in self-contradiction, then the experiment
will establish the correctness of this distinction.

3This experiment of pure reason has a great similarity to that of the Chemists, which
they term the experiment of reduction, or, more usually, the synthetic process. The
analysis of the metaphysician separates pure cognition a priori into two heterogeneous
But, after we have thus denied the power of speculative reason to make any progress in the sphere of the supersensible, it still remains for our consideration whether data do not exist in practical cognition which may enable us to determine the transcendent conception of the unconditioned, to rise beyond the limits of all possible experience from a practical point of view, and thus to satisfy the great ends of metaphysics. Speculative reason has thus, at least, made room for such an extension of our knowledge: and, if it must leave this space vacant, still it does not rob us of the liberty to fill it up, if we can, by means of practical data—nay, it even challenges us to make the attempt. 4

This attempt to introduce a complete revolution in the procedure of metaphysics, after the example of the Geometricians and Natural Philosophers, constitutes the aim of the Critique of Pure Speculative Reason. It is a treatise on the method to be followed, not a system of the science itself.

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