

A History of Philosophy

61 Whitehead's Process Philosophy

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Well, in any case, we are going to be focusing this week on Whitehead, process philosophy, and process theology, because of the two process philosophers that Stumpf discusses in the same chapter, Bergson and Whitehead. I've chosen to focus on Whitehead simply because of his very powerful influence in the development of process theology. And we'll see the beginnings of it in Whitehead, and later on, I'll make some comments about further aspects of it.

But Whitehead is, without doubt, of these two the most influential in the second half of the 20th century. You haven't started reading Whitehead. I suppose that means you haven't started reading even Stumpf's chapter in which he introduces Whitehead.

Okay, he started as a mathematician at Cambridge. He later became a philosopher of science at the University of London. And at the age of 63, when he was thinking of retirement, he became a professor of philosophy at Harvard for, I think it was about 15 years.

And when he finally retired, he kept on living there in the shadow of Harvard Yard, and open house to students and faculty, and so conversations with Whitehead from that point on were recorded until he died, I think, at the age of 88. He was born in 1859, I think it was. Let me start by saying something about the influences that shaped his thinking.

And the first is Hegel's philosophy, which I call Hegel's evolutionary idealism. You figure the idealism in Hegel all right. Evolutionary, yes, because of his emphasis on historical development.

A number of the 19th-century idealists and their successors that we were talking about the week before break can be thought of as evolutionary idealists. Yes, they buy into the theory of evolution, natural selection, if you like, or various other forms of the theory of evolution. But they're not philosophical naturalists, metaphysical naturalists.

They're idealists. So that evolutionary theory is compatible with naturalism, compatible with idealism, according to these people. And their point is that while the underlying reality is of the nature of spirit, absolute spirit in the case of Hegel, there are various degrees to which that immaterial, free, creative spirit is being fully manifested in the phenomena of nature, human existence, and human history.

So that the evolutionary process, biological evolution, cultural evolution, the overall evolutionary process is understood in terms of the dialectical unfolding of the absolute, you see, to a point where that freedom of spirit becomes self-conscious rather than just implicit. But unconscious. So the self-conscious expression of free, creative spirit in culture is the zenith to which the evolutionary process moves.

Now, that kind of evolutionary thought was in an idealist context. And so consciousness is the key, the basic model. What is this unfolding self-consciousness? That's the key.

And obviously, unfolding self-consciousness is not a substance. Hegel doesn't think of spirit as an unchanging substance, but as a creative process. It's not substance, but process.

And so you have a change in the basic notion of reality from the changelessness of some basic stuff. Be it Thaly's water, or whatever, or Descartes' thinking thing, or whatever. From the unchanging substance to some sort of dialectical process, which has, as in Hegel, its overall logos structure, but no unchanging substance.

It's the structure of the process that's unchanging, not the stuff that's changing, you see. So that, in Hegel, translates into Whitehead's notion of process. And like Hegel, he does a phenomenology of the process.

That is to say, a phenomenology of consciousness. A descriptive account of what the process is like, of the structure of events that make up the process. And the process is not some kind of mechanistic thing, as in 18th-century science.

But the model is more organic than mechanistic. More like a growth process than a machine-like. And the ingredients are not atomistic in the sense of having no essential relationships to anything else.

But the ingredients are rather relationships than isolated atoms. So an entity is a relational unit rather than anything else. Well, that's what you get in the evolutionary idealism.

And all of this translates into Whitehead. Except for the idealism. You see, Whitehead says he's going to translate this over, transfer it over into a naturalistic metaphysic.

So he is not going to be an evolutionary idealist, but an evolutionary naturalist. At least, that's what he declares. Whether towards the end of his life, when the God concept begins to figure larger in his thought, whether that changes is another question.

But at least his intent in developing the metaphysic was an evolutionary naturalism. Actually, the Hegelian thinker who most influenced him was F.H. Bradley. And those of you who skipped out on the last day of class will forever be impoverished because that's when we talked about F.H. Bradley.

Whom Whitehead explicitly cites rather than Hegel. And in the Bradley material that you have in the Gardner anthology, you will notice that Bradley speaks of appearances and qualities and the substance quality distinction, and that sort of thing as being sheer abstraction. Not a concrete reality by itself.

And Whitehead agrees. So that essentially the stuff you have from Bradley in the anthology about the world of appearances being abstraction, not concrete reality, Whitehead would agree with. The thing he disagrees with in idealism, the thing he disagrees with is Bradley's idealism.

