Dwayne: Okay, we'll start with the first and most obvious question, what is physics? You have talked about the Golden Principle of physics. Tell us about that as well.

Gaede: Yeah, well, the Golden Principle.

First, physics is not the study of this or the study of that. Anybody can study and not be able to explain anything in science, let alone physics.

But science is not just the study of something. It's explaining something, especially as regards to physics. You must explain physical mechanisms, causes. That's what I think physics is about.

In order to explain causes, you need to have objects. And I think the bread and butter of physics is this word called object. And to me, it's stunning that no one has figured this out in mathematical physics.

Since the days of Newton, at least, no one has figured out that you need an object to do physics. Once you cover that stuff, you got to define the word object. And no one has defined the word object in a scientific way.

Not a single physics textbook on planet Earth begins by saying: “This is an object and this is what we're going to do with it”.

In other words, specifically defined keywords that you need for the foundations of physics. This is an object. This is distance, this is a location. This is what we mean by motion. These words have never been defined in a scientific way.

In fact, Newton said he didn't know what motion was.

And so, yes, I think physics is the study of causes and mechanism. It's not about math. It's not about measuring. It's not about equations.

It's about explaining a mechanism. You want to explain how a magnet works; you want to explain how gravity works.

In order to do that, you need objects and you need to define what an object is. So, in a nutshell, is my vision of physics.

Dwayne: Okay, so how would you define an object?

Gaede: Well, you know, if you look in the dictionary, you'll find definitions of ordinary speech, not scientific definitions. In other words, not ones that you can use consistently, rationally.

In order to use that word consistently, scientifically, rationally, you have to define it as that which has shape. That's the only property all objects have, whether imaginary objects or real objects. All of them have the same property, shape.

And what doesn't have shape as known as a concept, essentially.

Dwayne: Right, I agree. What is mathematics? And how does it relate to physical objects? For instance, how do numbers relate to physical objects?

Gaede: I love the question. No, I'm saying mathematics has nothing to do with physics or with science. And people immediately say: “Why? No, you're crazy. What do you mean, mathematics has nothing to do with science?”

We go back to the definitions and just follow them strictly. What is science about? What is physics about? Physics is about explaining phenomena, causes and mechanisms. We have no use for mathematics whatsoever.

So, in that sense, mathematics has absolutely nothing to do with physics or with science. If physics is about explaining causes and mechanisms.

Obviously, if you define physics as measurement, equations, predictions, observation, proof evidence, well, then yeah, then you can bring mathematics in.

What's happened is that the mathematicians have defined what science, what physics is, not the physicists. And a real genuine physicist defines physics a little differently than a mathematician. He views it as causes and mechanisms. For that, we have no use whatsoever for mathematics.

What does an equation do? Equations are just a description. And I'm not asking for a description. I'm asking for an explanation.

And for that, you need to define the words “explain” and “describe” and find out what the difference between those two words is. But a lot of people think they're synonyms.

Dwayne: Okay, so how would you describe these words and the difference between them?

Gaede: Well, a description is a listing of properties. Say that I want to describe a chair. I say it's got four legs, it's brown, it's big, it's small. I use adjectives and I qualify it. All I'm doing is describing. I haven't explained anything so far.

An explanation is revealing causes and mechanisms for phenomena. And saying that there was something which happened. You are going to say how it happened.

Meaning, not a description like “It fell down and it fell at 9.8 meters per second squared”.

No, that's not an explanation. You want to know what caused it to fall down and not up, for example. Or how does one magnet attract another?

I can't just say, well, it attracts at such and such speed at such and such distance. That's not an explanation. That's just the description

What I want is an experience. I want to know the mechanism. If I want to explain to you the mechanism, then I can use the following example, because I guess everybody can relate to it.

You have a pulley and you have a bucket. You have a rope tied to the bucket and the rope goes around the pulley, the little wheel. And you say well, how did he put the bucket up there? It was full of water, and how do you put the butter bucket up there?

