

Exemplify
By

I suggest that you refer to some of Whitehead's scientific and mathematical work such as *Principia Mathematica* his 1st Published Work - On Universal Algebra. ~~Read the first essay in our Whitehead anthology~~

Whitehead's Method of Philosophizing

Whitehead was a very successful scientist and mathematician before he turned to strictly ~~philosophical~~ ^{metaphysical} inquiries. ~~He took up this problem~~ As a scientist, he was interested in what constituted a concrete fact, that is, ~~he~~ was concerned with the question of what ultimately makes for a fact in physics, in Whitehead's own words " what are the concrete facts which exhibit the mathematical attribute of wave-vibrations!"

What is reality ultimately? - You will have to briefly answer the question after you have explained his method - ~~Portsmouth article would show how his method leads to an answer of this question.~~ Before long Whitehead realized that the solution of this problem depended on some very definite assumptions as to the nature of reality itself, that is, he came to view the problem as a fundamentally philosophical one. Thus he writes in *Adventures of Ideas*: ~~the part of his method that is relevant - is 1st & 2nd stage of aeroplane metaphor - Whitehead is intuitively convinced that human experience disclose the general principles of all natural reality. Because man only form such a conception in terms of fundamental notions concerning the nature of reality. We are thrown back upon philosophy.~~

I.

Here then is how Whitehead defines philosophy. ~~This definition is characteristically functional and is expressed in purposive terms. It differs from that of the ancients who defined philosophy in more contemplative terms as "the love of wisdom."~~ ~~you can make this contrast if you make it simpler and clearer~~

Speculative philosophy is the endeavour to frame a coherent, logical, necessary system of general ideas in terms of which every element of our experience can be interpreted.³

A few important terms in this definition require explication if we are to have an adequate appreciation of its richness and of its true significance. ~~it is a refinement of the notion of the philosophic wonder which the Greeks spoke of and it meets adequately, so I think, the requirements of rationality in regards to explanations.~~ ~~Rationality demands that any system which attempts to account for or to explain facts, the facts of experience, should be 1) coherent; which means that the general ideas or notions which explain the related facts and constitute our system should in some sense presuppose each other, that they should have a mutual relevance, and that no one general principle should have significance in complete abstraction from the others.~~ ~~By the way, the coherent, logical, and necessary system of general ideas, Whitehead, presupposes the great ideal of Rationalism, that all actual facts ultimately play a significant part in relation to all other actual facts, constituting one integrated system of the Universe.~~

- 1 A I, 200
- 2 A I, 203
- 3 R R, 4

What justifies this faith - is that those who have attempted to achieve this ideal in ~~science~~ ^{knowledge} have had significant success - e.g. Newton, Einstein, Aristotle

[He asserts that the fact of this universal inter-relatedness should be exhibited in the coherence of the general ideas, the framing of which is the task of speculative philosophy.]

[The term logical is to be understood in its ordinary sense as being without contradiction, or rational inconsistency.]

[So much for the rational side of the philosophical ideal. An important dimension of Whitehead's worth as a philosopher seems ~~to~~ to consist in his inclusion in the philosophic endeavour of an empirical side. He does not relieve philosophy of the task of explaining what we term the scientifically observed facts and the scientific laws of nature. ~~As I stated above~~, it was his concern with facts as a scientist and mathematician that led Whitehead to undertake the more specifically philosophic task.

By the phrase "in terms of which every element of experience can be interpreted"
To fulfill the demands of the empirical side of reality, the philosophical scheme of general ideas should be both applicable and adequate. *Whitehead is explaining that the coherence and logical consistency of the general ideas are not enough. They should both apply*

to and prove adequate for the explanation or interpretation of the elements of experience. "Applicable" means that the facts of experience should be interpretable in terms of the general ideas, and "adequate" means that there should be no elements of experience which are excluded by or uninterpretable by the general scheme. *man discovers* If by chance there should turn up such elements of experience that cannot find adequate interpretation in ~~terms of~~ the existing scheme of general ideas,

then Whitehead's philosophy of method dictates that the general scheme of ideas *should* be modified in such a way as to admit the new evidence. But *man is always* ~~we can easily object~~ that there is always new evidence ~~being uncovered by scientific research~~ *and in* other legitimate forms of inquiry, as in the field of the psychology of human experience, which cannot be adequately explained by the ~~reigning~~ *ruling* scientific theories, and that this necessitates the constant revision of those theories which make up the so-called world-view of a given epoch.

