A History of Philosophy
63 Whitehead's Science and Modern World
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Okay, Whitehead's book, Science and the Modern World, is not his major piece. It's not a statement of his developed metaphysics, except in terms of certain segments of it towards the end, when those ideas do come out in a highly condensed form that is very difficult to understand if you haven't read the larger work, Process and Reality. I'm referring to chapters 9 and 10, which I did not assign for that very reason.

Very hard to understand. But I've asked you to read this book for the primary reason that while it introduces Whitehead, it does so in historical terms. As you've discovered, the first seven or eight chapters are about the historical relationship of science to philosophy.

So, really, it's an account of science in the modern world in relationship to modern philosophy. And as such, I think it is extremely helpful because, as I'm sure you've observed, it's just impossible to talk about the history of philosophy without talking about the history of science. And so this provides some help in that regard.

He sees philosophy as having a two-fold task. He states this explicitly in the introduction to Process and Reality, his systematic work. The two-fold task of philosophy.

There is a critical task, and there is a speculative task. Now that's the case with philosophy generally in any regard. Criticism of speculative ideas.

Criticism of theoretical constructs to see if they are coherent, consistent, and empirically adequate. And incidentally, those are the criteria he always works with. Empirical adequacy, does it cover all relevant information, empirical adequacy? And rational coherence.

Not just logically consistent, but does it provide a unified and comprehensive scheme? Coherence. So critiquing is one of the things. And in relation to the history of science, it's the critiquing of scientific abstractions.

The critiquing of scientific abstractions. And you see that at work in the first four or five chapters of the book. He's critiquing the theoretical abstractions of mechanistic science.

What he calls mechanistic philosophy. The second speculative function, of course, is the positive function of philosophy. To propose more consistent, more empirically adequate speculative theories.

Extrapolating. Now, these two functions of philosophy are very characteristic of the way in which philosophers describe what they're doing. Whether an introduction to philosophy, texts, or whatever, for the first three decades of this century.

1900 to 1930, 1935, this is the way it was. What happened after 1935? The rise of logical positivism. Therefore, with a rejection of metaphysical speculation.

And so only the first function remained. Which gradually came to be spoken of as the analytic function. And so analytic philosophy.

The analysis of arguments, concepts, and theories for their logical structure. And empirical adequacy. But with the demise of logical positivism.

And all we have now is its vague ghost lurking behind in other disciplines than philosophy. It's died out in philosophy. With the demise of logical positivism, speculative metaphysics is now alive and well.

And some of you, I don't know if any of you are, but some of your colleagues are taking a seminar this quad on contemporary metaphysics. Very contemporary, you'll see. But in any case, this is the way philosophy was conceived in those early decades of this century.

Now, as you read into this book, Science and the Modern World, the first note that strikes you in that beginning chapter is what he calls the basic presumption of science. The basic presupposition of science. Which he calls the order of nature.

The order of nature. In the second chapter, it turns out that he's discussing the mathematical order of nature. It was the rise of modern mathematics that was particularly significant in the 17th century.

So the order of nature. You notice, I hope, that while he calls it a mathematical order, or if you like, a logical order, he also calls it an aesthetic order. Keep that in mind.

As I mentioned last time, he seems to have an aesthetic theory of value. That is to say, all values seem ultimately to reduce to aesthetic values. Truth is valued for its aesthetic satisfaction.

Goodness, moral value, contributes to the aesthetic harmony of the whole. It's important for that reason. So he has an aesthetic theory of value.

So he's saying in a sense that this is a value-laden order of nature. Those values are not simply utilitarian. Usefulness of things.

Value is not something that we create and add, bring to nature. Nature itself is value-laden. And so he speaks of the aesthetic order as being an ideal for the future.

Inasmuch as this is a process philosophy, the process is directional. What direction? To the achievement of value. That's ideal.

You see. So it is a value-achieving process. Laden with the possibility, the potential, but a value-achieving process, a teleological process.

And it's that notion of a value-achieving natural order that makes Whitehead so revolutionary in comparison with modern science and earlier philosophy. A value-achieving natural order. So you can anticipate that the general theme of the book will be to critique the kind of supposed natural order which is value-free, bare, blind fact, blind process, causal mechanism without rhyme or reason.