I show the movie and I don't even have to explain anything. I can just show the movie. All the objects are all visible. And you see this guy pulls on the rope, the rope goes around the pulley, the wheel turns and the bucket goes up.

And so, everybody looks at that and they say, I understand how the bucket ended up there, he just pulled down on the rope.

And that is a mechanism everybody can understand. Because everything is visible in front of your very own eyes. And so, all you have to do is watch the movie and say, “I understand the mechanism”.

But we don't do that with magnets. We don't do that with gravity, we don't do that with light or with atomic behaviour. We don't do that with electricity.

What we say there oh, let me describe it for you. And in the case of gravity, they say mass. And mass is a concept, it is a mathematical concept.

I can't say mass did this or mass did that. It is like saying the weight of an elephant did this. The weight of an elephant squashed the ant.

No, it was the foot of the elephant that squashed the ant, not the weight. Weight has no power to do anything. Weight is a mathematical concept.

Likewise, mass is a mathematical concept. And you can't say energy did this or that either, because that's another mathematical concept.

The problem we have today is that we use these words like field, force and time. But nobody has defined these terms, which are obvious concepts.

And they use them as if they were physical objects. They tell you that time has warped. They tell you that they sent energy, that they transferred energy. They say that they moved the mass. That the force was strong, it was a very strong force. And so forth.

And so, we're using all these concepts as physical objects. We have gotten so used to it because they're all mathematical concepts. And its mathematicians who have defined science, not physicists.

In fact, if you go back to square one, we go back to Aristotle, he's the guy who wrote the first book of physics that we have today. The first extant book of physics. That's his eponymous book known as “Physics”.

Aristotle says, look, mathematicians do angles, numbers, that's mathematicians. Physicists, they do causes.

And a lot of people criticize this and they say “Well, Bill, you want to go back to the days of Aristotle”.

But you must understand the context. The context is not that we want to go back to Aristotle in the sense that maybe his scientific method was to be desired. The issue is that he had the right idea, physics explains causes. That's what we forgot.

There's nothing wrong with people doing experiments. There's nothing wrong with people doing math if they want. But when they come to the conference, they have to explain the mechanism. And that's what they forgot about.

They do a lot of math. They have a lot of descriptions, equations, numbers. They talk about infinity. They bring in all these fancy words like energy and field. And what we're missing is the explanation of the mechanism.

We still don't know how one magnet attracts another. Or how gravity works. And this is the issue.

That's why I go back to Aristotle only in the context of that business about causes and mechanisms.

Dwayne: What do you think the proper relationship between math and physics should be?

Gaede: Nothing. And again, I'm saying it's none. Because if and that is a big if, if we define physics as causes and mechanisms, we have no use for math. We have no use for equations.

An equation cannot tell me how Mother Nature does her secret tasks every day. How she does magnetism, how she does gravity.

Mathematics, an equation, can only describe it and say, look, it's done at such and such speeds, so much time, that sort of thing.

But it cannot tell me the cause. It cannot tell me the mechanism. And math has no power to do that.

Math has nothing to do with physics. That's why it's important to define what physics is about.

Dwayne: What do you say to those who say that it's all about prediction and not explaining stuff?

People do say that, of course. And I know you're going to disagree with that.

Gaede: It goes back to that same definition. Why? Why did the word prediction enter the world of science, the world of physics?

Well, because mathematics can predict. Yeah, nothing wrong with that. I mean, say that I use the example of the car going at 50 miles per hour. Okay. Well, you can predict that in one hour, it'll be 50 miles away. That's straightforward. Right?

And there's nothing wrong with any of that, it's predictable. The question is, we still don't have a mechanism. We don't know why the cheetah is running at 60 miles per hour or whatever. We don't have the mechanism, what we have is a description. And that's all that a prediction is, a prediction.

I'm not saying that. I'll give you an example. I can predict that tomorrow, at two o'clock, there's going to be an eclipse.