But otherwise, he's to take it over. Bradley maintains that the empiricism of the classic sort that came from John Locke is guilty of all sorts of faulty abstractions, the primary-secondary quality distinction. Well, even Bradley showed that it was an abstraction, not true even of actual experience.

The substance quality distinction. Well, I think Berkeley showed that it was an abstraction because how do you know what substance there is if all you know are the qualities? The something I know not what is an abstraction. The space-time distinction.

Well, certainly in terms of modern physics, it becomes an abstraction. Representational knowledge. Ideas that represent something else.

Abstraction. So all the way through, he sees the abstraction that there is. And when Bradley talks of there being degrees of reality in the world of appearances, varying degrees of reality in the world of appearances, that's precisely the language that Whitehead likes.

Varying degrees of appearance. And we'll pick up on that when we get down here and see his gradualism. There are various degrees to which what is the basic nature of things is explicit in the hierarchy of being.

Now, in that evolutionary idealism of the 19th century, however, there is one other note which isn't as perhaps explicit in Hegel, although we've mentioned it. We often tend to single it out, and that is the Romanticism of the 19th century. I'm not sure that Whitehead got this so much from Hegel as he did from Wordsworth.

His daughter wrote that there was a time in his life when he read Wordsworth as if it were the Bible. Read Wordsworth as if it were the Bible. She became the wife of, I think it was, an Episcopalian clergyman, so presumably she knew whereof she spoke.

But the Wordsworth themes run all the way through him. You'll pick them up in a chapter called The Romantic Reaction in Science and the Modern World, in which there is as much poetry as philosophy, including Wordsworth's poetry. Because he's seeing the philosophical content of the Romanticist reaction against the mechanistic science and the rationalism of the Enlightenment.

And all right, that's part of 19th-century idealism, but where Whitehead gets it from becomes pretty explicit. And I've found verbal identities between Whitehead's poems and some of the language in, did I say Whitehead's poems? Wordsworth's poems. And some of the language in Whitehead's process in reality, which is his long technical tome on metaphysics.

It's fascinating stuff. So if you want to read Whitehead extensively, I suggest you read Wordsworth's poems at the same time. It's very interesting.

All right, that's the first influence. The second influence from modern science. After all, he was first a mathematician and a scientist.

He cooperated with Bertrand Russell in, I think it was 1903, in a work which really introduced symbolic logic into the 20th century. A work called the Tractate. Bertrand Russell, no, not the Tractate, that's what led me, the Principia Mathematica.

The Principia Mathematica. I have a prompter over here, you'll see, to help me. The Principia Mathematica, Principles of Mathematics.

In which Russell and Whitehead, both of whom were teaching at Cambridge at the time, cooperated on the volume, essentially showing that mathematics is reducible to formal logic. And therefore introducing mathematical symbolism into formal logic. So as to eliminate the ambiguity of variables and make possible the formalized deductive systems that logicians like.

So he was first a mathematician who, like other mathematicians of the time, was very interested in logic and therefore in philosophy of science. And during his stay at the University of London, where he was teaching philosophy of science, he published three works in theoretical physics. Well, at least where theoretical physics borders on philosophy of science.

So, all right, he was very much into this. What in modern science influences philosophy? One, undoubtedly, is developmental biology. Both at the macro level, evolutionary theory, and at the micro level, genetics.

Developmental biology. He doesn't say as much about it as he does about physics. He was closer to physics.

And you'll find that in *Science in the Modern World*, he talks about the philosophical significance of three modern developments in physics. First of all, electromagnetic field theory. Electromagnetic field theory.

Whereby we think in terms of force fields rather than in terms simply of bodies with gravitational pull. Force fields. Second, quantum physics.

Where the basic units are, if you like, units of energy rather than solid pellets of matter. Quantum physics. And third, Einstein's theory of relativity, including space-time relativity, the general theory of relativity.

$E = mc^2$. Relativity theory. The professor who taught the Whitehead course I took in graduate school said that there were only two people who really understood the theory of relativity.

One was Einstein, the other was Whitehead. Now, whether there's been any improvement on that in the last 200 years or whatever it was, I don't know. But at least he seems to.

Are you awake? Okay. But at least he seems to understand the theory of relativity. And he weaves it into his metaphysics.