He's going to be critiquing that. And at the same time, tracing the developing case for the kind of teleological view that he has. Now, in both the critical and the speculative function, he has not only a set of criteria for judgment in terms of empirical adequacy and rational coherence, but he also has those.

But he has two points of reference. If you're talking of empirical adequacy, what sorts of experience are most significant? And his points of reference are, of course, developments in modern science. But he's perfectly aware that modern science is simply dealing with further scientific abstractions.

What makes the abstractions of modern science any better than the abstractions of mechanistic science? So it's not simply modern science. The other point of reference is what, again and again, is naïve experience, concrete experience. And that comes out in the kind of example that we were using in explaining his conception of the event.

Where the example was simply the concrete experience of perceiving, the perceptual event. Where his phenomenological description, yeah, you see Hegel's phenomenology, his phenomenological description of a self-conscious perceptual event, no, of a perceptual event in a self-conscious being, is the lens through which he is able to see everything else. You see, that's the paradigm.

Switch the metaphor. Now that's a case of concrete experience. And you'll find that again and again he recurs to concrete experience.

That is why he has that delightful chapter on the romantic reaction. It's loaded with poetry. You see? Because he takes it that poetry is dealing with concrete human experience, not with theoretical abstraction, you see, but it's capturing the experience.

And so he takes it that the romantic poets like Wordsworth and Shelley are reacting against that aesthetically sterile universe of mechanistic science. So his chapter is called The Romantic Reaction. Reaction against what? Well, it's the reaction against the sterility of that mechanistic worldview from the standpoint of what the romantics regard as concrete human experience, and Whitehead with them.

So if you think that romanticism died out with the 19th century, well, not in the case of Whitehead. Not in the case of a lot of others as well. But this comes through very plainly.

Now, let me illustrate that general tale that I've been telling. Turn, if you will, to page 18 in the book. Page 18.

Incidentally, he speaks in one place of Christianity as a religion in search of a metaphysics. A religion in search of a metaphysics. What he means is that the metaphysical systems which have been pressed into service are inadequate.

What Christianity needs is a more adequate metaphysic. And I think that granted his conception of Christianity, which you remember is that of the Galilean peasant. Remember that phrase? It's the Galilean Jesus.

Granted that conception of Christianity, he sees his metaphysics as the metaphysics for which the Christian religion may be looking. Which may account for the process theology that has come out of it. But in any case, look at page 17.

Did I say 17? Well, I'm saying 17 now anyway. About a third of the way down the page, there persists throughout the whole period, and he's talking about the 16th and 17th centuries, the fixed scientific cosmology which presupposes the ultimate fact of an irreducible root matter. Irreducible root matter.

That stuff. Something. You know not what.

Spread throughout space in a flux of configurations. In itself, such material is senseless, that is to say, unconscious, valueless, purposeless. It just does what it does following a fixed routine imposed by external relations, which don't spring from the nature of its being.

That phrase, external relations. Watch. Because an external relationship between A and B, as he says, does not spring from the nature of a thing's being.

In other words, they're artificial relationships imposed on A and B. Incidental. Which leave A and B essentially the same as they were before. The classic example of that is Descartes' mind-body relationship.

So the mind is a separate entity with its own function entirely separate from and able to function quite independently of the body with its mechanical functions. You see? So external relations. He's going to be arguing for internal relations, which obviously are the opposite of external relations.

So internal relations are relationships that pertain by virtue of the essential nature of A and B. You see, A has to be defined in terms of its relationships. That's what constitutes A. Yeah, what constitutes a servant, a servant, or a master, a master? You've heard of the master-servant relation, I think. What constitutes a servant, a servant, or a master, a master? But the relationship.

So he's picking up on Hegel's conception of internal relationships within a process. And he's going to be, as he says, transferring that into a naturalistic context. Okay, external relations.

It's this assumption of a valueless, purposeless, senseless matter following a fixed routine imposed by external relations, the mechanistic universe. It's this that I call scientific materialism. It's an assumption I'll challenge as being entirely unsuited to the scientific situation at which we've now arrived.