So, it turns out that you wait till tomorrow. And at two o'clock in the afternoon, you have an eclipse. So, I predicted the eclipse. What did I say? I say something's going to happen. What's going to happen? An eclipse.

So far, I have not explained the reason, the cause. All I have done is described that this is what's going to happen. I still don't know why it's going to happen. What caused it to happen? All I know is that it's going to happen. That's a description.

If you can explain why, what causes an eclipse, now you're talking about the past. You are no longer talking about a prediction, which has to do with a future. You're talking about an explanation. And you can only explain the consummated event.

What am I saying? I'm saying that this guy has already made the prediction and can explain why it's going to happen. He's already seen, he's already had some experience with this event. He saw it in a movie, maybe he's an astronomer and watched eclipses in the past.

So, he can explain why. He said well, you know, what's happening is the moon goes and between the Sun and the Earth. That's why the sky goes dark.

So now he's already had experience with it. We're talking about the past. We are talking about a consummated event that he's now regurgitating. That's why he can explain it.

If he cannot explain it, he can just predict and say it's going to happen. That is, he has a description. There is no explanation that up to that point, we have no mechanism.

Dwayne: Some people have accused you of being hostile towards math, would you like to comment on this?

Gaede: You know, I've done zillions of math courses in my life. So, I'm very well versed in math. I just abandon it because I realized math only gets in the way.

And so, I have no problem with math. I do understand math. I consider myself a pretty good mathematician. I have this natural knack to do the calculations in my head. I rarely use a calculator. You know, it's just one of those things I'm good at just by birth. I've always been mathematically inclined in that sense.

I just don't use math because I do physics now. And I see that math only gets in the way. And so, in that sense, I again go back to the definition of physics. What is physics about? It's about mechanisms and causes.

You have no use for math whatsoever. And people have a hard time understanding that. Because for 400 years, at least since the days of Newton, and even maybe before with Galileo, they've been harping on math, and they've been harping on measurement.

And I'm saying math and measurement have nothing to do with explanations of causes and mechanisms. That’s the relation.

Dwayne: Please tell us about your views on quantum theory and relativity. I think you have a lot to say about these.

Gaede: You have to keep in mind that since the 17th century so-called Scientific Revolution, that these people were genuine. At least as I understand it.

The original people you looked up in those days, such as Gilbert, Torricelli, Otto Von Guericke, all these people, they did experiments. And why did they do experiments?

Well, partly because they were studying nature. They were trying to figure out how this universe works. And they say, look, how interesting, look, this effect over here. Oh, look at static electricity. Oh, look at this light, it refracted and so on.

Okay, fine. I think they were originally trying to get to the bottom of things. They were trying to explain how this universe works in a rational way, in a way we can all understand. And again, I go back to making movies, you got to be able to visualize the mechanism.

I think they were interested in doing that. But they couldn't figure it out. And we lasted like that all the way through the 19th century, end of the 19th century, all the 1800s.

And that is when we came up with quantum, at the beginning of the 20th century. 1900 with Mr. Max Planck.

After that, we abandoned what we call classical mechanics, gradually and then more and more, through to these days. We abandoned classical mechanics, we abandoned rational mechanics.

People were trying to answer what causes things. How does this universe really work? And we got into quantum mechanics, and we got into general relativity. And what do they do?

Well, I say that the word quantum doesn't mean packet. It doesn't mean a bundle of energy. I say the word quantum means irrational. That's what it means every time someone says, “quantum mechanics”, he is saying “irrational mechanics”.

Why? Because all the explanations in quantum mechanics, without exception, are irrational. They all have the movement of concepts. That's one problem.

The other problem is probably just as bad. They tell you about mechanisms that are clearly irrational. A particle can be in two places at once. Now, what sense does that make?

The worst part is that the mathematicians who subscribe to quantum they say, oh, we know it is irrational.

But they say it in a different way. They say, we don't understand how quantum works, how that sub-atomic world works. They say, well, we just theorize and our theories are all irrational. Their physical interpretations, their mechanisms are all irrational.

