

Basic Assumptions Underlying Physics and the Existence of God

Notes on a talk by a Catholic metaphysician to an informal gathering of physicists at his home. The author wished to remain anonymous.

IT IS IMPOSSIBLE TO DISCUSS the problems of any given discipline with anyone who denies the basic facts of that science. If the mathematician says that he does not believe that numbers exist then you do not discuss the philosophy of mathematics with him. If anyone says he does not believe that there is any such thing as happiness, then you do not discuss the science of ethics with him.

In every art or science there is something that is first and by the very fact that it is first you cannot question it as though there were something prior to it. Thus, we know that there must be something in the physical sciences too which we are not free to accept or deny. That is what I mean by a first principle, because if something is a first principle, it is a first principle in the sense that everything in that science depends upon it. You are not free to accept or deny it as you would be with something posterior, for example some hypothesis within that science, as, in physics, the Newtonian hypothesis or the Einstein hypothesis. Because they are not first principles, such hypotheses could be accepted or denied without rejecting the whole science, but we do not have this freedom about first principles. The first step in our getting together, then, would be to ask these two things: one, whether there are such principles in the science of physics, and second, if there are, what they are.

Now I would say that the whole science of physics rests on this principle--that there is change in the world, and that anyone, therefore, who would deny this would be denying the whole subject matter of the science. Aristotle, in fact, referred to this at the beginning of his "Physics," *a propos* of Parmenides who denied the reality of change. And Aristotle is just as right today as he was then. I would say, then, that as physicists we have to agree that there is such a thing as change. The second principle we are bound to accept is this, that not only is change something real, but there are things which undergo change. This is particularly important because of the present mentality in physics, where we deal with things so rich in their complexity and speak of "events," thinking in terms of the equations between variables. For with that mentality it is very easy to think that you are in physics when you are really in mathematics whose whole

subject matter prescind from change. In which case it is very easy, then, because of this mathematical treatment of change, to forget that you are conceiving things which are undergoing change, conceiving each entity indeed as though it were some mathematical object like a point or "point particle."

The question before us, then, is this--can change be reduced to a variation in things without accepting the fact that the things themselves exist? In other words, are we not bound to assume in physics not only that there is change but that there are things which are undergoing change. You have the whole metaphysics of matter and form or substance involved here. And I am saying that we are not free here again. You are bound not only to accept the fact that there is a change but that you are necessarily interpreting change as something which is happening to something, or some things. Usually there is a plurality of things and the interrelation between those things, no matter how complex, does not alter the fact that things are changed. I would illustrate this with a very homely example of an empirical situation where you assume you are reading the same pointer in different positions. If you did not assume this you could not make sense out of your empirical data. You are bound not only to accept the fact that there is a change but that you are necessarily interpreting change as something which is happening to something, the pointer in this case, or more usually, a plurality of things. And the interrelation between those things, no matter how complex, does not alter the fact that things are changed.

In fact, I was thinking last night that in some strange way this concept that things change might be rejected because physicists thought that if things changed this would entail one thing moving the other in the manner of an unmoved mover, that is to say, maybe the physicists think they cannot understand change because for them change would imply a one-way relationship, that if A acts on B, A must not be affected by B. That, to be sure, is a misleading simplification of the physical situation. Rather there is a change in the configuration as a whole. If I push this thing, this thing that I push also affects me. But the fact that I change when I push on this doesn't in any way deny the fact that the thing I am moving changes even as it acts on me as it changes. In fact, unless that is presupposed we couldn't discuss these events. So the fact is, then, that in physics we must assume both are undergoing change and we cannot conceive a physical event in any other way. These principles, then, are logically prior to anything which could arise from an empirical consideration of change, i.e., of how things change

or whether or not the change could be conceived in terms of this or that equation or systems of equations.

As Aristotle said, it is the mark of an uneducated man to try to prove what is more evident from what is less evident. So to try to prove or disprove this principle from the data of quantum mechanics would be the mark of an uneducated man--uneducated in metaphysics even though he would be educated in physics. We are necessarily presupposing, then, not only that there is change but that change necessarily entails things, which perdure as they undergo these changes.