And you find that he immediately goes on to indict Descartes. Well, turn over to page 18, and halfway through the page, you have this. A little over halfway through the page.

The faith in the order of nature, which has made possible the growth of science, is a particular example of a deeper faith. This faith in the order of nature cannot be justified by inductive generalization. Why not? Well, you remember Hume's problem with induction? You see? The inductive generalization beyond present experience involves the principle of causation, of which we have no empirical evidence.

Well, he's going to come back to that later on. He anticipates it here. That faith in the order of nature cannot be justified by any inductive generalization.

It springs from direct inspection of the nature of things disclosed in our immediate present experience, concrete experience. That's where we get the idea of an order in nature. The fact that day succeeds day.

That your roommate is relentlessly the same. And so forth. There's no parting from your own shadow.

It's there all the time. I am I. To experience this faith is to know that in being ourselves, we are more than ourselves. To know that our experience, dim and fragmentary as it is, yet sounds the utmost depths of reality.

To know that detached details, merely in order to be themselves, demand that they should find themselves in a system of things. To know that this system includes the harmony of logical rationality, the order of nature, the harmony of aesthetic achievement, and there's that value achievement. To know that while the harmony of logic lies upon the universe as an iron necessity, the aesthetic harmony stands before it as a living ideal, moulding the general flux in its broken progress towards finer, subtler issues.

Hey, he waxes eloquent from time to time. Indeed, he does. Okay.

Page 54. Flash on to that. And you get it again.

Almost halfway through the page, in the context, he's talking about Newton's physics. Okay? And about Locke, who wrote with a knowledge of Newton's physics. He says, But the mind in apprehending also experiences sensations which, properly speaking, are qualities of mind only.

These sensations are projected by the mind so as to clothe appropriate bodies in external nature. Secondary qualities are subjective. Okay? Thus, the bodies are perceived as having qualities that in reality don't belong to them.

Qualities that are, in fact, purely the offspring of the mind. Thus, nature gets credit that should in truth be reserved for ourselves. Isn't that a cute way to put it? The rose gets credit for its scent, the nightingale for its song, and the sun for its radiance.

But according to Locke and the Newtonian tradition, the poets are entirely mistaken. No, according to Whitehead. The poets are mistaken.

They should address their lyrics to themselves and should turn them into odes of self-congratulation on the excellency of the human mind because nature is a dull affair, soundless, scentless, colorless, merely the hurrying of material endlessly, meaninglessly. He's talking here of aesthetic values. Nature is devoid of all aesthetic value if secondary qualities, the aesthetic qualities, color, smell, sound, if aesthetic qualities are subjective, then the world in itself has no aesthetic value.

It doesn't have any color, smell, or shape. And since you cook up the world of that by projecting your secondary qualities, you should congratulate the cook. Congratulate yourself.

That couldn't be much plainer than that. Well, you'll see that all the way through, that sort of thing, and I'll come back to it later. Okay, in Chapter 2, the chapter on mathematics, mathematics in the history of thought, he talks about the order of

nature, and of course, in the Platonic and Pythagorean tradition that was conceived to be a mathematical order, as it was in Descartes and much of modern science.

That's why a theoretical physicist I got to know a few years ago did his work with a slide rule, physics with a slide rule. Yes, because nature has a mathematical order. I don't know if he does it with a slide rule now.

I suspect not. He's probably dead long since. But even if he were alive, I suspect it would be some other computer than a slide rule.

But this notion of a mathematical order, of course, is what in the Greek tradition underlay the theory of forms, real universals, you see, so that what you have is a notion of an eternal range of order, an eternal mathematical order, an eternal logical order, whereas the things in this world have only vibratory existence. That's his phrase, vibratory existence, meaning that they come and go, vibratory existence. And you can get that in various ways.

You'll find him talking about it in talking of John Locke's notion of simple ideas, that is to say, atomistic ideas, so that those constituents of this so-called experience that John Locke talks about come, beep, beep, beep, disconnected, and we have to associate them with the psychological principles of association, you see, combining and separating ideas according to their resemblance, contiguity, whatever it is. What you get is an atomistic view of experience analogous to the atomistic view of the material world in the mechanistic scheme, where matter is composed of indivisible pellets. You see, the atom, our temnos, cannot be split.