A particle can be at two places at once. You have what is called entanglement, this particle over here can affect this other particle over there. And there's nothing in between it. It just does it by magic spirits or whatever in between. They have all these irrational explanations.

General Relativity, very similar. Why doesn't the Earth fly out of the solar system? Because you have this thing? This thing, very quotations on the word “thing”, called four-dimensional space-time. Four-dimensional? What is that? I can't picture it.

Oh, no, don't try to imagine four-dimensional space-time because nobody can. We have this three-dimensional mind. We are these puny little humans and we have no way of seeing this immense four-dimensional object or whatever it is that we're in.

And then you say, well hold it, time is a concept. And space, if it is equivalent to nothing, with vacuum, it's also a concept. And so, we have two concepts, and we make an object and we live within this unimaginable object.

And so again, both space, general relativity and quantum mechanics have only irrational explanations.

Black holes, dark matter, conveniently, invisible, conveniently, heavy, conveniently sprinkled wherever you need to explain something involving mass. And they say well, this is the way your universe works.

And that's when you start doubting their physical interpretations of these. I will call them disciplines so that I don't offend anyone by calling them religions. They don't have rational explanations.

And that's my take on quantum mechanics and general relativity. They have no rational explanations. We still don't understand how this universe works for all those invisible phenomena. For all those phenomena in which there's an invisible mediator; gravity, light, electricity and magnetism. We don't understand how they work.

General relativity and quantum mechanics will not help you. Because they can only offer you irrational explanations.

A particle can be at two places at once, this particle effects the other one from a distance. There's nothing in between except spirits. And space-time is not imaginable and is four-dimensional.

And so, it is all irrational, you cannot picture any of it. That's my take.

Dwayne: Yeah, it's basically a bunch of really, really bad mathematics. And that's about it. Do we even need to discuss string theory? That is, in the words of Pauli, “Not even wrong”.

Gaede: There are a couple things about string theory. The first thing is string theory has nothing to do with the rope model that I have.

And string theory is a mathematical theory, not a physical theory.

What string theory is trying to do, the reason it came to be, is that it tried to merge, to find some common ground in between quantum mechanics and general relativity.

General relativity has equations related to fields. And quantum mechanics has the Schrodinger equation which tells you something about this subatomic world where the electron can be found around the atom.

So, we have this micro world here with this macro world over here. And the equations are totally different, they describe different things. How do we get them together?

And so, string theory came in and says, well, we're going to try to put them together. And what string theory does, or what it's trying to do, is what is known as quantization of space-time.

They are trying to get the micro world of quantum mechanics into a point that is used to build four-dimensional space-time. Think of it as space-time. But we can't picture this whole thing. But what we can do is look at a little piece of space.

So, what is in this little piece? Well, let's take it all the way down to the tiniest region that we can imagine. And that's where quantum can be put in there because now this region can be created with quantum effects. And that's what they've tried to do.

Now, the first thing you need to understand about this is that space-time already was quantized. The bread and butter of space-time in that sense is the point. It's known as the event and the event is a point in space-time.

What does that mean? It means that you can locate the happening, the occurrence, the event, something that happened, within space.

It means that you can locate that with four coordinates, One of time and supposedly the three dimensions. The three physical dimensions, length, width, and height.

They are talking about coordinates. They are talking about longitude, latitude and altitude plus time. They are really talking about those four number lines, which they call four-dimensional space-time.

And that's how you locate a point. What is that point? That's the point that we're going to analyse with quantum mechanics. And that's what string theory is trying to do. It's trying to merge the world of the small with the world of the big.

And for this, they created the line. They went from the point to the line. You have the point. And you have the line.

What is the line? Well, a line is a point that's moving somewhere, hopefully in a straight line. And so, the bread and butter of string theory is the line.

Is it a three-dimensional string or something? No, it's a one-dimensional line. One dimensional? Are we talking about length, width height? Are we talking about longitude, latitude, altitude?