Such new evidences demand The more evidence discovered which cannot be ~~accommodated~~ *explained* by the ~~reigning~~ *ruling* theory, the more the theory becomes useless, and at a certain point ~~has to be discarded altogether~~ *Eventually, the theory may have*. This is the history of scientific revolutions exemplified by the Copernican, Newtonian, and Einsteinian revolutions successively. ~~It is not then, that Whitehead's coherent,~~ *was sought to be* logical, and necessary system of general ideas is beyond the power of man to formulate *attempt to*

definitively Whitehead was well aware of this fact. After telling us that the philosophic scheme of metaphysical first principles and general ideas should be coherent, logical, applicable, adequate and necessary, that is, that it should exhibit in *such scientific revolutions and in fact participated in the overthrow of the Newtonian world view. Whitehead* as a result, Whitehead emphasizes the word

Definition. ~~Let us~~ His Definition of philosophy

itself a warrant and testimony of universality throughout all experience, he tells us flatly; "Philosophers can never hope finally to formulate these metaphysical first principles."⁴ ~~I admit that it is quite a let-down.~~

But Whitehead is no Sceptic. Let us note his emphasis on the word finally, and once again let us examine some of the reasons for his statement. Our difficulties resulting in the impossibility of arriving at a final formulation of the philosophic scheme arise from the so-called empirical side of philosophy, and they are two: 1) the deficiencies of language to really express or capture the concrete fact in the totality of its aspects and the immensity of its relational significance to all other facts; in *Adventures of Ideas* Whitehead has this to say about language and its function as a tool for the expression and formulation of ideas:

Language is incomplete and fragmentary and merely registers a stage in the average advance beyond ape-mentality. But all men enjoy flashes of insight beyond meanings already stabilized in etymology and grammar."⁵

2) Secondly, the finiteness and deficiency in imaginative penetration which characterizes the human mind, and which indeed constitutes its very mode of operation, forbids the final formulation of the philosophic scheme discussed by Whitehead. In other words, Whitehead's formulation of the function and goal of speculative philosophy is an ideal which our most brilliant and penetrating human minds can only approach asymptotically, in the way that constant division by $\frac{1}{2}$ merely approaches, but can never reach, zero.

Cartesian
~~rejects the Cartesian notion of philosophy as the science which begins with first principles, knowing clearly and distinctly~~
Whitehead rejects the attempt to do philosophy by the explication of the entailments of certain self-evident first principles by way of strictly logical inference and deduction, as was attempted by Descartes and

Spinoza and their *modo geometrico*. He also rejects the Baconian method of induction because it precludes the play of free imagination even when controlled by the requirements of coherence and logic. Then Whitehead presents a sketch of his own ideal of a philosophic method, a method which is also essential for the advance of any sciences.

begins with many presuppositions and many obscure points which must all be searching for metaphysical first principles. The philosophy is searching because
4 P R 6
5 A I 227

examined. Because of such an uncertain obscure starting point, philosophy is an attempt, an attempt to finish the definition

~~How does he~~ We will now move on to discuss the ~~paper~~
~~method which Whitehead uses to fulfill~~
The true method of discovery is like the flight of an airplane.

II.

~~his definition of philosophy~~
It starts from the ground of particular observation; it makes a flight into the thin air of imaginative generalization; and it again lands for renewed observation rendered acute by rational interpretation.

~~This is Whitehead's airplane metaphor to explain the three stages of his method.~~ [p. 6]
Again some explanation of the key terms in this statement is here in order. By "imaginative generalization" or philosophic generalization

(A)
↓
is meant that notions derived from a particular or specific group of facts should be utilized for the discovery of the generic notions which apply to all of reality. A good example of philosophic generalization was Newton's ~~observation~~ ^{imaginative guess} that the force which made an apple fall to the ground might just be the same force that keeps the moon in its orbit around the Earth, [and which is in operation according to certain laws between any two masses in the entire universe.]

In this manner, specific notions arising from the observation of the subject matter of physics, psychology, aesthetics, physiology, sociology or ethical beliefs, should be generalized to see what light they can throw on the fields of interest other than their own. Whitehead writes on this point:

The partially successful philosophic generalization will, if derived from physics, find applications in fields of experience beyond physics. It will enlighten observation in those remote fields, so that general principles can be discerned as in process of illustration, which in the absence of the imaginative generalization are obscured by their persistent exemplification. 7

6 P R 7

7 P R 8

~~The first stage of the method is the airplane on the ground. This airplane image represents~~

Whitehead's method in philosophy is similar to ~~the~~ ^{scientific} ~~method~~ in scientific method, there are essentially three steps.

first, observation; second, creation of an hypothesis to explain the observations and the deduction of further consequences; and third, the verification of this hypothesis ~~by~~ experimental observation of the deduced consequences.

~~Perhaps you should illustrate this by a simple scientific example. (?)~~

Whitehead shows the similarity of his method to scientific method by a metaphor about the flight of an airplane. Then give the quote.