Indivisible pellets of matter, that being pellets of bare, senseless matter, have no relationship to anything else except incidental spatial relationships. And in a uniform space and time, their own spatial, temporal identity doesn't mean a thing. It's only in a relationship that's external.

So he's talking of the atomistic nature of things, and these simple ideas come and go, vibratory existence. Later on, when he gets to talking about quantum physics, he comes back to this notion of vibratory existence because the quanta of energy in quantum physics come and go. And if you think of the life cycle of any organism, primitive or advanced, we come and go.

We're biodegradable. Well, the unit of reality in his theme is the event. Events come and go.

Vibratory existence. So this notion then develops. The question is whether this vibratory existence has any meaning or not.

And he points out that he is going to change the picture from a mechanistic picture of these indivisible little pellets, to an organic picture. Or if you like, an organismic picture. The model is not that of a machine, cause-effect mechanisms.

It's that of an organism. Where the parts of an organism are interdependent. They don't have a separate existence.

They're internally related in the sense that the one is defined in its relationship to something else. That's why it's important to watch what you eat. You see, because of the organic interrelatedness of everything essentially.

So he's going to have an organic model then, with internal relationships rather than a mechanistic model with external relationships. You'll find that he talks of atomism. An atomistic philosophy.

Yes, he has sort of an atomistic view of events. But they're atoms in an organic interrelationship with one another. Internally related to each other.

Growing out of one another. You see, you get the genetic notion that we were on last time. An event has a life cycle.

From the initial objective data, which gives rise to a new event, through to the final satisfaction, the culmination. Which then becomes the thesis for the next antithesis of further objective data, which precipitates another event. You see, like in Hegel, thesis, antithesis, synthesis.

And the synthesis then is the thesis for the next thesis, antithesis, synthesis. And the synthesis is a thesis for the next thesis, antithesis, synthesis. All right, Whitehead changes the vocabulary, but does the same thing.

So the satisfaction provides the thesis for the next event. It's a vibratory existence, but with internal relationships. Chapter three does deal with that problem of induction.

And after talking of the difference between a mechanistic model and an organismic model, the difference between atomism with external relationships and atomism with internal relationships, he can now address the problem of induction. Why is induction a problem? Precisely because the moments of experience are unrelated to one another. They are atoms of perception that have no bearing on future experience.

There are no internal relationships. So that the association of ideas by some sort of psychological process, there is nothing intrinsic to any one idea, which means that

something else is around the corner. In other words, it was the theory of external relations in Hume's atomistic view of ideas and impressions.

Which means that you do not, therefore, have any impression of the causal connection between experiences, ideas, or events. The causal connectedness would be a relationship that you don't experience. All you experience is constant conjunction, sequence.

A followed by B. Always A followed by B. Always A followed by B. But you don't see the relationship. The causal connection is unknown. And because the causal connection to what is as yet beyond present experience is unknown, how can you make inductive generalizations? How can you, by inductive reasoning, make predictions? So you have a problem with induction.

So the problem that he cited at the beginning, that the order of nature, the uniformity of nature, the orderedness of nature, is a presumption that's not empirically proven. And that statement at the beginning is simply a reference to Locke's problem. Now he knows why Locke had a problem.

Namely, the wrong scientific abstraction led him down a garden path, creating the problem. But, as he indicated, in concrete experience, in the immediacy of our own experience, there's no problem. So he talks then of this in terms of two fallacies.

You see, the critical function is trying to criticize the abstractions. And he finds two fallacies here, the fallacy of simple location and the fallacy of misplaced concreteness. Now, the fallacy of simple location is the assertion that things have fixed locations in space and time.

If there is a spatial field, things have fixed locations just like that. Simple location. That is to say, you think of their location as abstracted from everything else.

Whereas in reality, these locations are defined in terms of their relationship to other things. And by the time you bring the time dimension into the notion of spatial location, then obviously, there is no simple location. You see, in terms of the relationship between these three points, if in the process of time, this is moving that way and this is moving that way, and this is, say, stationary, then what you say about the relationship between point A and point B is going to be different at different times.