So now, with that as a foundation, it is very easy to demonstrate the existence of God. And observe that the demonstration proceeds from these very things which the physicist must presuppose in his science. Here I would observe that it is the obligation of the metaphysician, that he must not only at all times be able to grasp such demonstrations as this, he is bound to show the principaling of the principles from which he proceeds in the science in which he is demonstrating. And this I think is a grave omission on the part of philosophers today, that they do not establish this contact, they do not develop a manifestation of the principles that they are using from what, e.g., the physicists are doing. As a result of not doing that, the physicist can make generalizations, as I said earlier, from his own empirical methods and rely on what he thinks are the first principles, when they really are not. Just as in mathematics they think that logical principles are first in mathematics. In physics, as in every science, you are presupposing certain principles which will be more general, like the ones we have been referring to, metaphysical principles, but not more general as though they were distinct with a boundary between them and the empirical sciences. They are more general because although they are functioning in a given science, yet it does not belong to a specialist in the given science to grasp them in their generality. That is why the work we want to do requires the cooperation of the metaphysician with the physicist, because of this overlapping area. For example: you are presupposing as a physicist, as we have shown, both the fact of change and the fact of subjects undergoing change, but as a physicist you do not have the expertness to recognize those things which you are implicitly presupposing, because your job is to go about and describe the manner of the change, the manner of the change in your equations, etc. And that does not give you expertness in analyzing the presuppositions in that operation.

So now, we assume these two things, and assume them, be it noted, *not* in a hypothetical way characteristic of the modern mind which believes that any assumption must be merely an hypothetical assumption. To illustrate, take the assumption that between any two points one can draw a straight line. This is an assumption of geometry, but it is not hypothetical in the sense that you are free to accept it or not. It is an assumption in the sense that if you deny it, the whole science of geometry disappears. So I would say the modern mind, through the empirical method which by its very nature is hypothetical, unconsciously generalizes from that and concludes that all principles, insofar as they are principles, can only be hypothetical, except for logical principles. So what we have shown here implicitly is that there are principles which are neither logical nor hypothetical but necessary and real. And obviously, you can see, *a priori*, that if you are going to prove the existence of God you are not going to prove it from an hypothesis, i.e., from something which is subject to change without notice, because then the conclusions would have no more necessity than the premises. So the moderns, without realizing it, are at the very outset begging the whole question whether or not you can prove the existence of God: they are assuming you can't because they take away the whole foundation which is the existence of principles which are both necessary and real. And they do this dogmatically, without any proof, in fact, for as we have already shown, they are not only dogmatic but wrong.

If then this is so, we can state the major premise of the demonstration of God's existence in this way--that whatever is the cause of an observed effect must exist in some way. That is to say, you cannot have an effect without a cause. Again let me observe that this is not a metaphysical observation that the metaphysician begs the physicist to accept. No, here again, it is only a case of acknowledging what you are in fact presupposing. For by cause I mean nothing more than that which communicates. And as we were saying a little while ago, in change we have a subject which undergoes change, so that when it changes something must be communicated to that subject, and by the 'cause' we mean the principle which communicates this to the subject. Whenever something exists, its cause must exist, therefore.

But this requires distinctions because it is not always true without qualification. I would like to take this principle and show you where it is true, where it is not, and why. For example: A man exists, his father was the cause of his existence, but let us say his father is dead. The man exists but you cannot prove his father exists. So when is it necessary, if at all, that a cause should exist if the effect exists? Well, in one way, it

would be necessary if they were both simultaneous, that is, if A is communicating something to B now and the B that we are talking about is the very coming to be of something, then the A must be communicating that thing as it is being received. If then, this relation of cause and effect is simultaneous, and the effect is existing now, there would be a necessity of a cause if the effect exists.

In another way it would be possible for a cause to be necessary, even if the effect had ceased to exist. In that case, the cause would exist if the nature of the cause would be such that it could not not exist. So for example: if it is true (this is only an hypothesis) that motion implies an unmoved mover, even if there were motion only in the past, it would be true that an unmoved mover exists in the present because an unmoved mover cannot *not* exist because it would have to be moved by something to stop existing. So we can say, then, that we can show the necessity of the cause in those two cases where the cause is causing simultaneously as the effect is being effected, or, when the nature of the cause is such that it could not not be, so in that case even if it happened in the past it still exists. Applying this to our demonstration, then, we can say that we observe something is moved and our principle would be that whatever is the cause of the motion we observe must exist. It must exist on either of those two grounds, either because it would be simultaneous with the effect, or because by its very nature it is unable not to exist.