None of those. What they're talking about is a number line. They're saying that something moves and traces a path. Now they turn that path into a geometric line.

They say, okay, now this thing is one dimensional. It's not two or three dimensional. And we're going to deal with that line. And that's what we're going to construct our new math with.

And that's essentially what string theory does. That's what all the equations in string theory are about. They take those paths then and they build branes with that. And that's another monster. Nothing to do with physics.

Dwayne: Don't forget all your other 9 or 20 dimensions. Whatever all of that means. Well, we won't go into that.

Okay, now, good stuff.

Now on to some of your ideas. Tell us about the Rope Hypothesis. Tell us about some of the great mysteries or poorly understood phenomena that explains.

Gaede: With the rope model, I was able to explain two things to my satisfaction. One was light. And the other one was gravity. Gravity came like a second hint.

I had originally come up with my notion of gravity. And that was with all these lines. If two objects come together, assuming that all these lines connected every atom, then as the objects approached each other, these lines would fan out.

And when the objects got farther away from each other, the lines would come closer and act as one eventually, at a great distance. And I liked that concept.

Then I came up with a rope model separately. That was a separate train of thought. And, and that was that you have a rope. Here I am holding my famous rope.

And what is it? I am saying it is a torsion along the rope. And if you look at a torsion, you can call it a torque wave. It's a three-dimensional wave along a rope. Not a two-dimensional or a one-dimensional longitudinal wave. It's a three-dimensional wave.

What it is, is essentially a torsion. Along the three-dimensional object, the object is simply twisting, or torqueing in place.

And you can run the experiment at home. Just tie a rope to two walls or two posts or whatever. And you hang two clothespins. Very dangerous, very expensive experiment, right?

Take grandma's clothesline, just put two clothespins there, and you move one and the other one moves you can say instantaneously. It just moves and torsion is instantaneous.

What this tells you is that is why light is so fast. If light is a transverse wave, it's slow. If it's a longitudinal wave, it would be slow. If it's a torsion, it's the fastest thing you can imagine. And so that's one issue.

The other issue is that now we can explain Maxwell's equations. Because now you have what is known until today as a magnetic field, and then the electric field.

What they've been describing all these days is a magnetic thread. And an electric thread. These two threads are twined around each other. And they have confused that with two plane transverse waves.

And so, I'm replacing their model with a rope. I'm saying it's a physical rope that connects any two atoms. So, when one atom expands and contracts, it torques the rope. By torqueing the rope, the signal goes to the other atom.

The good thing about torsion is it travels both ways. So, both atoms receive the signal irrespective and they're constantly receiving that at the speed of light. Because again, torsion travels extremely fast.

And so, we can explain speed. We can explain other phenomena like c equals frequency times wavelength and the fact that frequency is inversely proportional to the wavelength.

The more, the longer the wave, the fewer links you have in a longer given length of rope. And the more you torque it, the shorter are your links, and the more links you have.

And then you have frequency times wavelength, which is equal to the constant known as the velocity of light, which is 300,000 kilometres per second. So, we can explain many things with it.

And, of course, I can also explain electricity and the merged electron shells. They the whole thing twirls, I call it a serpentine.

You have a whole bunch of atoms, you have molecules. But with atoms, it is easier to visualize. You have all these merged shells, electron shells. And when one twirls, the whole thing twirls.

And I'm saying that's what electricity is. When it does so it swings threads that comprise the rope around itself. And that's going to be the magnetic field, which goes at 90 degrees to the electricity.

So, you have electricity in one direction, and you have the threads moving around the other direction. That's going to be the magnetic field that causes a force on things. And so, it's a self-consistent model.

You can explain gravity, you can explain light, you can explain the magnetic field, you can explain electricity, all with the same model. It's just a different model out there.

And what I always try to emphasize is that the issue is not to try to convince people. The issue is for people to understand the mechanism, which I can illustrate.

I illustrate it, I show it there. What people want to believe that's their personal opinion. The issue is that they can look at it objectively and say, okay, I understand what he has proposed.