Remarkably. Now, notice what's happening. Here, he is a naturalist rather than an idealist.

Here, he is interested in modern physics. He's going, therefore, as a naturalist interested in modern science, to be a scientific realist. Taking science as telling us in a provisional way about reality.

The idealist had a phenomenalist view of science. Whitehead has a realist view of science. Yet both of them seem to have the same ends and purposes.

Namely, preserving a romanticized view of life and nature. And as we'll see later, insisting that there is no ultimate separation between fact and value. The world of nature is value-laden.

Now, the idealist wanted to say that and therefore rejected the scientific account of reality. Whitehead wants to say that, but he accepts the scientific account of reality. How come? Well, because of the change in modern science.

He maintains that developmental biology and energetic physics, relativity theory, enable us to say that the physical facts of mundane existence are loaded with value, meaning, and purpose. He's coming back to a teleological interpretation. Of the scientific universe.

So here's going to be a philosophical naturalist, who's going to find moral and aesthetic value inherent in things. Yeah, he talks a lot about science in his writings. He takes it that philosophy has a two-fold function with regard to science.

One is to critique scientific abstractions. There's that word abstraction again. The abstractions that take some theoretical notion like equality as the ultimate reality.

A mistaken abstraction. To critique those abstractions is part of the function of philosophy. And he critiques mechanistic science.

And you'll find that's the major function of the first six chapters of the book you're reading. But then the second function is to engage in what he calls flights of speculative imagination. Based on modern science.

In other words, to extrapolate from science into a speculative metaphysical scheme. And he likens those flights of speculative imagination to what plane travel was like in the 1920s. If you can imagine that.

Namely, you'd soar aloft above the clouds in this heady sort of world of speculative imagination up above the clouds. Periodically, to get your bearings in the world of fact, you'll drop down below the clouds and find where you are. I suppose today, if he were right, he'd say radar checks or something of that sort.

But in other words, flights of philosophical speculation, metaphysical speculation. But always taking off from and returning to the facts of science and ordinary experience. Concrete experience.

Because he's realistic about both. So, if you like, he has two sorts of empirical points of reference. Science, concrete experience.

Not the abstractions of an empiricist like Locke. But the sort of experience that we can phenomenologically describe introspectively. Self-consciousness is the window of reality.

Self-conscious introspection. So, you'll find that in the light of that, he is always denouncing certain fallacies. The fallacy of misplaced concreteness.

Uh-oh, I can't even spell. All right. The fallacy of misplaced concreteness and the fallacy of simple location.

Well, if concrete is the opposite of abstract, you can tell what the fallacy of misplaced concreteness is. Assigning concreteness to sheer abstraction. So, the fallacy of misplaced concreteness is the fallacy of taking abstractions to be real.

Assuming that what are really intellectual abstractions, theoretical abstractions, have concrete existence. Not so. The fallacy of misplaced concreteness.

And he's always accusing mechanistic science of that. Then the other is the fallacy of simple location. Of assuming that there are fixed points in a uniform space, uniform time of a Newtonian sort.

Simple location. So, all you have to do is call out the coordinates, and you can locate the thing. Failing to see that motion is in both place and time.

And the spatial coordinates change, varying with time. Relativity. The spatial relationship to time.

And consequently, the notion of a simple location, such as we use in geography, is just an abstraction that may be useful at some levels but quite useless at others. So, according to the influence of modern science. Now, the third one may surprise you.

The Alexandrian church fathers. And you might say, what is a philosophical naturalist doing trafficking with the Alexandrian church fathers? And he's trying, in fact, to buy their Lagos Doctrine. That's what he's doing, shopping there.

He wants to buy the Lagos Doctrine. He's very much impressed by Platonism. Particularly, the Middle Platonism.

Not so much just Plato. But the middle Platonism, which developed the Lagos concept in talking about the ordered structure of nature. Now, in order to get the point of this, you have to back up a little bit.

To begin with, just as a Hegelian would want to say that all of subsequent philosophy is a series of footnotes to Hegel, Whitehead, in one place, says that the whole history of philosophy is a series of footnotes to Plato. And you begin to see that the thing he appreciates about Hegel is the view of the processes of nature being basically of the nature of spirit, creative, but with a Lagos structure to those processes, a dialectical Lagos structure. But that's only one thing to help understand this.