Well now, the minor premise would be: An unmoved mover is a necessary cause of motion, therefore an unmoved mover exists. Now this minor premise has to be proved. What we have done so far has been merely by way of giving the logical structure of the demonstration in an architectonic way. This is what would yield the conclusion but this does not mean that the premises themselves do not require an explanation and proof.

But now when it comes to the premises we have to make a distinction. Some premises are self-evident and are self-evident to everybody. For example: The one I just mentioned, that in one way or another, an effect cannot exist without a cause. Others are self-evident only to those who know. This is the distinction in Aristotle between an 'axiom' and a 'postulate,' an axiom being something which is known to everyone, like the whole is greater than the parts. So here the principle that the cause of what is moved must exist is self-evident as a contraction of a general principle, namely, that 'the cause of what exists must exist.' 'The cause of this thing being moved must exist' is a contraction of 'the cause of any effect must exist in some way.' That is to say, it is

axiomatic that if an effect exists the cause must exist in some way. For, as the distinctions I have just made would show, although it is possible that the cause in a given case should not exist, yet in some way it must exist or have existed, for there can be no effect without a cause. Or if you want to put it another way, there can be no effect without a cause, the effect in the case of change being that something becomes what it was not.

Now the minor of this demonstration is also self-evident but in this case only to the learned, namely, that an unmoved mover is the cause of the thing being moved--the reason that it is self-evident is because when you understand motion, you understand it as the ingression of an act from the principle as against those who just see the thing on the surface, who would see that this is here and now it is there. The learned understand that this is what motion is--a coming to be of something in a subject, that a thing changes as something is going into it, being received into it. But because this is not evident to everyone it is obvious that the demonstration has a burden, namely, to manifest the necessity of this truth, and the logical method here is one of disjunction. For if a proposition is self-evident it could be demonstrated from something prior, but if not you can also show it by removing all other possibilities.

So now when we say that a thing is moving, there are these three possibilities: (1) that what moves is moving itself; (2) that it is being moved by something else which moves itself (whether that other is one or many doesn't matter), or (3) it is moved ultimately by an unmoved mover. Those are the three possibilities. Now, the first two can be removed through the very conception of motion which we have clarified. For if a thing is to move itself, or be moved by something which moves itself, no matter how far back in the sequence, then that first thing which moves itself would be giving itself what it does not have, which is inconceivable. Since, then, there are only these three possibilities, the first two of which are inconceivable, there must be a first unmoved mover and that is the substance of this demonstration.

The other part is just by way of introducing the nominal definition of God. For we have demonstrated thus far the existence of a first unmoved mover, so to complete the demonstration we must introduce the term God. If the first unmoved mover exists, then God exists--this is only a matter of logical manipulation. For if the first unmoved mover exists and that's what you mean by God, then God exists. We may sum up our results, then, as follows: the existence of a first unmoved mover means that God exists,

and the existence of motion implies that a first unmoved mover exists. This is the complete demonstration, mind you, which starts not from my premise that I say you have to accept as a favor to me, but from premises which you acknowledged at the beginning because you recognize you are not free to reject them, because you are assuming them as soon as you operate as a physicist.

Now we may ask, 'Doesn't Newton's first law of motion show your basic philosophical principles to be invalid?' However, a difficulty like this, before we get into it, has to be oriented with respect to the whole science. For example, we could lay down the fundamental principles of geometry and then you get to some theorem about a thousand steps removed from those principles. Then you say, 'I don't know whether those principles are right after all.' This is really stupid, because if these are first principles which you are not free to accept or reject, how can you, on the basis of those principles, arrive at a conclusion which would cause you to deny those principles? To me, this is an aspect of the revolutionary mind, that each generation destroys the next [note--text says 'next' but HTS may have meant 'previous'], which is part of the modern mentality and which is another story too. There are social repercussions of this whole idea. It goes together with the idea that all principles are hypothetical and therefore are subject to change. And that is the kind of mind that would entertain all that we have said here, saying, 'Yes, that is all very fine, I admit I assume all those things, but now I get this conclusion and therefore I must question all of those basic principles that I have assumed.' I would refuse to discuss that at that level because if I did I would be confirming you in the abuse of the right order and method. For if it is true that you assume those things, as you said, you cannot then change and say, 'Yes, I know, but I get this conclusion, and now I want to change the things assumed, even though this conclusion follows from them.' Which doesn't mean that there is no obligation to correct the minds of those who are in this error, and to clarify things, but not as though you were going to be proving the principles from what comes next.