Whether you like it or not, whether it violates your religion, I don't know, that's your personal issue. But I can explain these different mechanisms, these invisible mechanisms with a single model.

Dwayne: What is the best experimental evidence for the hypothesis? Or what experiments. Would you like to see in the future if they had not been done yet?

Gaede: Okay. First, in science, we don't produce evidence for what I just said. The issue is not to try to convince people. And that's what evidence is used for.

A prosecutor comes to the court. And he tries to persuade the jury to vote for his side of the case. How does he do it? He presents evidence, he presents, maybe, expert testimony.

He presents material things. He presents the knife or whatever he's trying to prove about how the person was killed. He presents evidence. And the only purpose of evidence is to persuade.

We don't do that in science. We do that in religion. In science, we just present a mechanism, a cause. So, I want to clarify that point first.

Second, I'll say that, if you want evidence, the evidence is every experiment we've done today.

We have already made practically every experiment that we can think of out there. We've done the slit experiment, we've done polarization, the Compton Effect and the photoelectric effect. We have all these experiments already done.

Now we must explain them. And so, it's not an issue of evidence. It is what mechanism can you come up with to explain these different experiments that have already been done.

How can we explain them objectively? So that someone understands the mechanism and say, okay, I see what Mother Nature is doing here with all her invisible stuff. And all you want to do is explain it mechanistically so that people look at it objectively and say, okay, I understand it.

Doesn't mean you're going to believe it. It means you understand it. That's it, that's where science stuff dies, then after that, you have religion.

And then the final issue is that I have come up with a new experiment. One that distinguishes between the wave, the transverse wave and the rope. If light is a rope, it's not a transverse wave.

The transverse wave is simply a concept. There's no such thing as a wave. The transverse wave of quantum mechanics is a bunch of vectors, they only have magnitude and direction.

If you look closely at that wave that they always show you, you'll see arrows. What is each of those arrows?

Magnitude and direction. That is all it is. It's a mathematical concept. There is no standalone object I can put on the table called a transverse wave. No such thing. So, the rope model is different in that sense.

So, what experiment can we run? Well, I'm saying that there's one experiment that I don't think people have tried. I don't know anyone who's done it.

I've come up with this experiment. It's the slit in a vacuum. That's what I call it. You take the slit experiment and you put the whole contraption under vacuum.

Why? Because quantum mechanics will tell you that if you remove material from that chamber where you're going to do this slit experiment, the mean free path is going to increase. The photons now have nothing to bounce against because you removed all the matter that was in its way. So, what should you see at the end?

The slit experiment for those who are not familiar with it is where you run monochromatic light through two slits. And instead of seeing two lines on the screen, you see fringes, you see many lines.

And so, the question is how does Mother Nature do this magic? I'm saying, let's put that whole setup under vacuum. What happens if you put it under vacuum?

Now, we remove the matter from the chamber. That means the mean free path increases. And that means that now, according to quantum mechanics, the intensity should increase.

Why? Because there are more photons reaching the screen, reaching wherever you see the fringes. There should be more photons hitting that area and the intensity should increase. And you can measure that with a photodetector or multiplier or whatever.

The rope model says something different. It says that light is relayed from atom to atom. So that means if you remove atoms from the chamber, you're reducing the number of atoms that are relaying the signal to the screen. And therefore, the intensity should go down.

So, I think that would be an experiment that someone who has the equipment should run. And say, well, does light consist of little particles? If it consists of little particles and you remove all the obstacles, there should be a higher intensity.

The rope model says that all atoms are interconnected by a rope like mechanism. A rope, like mediator. And if you remove the atoms, they are still ropes crisscrossing the chamber.

But now you don't have that relay going to the screen. And the intensity should remain the same or drop.

And so that's the difference between those two. The experiment would, I think, decide between those two. But it has got to be done very carefully.

One thing you must be aware of is something about photomultipliers. I use them and they're designed to count blips as particles. And that's already against the rope model because it's already predetermined.