The other is that he grew up in a parsonage. His father was an Episcopalian clergyman of evangelical persuasion in the southeast English town of Ramsgate, 20 miles from my home. So, as kids, we used to ride our bicycles over to Ramsgate fairly often.

And I think I knew the church, though I've not been back to check on it, where he was. Whitehead, then, grew up in this home. When he went off to Cambridge as an undergraduate, for a while he was reading theology avidly and then decided that wasn't for him.

He couldn't buy it. Sold all his theology books, turned his attention to mathematics, and, along with Bertrand Russell, was an undergraduate together. Later, however, in one of his later works that was published in the 1930s, a work called *Adventures of Ideas*, it's very plain that he has a new interest in theology and particularly in Origen and the Christian Platonists of Alexandria.

Origen, Clement, that tradition. Middle Platonism is there. And what appeals to him is the logos conception and the idea that in the emanations from God the good, and you remember they weren't clear about ex nihilo creation, in the emanations from God the good, that logos structure transfers to every finite manifestation, as in the Stoics, for whom there was the logos spermatikos, the seminal logos in every particular.

And it's that way of accounting for the orderedness of nature, the goodness of nature. God said it was good. The theme of Platonism is that being is good.

Not necessarily becoming, but being is good. And it's this which seems to appeal particularly as a way for finding a basis for value in a world of fact. The logos structure.

Okay, so those three influences. Let me pause there and get your feedback, questions, and clarification. Does that get you back in tune after spring break? Tuned in? Okay, clear enough on those three? All right.

There we are. All right, then our next task is to ask ourselves what this metaphysical scheme is. That he develops in flights of speculative imagination on the basis of concrete experience and the basis of modern science. Well, since we've said that he's a naturalist rather than an idealist, but he's profoundly influenced by those 19th-century idealists and particularly the Romanticist themes, how is he going to describe what is ultimate? Now, he doesn't say the ultimate reality as if the ultimate reality is one reality and there are many others as well.

You see, that would be a theist's language. The ultimate reality is God. There are all sorts of other lesser realities.

That's not Whitehead's language. The ultimate reality for Whitehead is something that pulses through everything. And the ultimate reality for him is, wouldn't you know it, creativity.

You say, that's not a thing. It's a property. Well, you're right, it's not a thing.

His is not a substance, metaphysic, to have the ultimate as a thing. Is creativity a property? No, not exactly. It's a process.

It's the process of the emergence of novelty. And that's what's ultimate in all of novelty. Creativity, novelty.

Now, be careful, this creativity, even when he develops his conception of God much more fully than at the beginning, this creativity is not God. It's not God. Well, to one who's read Bradley, that's no surprise, because for Bradley the absolute is not God either.

God is simply the highest manifestation of the absolute. And for Whitehead, God is simply the highest manifestation of creativity. Now, immediately, you begin to see why Whitehead's God is attractive to people in our Christian tradition.

You see, if God is the highest manifestation of creativity, well, it sounds like he could be seen as the creator. But, all right, the ultimate. Now, how are you going to describe the process of creativity? Well, obviously, the thing to do is to start with describing some creative event rather than describing creativity in total.

And just as for these idealists, what they're doing is looking through the lens of self-consciousness at the larger screens of reality. So, Whitehead then tries to look at some creative event that we know by immediate experience introspectively. So, the simplest thing with which to start, and seems to be the paradigm case for him all the way along, is the experience of sense perception.

The experience of sense perception. Now, notice that's precisely where Hegel begins his phenomenology of mind. Subjective spirit.

Sensation. And perception. And inasmuch as he is describing this experience of sense perception introspectively, what he's going to give us is a phenomenological description of sense perception.

The phenomenological method, like in Hegel. Phenomenological method. So what does he do then in describing sense perception? Well, he distinguishes in the perceptual experience three modes.

Perception in the mode of. Okay? The first is perception in the mode of causal efficacy. The second is perception in the mode of presentational immediacy.

The third is perception in the mode of symbolic reference. Now, as he develops this, as he does in a number of places, as he develops this, it's always in contrast to John Locke's theory of perception. Now, as John Locke describes sense perception, what comes first? Causal efficacy or ideas? Huh? In the phenomenology of it, in the consciousness of it, what comes first? Ideas.

That's the beginning place. In the consciousness of it. It's ideas.

And for Whitehead, that's utterly mistaken. It's false. He calls it the fallacy of the primacy of presentational immediacy.