~~Then explain that there are three steps in the method. Number them first second, third, the first stage of the airplane's flight is the ground of a particular observation. This is similar to~~

First, the airplane begins on the ground. Whitehead begins with some particular observation about experience such as ~~all things are in flux~~ in human experience, the end of man's action influences his action.

Second, the airplane flies in the air. Whitehead generalizes his observation about the end as a cause of human action into a statement that ~~the end or goal~~ ^{he imaginatively guesses} the end or goal.

The test of some success in the philosophic endeavour then, will consist in the possibility of application beyond the field of immediate origin. ~~To reiterate a bit then,~~ Whitehead's concept of the method of discovery applies equally well to any science which is both serious in its aspirations for progress and is also honest in its evaluation of the progress it has achieved.

In the last analysis, any system of general principles framed in whatever field of human endeavour, must square and agree with the facts. Not that by itself it should be sufficient to explain the facts, for since language and human thought are also facts, are also elements of reality, any attempt to fit all of reality into the finite categories of human language and thought would be analogous to trying to explain and adequately fit a whole into one or two of its parts. What must be asked of any system is that it should not contradict any facts that are already responsible and adequately established, if only by the pragmatic device of the Will to Believe that William James speaks about.

An Ideal which any science must unflinchingly maintain is Rationality, by which Whitehead means that a science should seek both coherence and logical perfection. Whitehead is not blind to the half-hearted attempt that particular sciences have made in the pursuit of this ideal. He notes that whereas within its own borders natural science has adhered to rational methods, the turn is a different one when natural science turns to the consideration of the attempts at truth made in fields other than its own. Here, for instance, in the fields of ethics, religion, or aesthetics in general natural science has dogmatized quite irrationally in its denial that there are any factors in the world not fully expressible in terms of its own primary notions devoid of further generalization." Whitehead calls such a denial the self-denial of thought".

is a cause influencing ^{the} actions of ~~whithead~~ ^{fall realities}
~~generalize that first causality expresses a truth~~
about all ~~facts~~ realities in the world.

Third, the airplane lands again on the ground.
Whithead observes reality ~~again~~ other than men
~~to~~ ^{in an} attempt to verify his generalization. He discovers
that animals ~~show~~ show goal-directed behavior in
instinctive action. He discovers that physical objects and
~~show~~ atomic particles show an orderly action-pattern. And
he takes this orderly-action ~~as~~ as a sign that the
behavior is ~~goal-directed, goal-~~ influenced by the
end of action.

~~the actual use of the method is much more~~
~~complex than this single metaphor.~~ Whithead

~~It is important to~~
the actual use of the method is much more

complex than the airplane metaphor suggests. It
must ~~be~~ easier to make one ~~general statement~~ about the end as a
cause of all action ^{and verify that statement} than it is to frame a coherent, logical,
necessary system of general ideas in terms of which every element
of experience can be interpreted. It is very difficult
to imaginatively generalize a ^{coherent} ~~scene~~ of ideas in which
all realities can be understood. This difficulty is
precisely ~~where~~ ^{why} ~~the narrow~~ viewpoint of the natural scientist
~~keeps him~~ ^{keeps him} remain a scientist. ~~the scientist~~ His
~~scientist~~ categories are too narrow

He regards therefore, the ideal of logical perfection as important for the advancement of any science, and points to the contributions made by

to understand such diverse human experiences such as aesthetics, ethics, and religion.

If the natural scientist attempts to force all reality into ~~the~~ ^{indivisible} scientific categories, ~~that are~~

~~too narrow~~
~~Whitehead justifies such an attempt~~
~~as committing the fallacy of misplaced~~
~~concreteness. The scientist is mistakenly~~
~~putting is attempting to explain the real world by~~

Whitehead holds that such an attempt will do
an injustice to important human experiences ~~such as~~
~~aesthetics, ethics, and religious experiences.~~
~~Science alone cannot answer the question what is~~
~~reality. Philosophy and its method must attempt~~
~~to answer the ultimate questions.)~~

Perhaps suggest a quick answer to the
question what is reality by showing how Whitehead
uses the causes of Aristotle. Then discuss the place of
man in reality.

Tom,

I did not read your handwritten work until after I had finished writing my suggestions. I see that you did go on to discuss the aeroplane metaphor in detail, and very well too.

In general in rewriting and finishing my comment is that you should use shorter sentences; simpler language; and emphasize the unity of your talk and the major transitions that occur in your talk. I suggested some divisions. I also suggested that you repeat the definition of philosophy in the I and II at various points to keep the audience's attention to the unity of your talk.

Your talk needs 2 or 3 minutes about Whitehead's life - Born when - ?
lived where - England
taught what - math
then came to America at
age 45 as professor
of philosophy at Harvard