This is a little bit like when a person of faith is tempted against faith he makes an act of faith. He does not use his reason in order to try to get proofs for the existence of God to take the place of the act of faith, but then having done this there would be the right use of reason to remove the difficulties, but not to take the place of faith. I am saying that there is something very sharply analogous in this situation we have been discussing, that these first principles would be to science as faith would be to a given difficulty, and therefore, we must rigorously hold on to those principles and not get into a state of

mind that we might have to give up these principles after all. I would say, further, and I think it is very significant here that this has a psychological aspect which is very important too, because the modern mind being guilt-ridden is afraid of anything which is necessary. This is an aspect which is theological and psychological and practically determines everything else, because if a person is afraid of God or authority, as the modern mind is, then he is going to be afraid of what he knows is going to lead to it, and any necessary real principle does lead to it, and so this thing has to be treated in a sense in a clinical way as well as in a scientific way. The key to these difficulties is found in the mercy of God, the Sacred Heart of Jesus. The truth of the matter is that people who are bothered about hell are not bothered by a theoretical preoccupation with the justice of God or anything of that kind. What they are bothered about is that they might very well get there, and nobody wants to sign his own death warrant.

So even to provide a climate of objectivity in these scientific investigations, especially in these questions of the foundations, there must be an atmosphere of loving cooperation where the mercy of God is not only accepted as a truth of faith but where it is being lived as we love one another, and as we investigate such questions. (That is the significance of coming to my house and seeing what goes on, because what you see there is that we love one another.) As we love one another it is only then that we can become disinterested in the pursuit of truth, especially where the truth affects us practically.

Here is something very interesting, that the scientist can be as objective as you please at the mathematical or physical level, so long as he is concerned with something which will not affect his essential values. But as soon as the questions are practical, that is a different story. For even without realizing it, physics or any science does affect our practical life, that is to say our interpretation of it finally does, and in this sense everyone is a virtual metaphysician, i.e., would have an implicit metaphysics which would be the rationalization of one's practical mentality, and that should be brought out and discussed and not treated as though it was a theoretical difficulty when it really is a practical one.

The whole foundation here, then, is one of order. There is an order from A to B--it doesn't mean that we are going to chose between A and B--and that is another characteristic of the modern mind. It doesn't seem to have a sense of order. It is always making choices, this or that, philosophy or science, for example. Whereas the real

question is 'What is the order?' 'What is the relation of this to that?' So here, if there is a difficulty, whether metaphysically about science or practically, we need to determine what the order is first and then arrive at or answer the difficulties. If we have a difficulty, say, with change that seems to be perfectly ideal and that seems to go contrary to the principle, then we have to say, 'But we have assumed this principle and we cannot conclude then that there is something wrong with the principle.' We have assumed it necessarily but then there is a further moment in which we must manifest or solve the difficulty by showing that it is only apparent.

To do this, one does not preclude the other. But since the apparent contradiction arises from the principle, don't try to solve the difficulty by rejecting the very principles on which the very difficulty depends. If C depends on A and B, don't say 'Let's see if A and B are correct because of C,' but if there is a contradiction and C is valid, there it can only be an apparent contradiction. Then we have an obligation to resolve the apparent contradiction, to show that it really isn't a contradiction. But not by way of questioning whether or not the principles are valid, or what is worse, discarding the principles on which C depends. This order has to be established first before we can get into the consideration of C, otherwise you would unwittingly communicate the notion that the principles A and B are going to depend upon the results of the discussion of C.

I have had occasion to absolutely refuse to discuss the proofs for the existence of God with people who have asked me to give them because I am sure before I start that the only conclusion they would get would be that God's existence couldn't be demonstrated. They were merely trying to use me to confirm them in their own principles. So I would say that practically the first thing to establish is the truth that you are assuming these principles and therefore you are not permitted by your own intellectual integrity to question the principles you are assuming, because of a difficulty arising from the principles.