He loves labeling things as fallacies. Seemed to be in vogue in the 1910s and 20s. The fallacy of giving primacy to presentational immediacy.

You can tell what presentational immediacy is. The idea that's immediately presented to the consciousness. The cognitive.

The presentational immediacy is the cognitive content, the idea. Whereas causal efficacy, obviously, if we're conscious of that, it's affective rather than cognitive consciousness. And the awareness of that is less vivid in sense perception, I mean in visual perception, than it is, for instance, in auditory things, where there's a loud noise and then you decipher what it is later.

Or in the sense of touch, where the recognition comes more slowly. But his point is that if we consider the perceiver to be the entire psychosomatic unity, the entire human organism, then from a phenomenological standpoint, in terms of consciousness of, the initial thing is the causal efficacy. There is some effect, causally, that is felt.

And, misled by the clarity of sense perception, Locke talked otherwise. But even in visual perception, if the light is sufficiently bright, it's felt first. The dazzling light.

So, the primacy in the mode of causal efficacy. Now, notice what that does. You see, in John Locke, the idea came first.

Then, the question. What caused it? And you have to have a cause-effect argument of a purely intellectual sort from the idea, which is thought, not felt, but thought, to what caused us to think the idea. That is to say, the idea is a representation.

Hopefully, it's a copy. And what it is out there that causes it, we don't know. We have to infer.

Is there a cause? We don't know. For sure. This, therefore, means that our knowledge of reality is always indirect.

It has to be logically inferred. But for Whitehead, if the causal efficacy is the thing, causal efficacy, you see, in that experience of causal efficacy, there is a direct knowledge of the cause affecting me. Like if Ryan were to stand up and I were to sock him on the jaw, he would have a direct awareness of the cause affecting him.

So, what we have then is, on this basis, what we have is, on this basis, what we have is a direct knowledge of the existence of a real object. That's how he can be a realist. You see, contrary to David Hume, that we only know constant conjunctions; he's arguing we do experience causal connections.

Hume is wrong. Hume stumbled over the fallacy of the primacy of presentational immediacy. You see, with a big label like that, you think he could have caught it.

But, no. He was so locked into the Lockean mode of thought. This awareness of causal efficacy has nothing to do with constant conjunctions.

How many times does Ryan have to be hit on the chin before he's aware? One, pretty surely, will do it. The immediacy of it. Presentational immediacy then follows.

An idea comes to mind. Now, there's no guarantee that the idea is correct. You know the way it is.

In the morning, you are awakened by a bell ringing, and you grab the alarm clock and say, Hello. You've got the wrong idea. But you've got an idea.

So, the presentational immediacy provides you with a hypothetical idea. No guarantees. And what you do is to take that idea and refer it to the cause of the stimulus.

Notice the idea is not a representation, a copy. It's a symbol. Where did he get that language? Straight from Bradley.

You see, Bradley, in his criticism of traditional empiricism, said ideas are not copies, representations. They are symbols that we use in thinking about things. So, we take the idea and use it as a symbol in referring to.

So, we have indirect knowledge of the essence of an object. The essence is what it is. The existence is that it is.

So, you have a direct awareness that something is, an indirect awareness of what it is. Now, notice what's involved, something else that's involved in this threefold business. What is it in these three that is the cause of the perceptual experience? What are the causes, what are the factors that create this experience of perception?

Well, first, there are objective data, objective givens that affect the present state of consciousness.

So, if you like, my daydreaming is disturbed by these causal givens. Causal stimuli are objective data that causally affect. Second, as the ideas develop, these are what he calls eternal possibilities.

What is this? It's the phone ringing at this hour in the night. You say it's a possibility. You are wrong.

It's the alarm clock. But the ideas are simply possibilities that come to mind. And the world is teeming with all sorts of possibilities.

Objective, logical possibilities that you think of. And then there is a third factor that makes the perceptual experience complete. Decision.

So you say hello and realize that you were wrong in your decision. But the decision, you see, is selecting from the eternal possibilities, the whole range of possibilities proposed by the stimulus. You select from that and go with it.

And it may turn out to be that the symbol you use in referring to the thing is one that works. Maybe it doesn't. But with experience, you begin to know what the symbol you want is, what will work.

Now, I said that perceptual experience is his paradigm event. The event of a perceptual experience. Lovely.

And his point is that in every experience, in every event, in the entire cosmic process, there is first causal efficacy. Real causal process. There is, secondly, the entertaining of possibilities that are presented as possibilities to the mind, ideas.