And what you say about C being in a relationship to A and B makes it even more confusing. It's just that there are no such things as simple locations because of movement in time. Because space is just a pattern of relationships.

Nothing more. You see, he's getting at the relativity of space-time. So then, the fallacy of simple location.

A second is the fallacy of misplaced concreteness. You see, concrete and abstract are the antitheses. Misplaced concreteness is when you give concrete existence to an abstraction.

You see, the idea of a fixed point is an abstraction that doesn't exist because everything is in motion. So the idea of a fixed point is an abstraction, a fallacy of misplaced concreteness. The idea of an event without internal relationships to other events is an abstraction.

So, in constructing a scheme in which you have events or atoms of that sort, misplaced concreteness. And there's nothing that could be said about you that's worse. From Whitehead's standpoint, you engage in the fallacy of simple location or the fallacy of misplaced abstraction.

Those are the unpardonable sins, philosophically. Yeah, and his reason for this is that they fail the test of empirical adequacy. Because abstractions of that sort are just not adequate to concrete experience.

You see, so that criterion of empirical adequacy, which he has in testing abstractions, comes into play in that way. Okay, on that topic, take a look at page 50. Page 50.

Bottom of the page, the new paragraph. Are you following all right? Okay. Bottom of the page, new paragraph.

This simple location of instantaneous material configurations. Simple location of instantaneous material configurations is what Bergson has protested against. Well, you've read a bit about Bergson and stuff.

Okay. Another process philosopher. As far as time is concerned, yes, Bergson stressed the relativity of time.

He protested against it so far as it's taken to be the fundamental fact of concrete nature. He calls it a distortion of nature due to the intellectual spatialization of things. I agree with Bergson.

But I don't agree that it's a vice necessary to the intellectual apprehension of nature. I thought it was. In subsequent lectures, I'll endeavor to show that this spatialization is the expression of more concrete facts under the guise of very abstract logical constructions.

There's an error, but it's merely the accidental error of mistaking the abstract for the concrete. An example of what I call the fallacy of misplaced concreteness. Then the next paragraph.

It's at once evident that the concept of simple location is going to make great difficulties for induction. Induction. Now, if in the location of configurations of matter throughout a stretch of time there is no inherent reference to other times, past or future, it immediately follows that nature within any period doesn't refer to nature at any other period.

Accordingly, induction is not based on anything that can be observed as inherent in nature. There's no broader reference than to the present. Thus, we cannot look to nature for the justification of our belief in any law, such as the law of gravitation.

The order of nature cannot be justified by the mere observation of nature. There's nothing in the present fact that inherently refers either to the past or the future. It looks, therefore, as though memory as well as induction would fail to find any justification within nature itself.

You may notice there is some sort of similarity between Hegel's literary style and Whitehead's. I was commenting to somebody the other day that, whereas in people like Locke and Descartes, you take a paragraph and you tend to have a succession of ideas that logically follow one from the other. Step, step, step, step.

In Hegel, what you have is a thesis statement at the beginning of the paragraph and then a mulling around in that concept for the rest of the paragraph. And that's what you have in Whitehead. It's the same sort of thing.

Well, then you have this business of misplaced concreteness. At the bottom of that page, he talks of two correlative categories of substance and quality, and calls these misplaced concreteness, too. Well, those of you who were here the last day before break, when we were talking about F.H. Bradley, why do you laugh at that one? Those of you who were here, yeah, not half of you, two-thirds of you were here when we were talking about F.H. Bradley.

F.H. Bradley explicitly rejects such dichotomies as sheer abstraction, substance quality, and so forth. In the preface to his Process and Reality, Whitehead lists all of the things that he takes to be sheer abstractions, and that list corresponds pretty well to Bradley's list. It's in that context that he says he is taking Bradley's metaphysics and translating it onto a naturalistic basis.

You see, the same abstractions. Though what they take to be the concrete reality is different. Okay.

Chapter 4 critiques the 18th-century thinking where the antithesis of mind and bare matter is another sheer abstraction. Another sheer abstraction. Whitehead, it turns out, has a double aspect theory so that any event has both its physical and its conceptual aspect.

Now you recognize that if you hark back to the analysis of an event. And in his analysis of an event, to the idea of prehension. Prehension.