I've got an idea. What's an idea? It's a possibility. What's this that's happening? Well, I've got an idea.

Possibility. And there is the decision whereby, in the process, the lot is cast, and you go with one possibility. Now, you could diagram that, then in a more general way.

Diagram it like this. Here is the process to this point. At this point, there is some causal intrusion.

Okay. Whereupon all sorts of eternal possibilities converge that would be suggested by such a causal intrusion. So, from a range of an indefinite number of possibilities, there are some which are relevant in this particular instance.

And from these, a decision is made. You see, with these possibilities, you could go in that direction. Possibilities one, two, three.

You could go in that direction. You could go in that direction. You could go in that direction.

Corresponding to the various eternal possibilities. And choosing number two, full steam ahead, that direction. So there are always three constituent elements in every event in the cosmic process.

Objective causal givens. Inherent possibilities. Yes, natural process is loaded with possibilities for good, for bad, value-laden.

Yes. So you've got the objective causal given, you've got the eternal possibilities, and third, you've got the decision. Now, if you can grasp that, Whitehead's easy.

You see, Whitehead's basic question is, what's the source of these eternal possibilities? And because I've already cued you in that he's looking for a Lagos doctrine, what's the source? God, the Lagos. Who is not a creator in any sense of XD, hello. God isn't a causal force.

God is just the orderer, the providence, the Lagos. You see, that's why he's not a theist. Is he a deist? No, a deist even creates.

So he's not a theist, he's not a deist. Is he a pantheist? No, because there are other events than the supreme event, which is God. Well, what is he? It's Whitehead.

You see, he doesn't fit into classifications. Yeah, let me pause there. Do you see what he's doing? You'll find that these three elements, I'm going to say, figure large in his whole metaphysical scheme; the objective data are simply other events.

Other space-time events, which causally affect the present status of this stream. So there's an intersection of two causal streams. These eternal possibilities he calls eternal objects.

Not objects in the sense of substance, but in the sense of objects of thought, ideas. Ideas are objects of thought, thought objects. These are eternal objects.

Events he sometimes calls actual entities. So his metaphysic is a metaphysic of actual entities comprising a space-time process. With eternal objects, which are logical possibilities of what could be, and decisions which account for the individuality of things.

What makes this an individual perception, a particular perception? You see, what makes your life your individual life? Well, in that stream there is a decision, a decision, a decision, a decision. A decision which in every case brings what he calls satisfaction, not necessarily emotive satisfaction, but in the sense that the causal stimulus is assimilated in some way into the self. So it becomes an ingredient in the ongoing individuality.

So the process involves individual things causally related to other individual things. If you like, individual sub-processes are causally related to other individual sub-processes. Out of which there is room for all sorts of possibilities, creative possibilities.

Only some of which are actualized. And some of those are actualized by virtue of the decisions, by virtue of which the directions you go in the individual process. Now, this kind of event is the paradigm, and that's where we can understand gradualism.

Because while in perception it's a conscious thing, and you have consciousness of all three of those things, at other degrees of reality, it may not be conscious. So that there is a low-grade analog to decision, which is not conscious, in which there's nobody deciding, but it's the cut-off point, in which, in the confluence of events, a certain possibility is to be sure. Example.

In that beautiful weather we had the week before last, my daffodils, no, my tulips, beg pardon, my tulip bulbs in rows up the flower bed in the backyard were getting to be that high, literally. And my mind was filled with possibilities for a blaze of color in a few weeks earlier than ever before in the season. Now there are other possibilities, of course, that came to my mind.

But for the process of the development of my tulips, there were all sorts of possibilities. But then came the moment of decision, that cold snap last week. Which froze my tulips, so that as of now they are limp, dead, sagging to the ground.

Now there was a possibility all along. And the decisive moment was that deep frost, down to ten degrees one night. Exit my spring tulips.

And you've got all the same there. You have the given process, in which there are all sorts of objective data that affect them. And depending on the objective data that affect them, a whole range of possibilities.

Now, it's much more deterministic with tulips than it is with the conscious decisions that you and I make. He's not saying the decision is free on the part of the tulips. But he is saying that a week before, it was indeterminate and was the confluence of events.

That's all. So in every event you have that. It's the nature of the process.

Hey, we went over time, I'm sorry. Okay, we'll pick up on this next time.