Which is the way in which, in a process, objective data come into the act by what he calls physical prehension, physical causation. What in conscious perception is consciousness of a stimulus, of a physical stimulus? And in addition to that, it's the way in which eternal objects, those eternal possibilities, come into the act by conceptual prehension.

So that you have two kinds of prehension, physical and conceptual prehension. So that every event has these two sides to it. You see.

That is to say, it has on the one hand its internal relatedness to other events which are pending. Perhaps I should say impending, not impending, but impending. I-N.

It has that relationship. It also has a relationship to the logical possibilities that it poses. The conceptual prehension.

Which, in conscious thought, are conceived possibilities, thought possibilities, ideas. So in that sense, every event has these two aspects. Every event of human consciousness has those two aspects, the physical and the mental, as we call them.

Now, to say that that means there are two substances, as Descartes said, mind-body dualism, you see, is misplaced concreteness again. All we have empirically in concrete experience is the event and the two aspects of the event. The concretization of two things out of two aspects of an event invokes a substance-quality distinction, which is sheer abstraction.

So his critique goes that way. He, therefore, is critical of both Descartes' dualism and metaphysical materialism, where there is one substance, matter, one kind of substance, and metaphysical idealism, if that's an idealism of mind substance, spiritual substance, as in Berkeley. So any metaphysical substance he repudiates because concrete experience is about events.

We don't have an empirical basis for the other. Now it's also in Chapter 4 that he gets into the atomism business and the internal-external relationships a little bit more. You'll notice on page 64, 65 through to 72, 73, he points out that in talking of whether atoms or events, the 18th-century writers speak of the separative character of space and time.

So that things are separated in space, separated in time. That's involved in the atomism notion. Space and time separate us, one from another.

Now he maintains that's just a part of the story, not the whole. And insists that space and time, in addition to having a separative character, also have a prehensive character. Prehensive.

Yeah, that is to say, prehension, whether it's physical or whether it's conceptual, is of the very nature of an event. You see? So that space-time events are interrelated by physical prehension. Yeah.

It's of the very nature of things. The causal connectedness is intrinsic to the whole notion of an event. There wouldn't be an event without objective data in Troding.

So this sort of concern becomes extremely important. Look at 69 and 70. You get the initial notion of this on 64, but on 69 and 70, you get some other stuff that's related to this.

Let's see. The word perceive in our common usage is shot through with the notion of cognitive apprehension. So is the word apprehension, even with the adjective cognitive omitted.

So I use the word prehension for uncognitive apprehension. Apprehension, which may or may not be cognitive. Now, take Euphrano's last remark.

This is in one of Berkeley's writings. It's not plain, therefore, that neither the castle, the planet, nor the cloud which you see here is the real one which you suppose exists at a distance. Accordingly, there is prehension.

It's plain. That's the case. There's a prehension here in this place of things that have a reference to other places.

What you see here are the real ones that exist at a distance. Space is both separative and prehensive. Well, Berkeley's sentences contend that what constitutes the realization of natural entities is being perceived.

Yes, to be is to be perceived. You remember Berkeley? Well, we can substitute the concept that the realization, the reality, is a gathering of things into the unity of apprehension. To be is to prehend.

Not to be is to perceive or to be perceived, but to be is to prehend or to be prehended. So Berkeley had a clue, but he misread it. What is realized, the reality that comes into being, is the prehension, not the thing.

God's thinking doesn't make things. It makes prehensions. And then on 70, the end of that paragraph halfway down the page, the concrete fact is the process.

Its primary analysis is into the underlying activity of prehensions in the realized prehensive events. Each event is a matter of fact, an individual matter of fact, issuing from an individualization of substrate activity. Not substrate stuff, but activity.

Individualization does not mean substantial substance independence. So forth. Okay, I guess that'll do it on that.

Then you get the Romantic Reaction, Chapter 5. And I urge you to enjoy that. It's very significant, but after the poetry, the philosophy becomes more explicit even. So on pages 89 and 90, he gives three reasons for rejecting the subjective idealism of Berkeley.

Three reasons. About 12 lines down on 89, one reason arises from direct interrogation of our perceptual experience, naive experience. In sense experience, we know away from and beyond our own personality.

Yeah. What I see here now is something there. Here, there.

Concrete experience, you see. What he's appealing to there is what we'll run across in some of his contemporaries, like G.E. Moore, in the analytic tradition. The recognition of intentionality, or what is sometimes called a mental act, in perception.

Locke had said that in perception, the mind is passive. It's not a blank tablet just registering sense impressions, you see. Not so Whitehead, not so G.E. Moore, and others.

The mind is active. It's reaching out. We give attention to.

We refer to. We select within for attention, you see. The mental act of external reference, of spatial reference, of time reference is an ingredient of ordinary language, concrete experience.

Again, saying that Locke's description of experience and its constituents is a mistaken description. Just ain't true. All right, so you get that then on page 89.

The second reason at the bottom of 89 is that our historical knowledge tells us of ages past. When, as far as we can see, no living being existed on Earth. It tells of countless star systems.

In other words, there's a good reason for something more. And the third reason on page 90, about eight lines down, is based upon the instinct for action. Just as sense perception gives knowledge of what lies beyond the individual, so action seems to issue an instinct for self-transcendence.

Acting beyond my subjective ideas. Now, you say, yeah, but Berkeley knew all about this, and he had his explanation. Well, you see, here it seems to me his whitehead's argument is not in terms of empirical adequacy.

Berkeley covers this sort of data. The argument is in terms of rational coherence. You see, which gives the more obvious, unifying, meaning-giving explanation? An appeal to a coherence criterion, the truth.

So that the reality of other space-time entities, outside of any mind, seems to make much more sense. To fit much more naturally with the concrete experience that we have of history, of action, and of mental intentionality. That is the case of Berkeley's speculative abstractions.

So rational coherence. And then in 93 and 94, he began to get where he was going all the time, at the bottom of 93. Remembering the poetic rendering of our concrete experience, we see at once the element of value, of being valuable, of having value, of being an end in itself, of being something which is for its own sake, must not be omitted in any account of an event as the most concrete actual something.

Value is the word I use for the intrinsic reality of an event, the satisfaction achieved. Value is an element that permeates through and through the poetic view of nature. We've only to transfer to the very texture of realization in itself that value which we recognize so readily in terms of human life.

Next page. Value is the outcome of limitation. That is to say, of all the eternal possibilities, value is achieved when those possibilities are narrowed down to what is actualized.

So aesthetic attainment in terms of limitation. And if you read his chapter on God, which is a brief chapter, chapter 11, you'll find that that chapter treats God as the principle of limitation. The principle of limitation.

Look over to that, if you would. Page 178. He says at the beginning of the middle paragraph, There's a further element in the metaphysical situation.

A principle of limitation is required. Get that? A particular way is necessary. Some particularization in what is necessary.

Some principle of limitation. We must provide a ground for limitation that stands among the attributes of substantial activity. This attribute provides the limitation for which no reason can be given.

Why, amidst the boundless possibilities, is there one selected for actualization? All reason flows from this. God is the ultimate limitation. His existence is the ultimate irrationality in the sense that you can't give reasons for God's emergence.

It is the existence of God that is the reason for the actual entities emerging that do emerge. And the activity of God. God is the ultimate limitation.

For no reason can be given for just that limitation which it stands in his nature to impose. God is not concrete. He is the ground of concrete actuality.

No reason can be given for the nature of God because that nature is the ground of rationality. And you remember I talked of that in terms of what he says, not here but in his later works, of the threefold nature of God. God, in his primordial nature, is the unity of all conceptual possibilities.

God, in his consequent nature, is affected by all events which he prehends. God, in his superjective nature, is God holding out possibilities to new events in the world. And it's by that superjective nature that he's the principle of limitation.

Well, that's as far as we have time to go. The two chapters I omitted, seven and eight, have to do with electromagnetic field theory, quantum physics, and relativity theory, which are the scientific bases for the position he's taking. Because they talk of internal relationships.

They talk of the relativity of space-time. They talk of events rather than mechanistic things. So the combination of the two is concrete experience, modern science.

Ah, I miscalculated time. I wanted time for you to feed back on this.