These devices they're already assuming a particle world. That's why they call it a photosensor. Because it senses particles, it treats every blip as a particle. And that's already against the rope model.

Dwayne: What kind of support does your role model have? Have you had any success in getting any academic support for your model?

I imagine because it disagrees with the mainstream ideas that this is hard. Would you like to comment?

Gaede: Yeah, there's no support whatsoever. Because people don't know about it. That's the problem.

And you can't get people to know about it. Because it's a qualitative type issue. I'm saying, look, we can explain this universe, at least one model can. And that's the rope model.

I can explain to you on the board how gravity works with this model. I can explain light, electricity, magnetism and I explain all this. And you don't have to take my word for it, you just have to watch the movie.

I'm not going to tell you, look, it's unimaginable. It's four-dimensional. You can't see it. It is zero-dimensional or one-dimensional, like in string theory.

No, I'm saying, look, I'm talking about a three-dimensional rope. Just like I'm seeing here. And it's invisible. Because it is very thin, very small. And so yeah, you can't see all this. But here is the mechanism. Do you understand the mechanism? So, I can illustrate what I'm talking about.

But what happens? That's a qualitative issue. And the mathematicians for the last hundred years are already on record for saying that there's no way you can explain the mechanism of this universe. They are already on record saying, no, this world works irrationally.

Or better yet, they don't like to say irrational, obviously. They say, look, it works in ways that we cannot understand. We cannot explain how this quantum world works.

We can describe it, look, here are the equations, here are the numbers, here are the measurements. But we don't know how Mother Nature does it.

How can a particle be at two places at once? I don't know, don't ask me just take math and you'll understand it. That's the issue.

And so, what happens, the people who control the literature, the publishing world, are all mathematicians. Essentially, people who've been brainwashed, generation after generation after generation. For the last hundred years.

So, what happens is that I submitted articles. I submitted to Science, I submitted to Nature. And I get a polite message back saying, well, you know, editorial space is limited, and blah, blah, blah. And we only have space for nonsense.

That is not what they said, but this is my interpretation.

We have space for black holes, magical black holes. We have space for dark matter, we have space for particles that travel backward in time, we have space for you to be in different universes. Alternative realities, that's what they call it. We have space for all that, but we don't have space for rational stuff.

And they think you are arrogant. Just because you think you can objectively answer how this universe works. They say that's impossible. Only God knows that.

And so, they don't publish qualitative stuff. You read any paper in the literature today, it's all math and totally crazy.

That's why none of the general public reads that nonsense. Because it's all just math taken to ridiculous levels. Today you read any of those papers it is just equations, equation, equation equations. You don't see any pictures in it.

So, you can’t understand that. You can't visualize anything, because there's nothing to visualize. Because they're not concerned about qualitative explanations. About causes about, mechanisms.

And so, when you submit a paper talking about qualitative stuff, they reject it immediately. Because they say, look, classical mechanics died in the 19th century. Where have you been during the last hundred years?

And so, the issue is that they won't publish anything that deals with qualitative stuff anymore. And, there's no way to get that in there.

So, then you get this irony, for example. Where people go to Quora, which is a site where you ask questions, and you try to get answers.

And 99.99% of the people go in there and ask questions of physics, ask questions like, how does a magnet work? How does gravity work? They want to see a qualitative explanation.

They don't realize, first, that they're asking the wrong people. Second, these people are saying in so many words that we don't understand how this works. You want to understand it, take math courses at the university level.

So, the person asked a question and they never get an answer. They say, I'm so puny, I don't understand any of this. And they say, thank God, we have all these mathematicians that do all the thinking for us. They understand all of it.

And the mathematicians are telling them in our face, we don't understand how this universe works. We can only describe. And so, we have this run-around. This is the world we live in.

Dwayne: God yeah. I look at some those questions on Quora. Yes, the answers are horrible! Well, if you want to call them answers.

Gaede: I mean, you won't get an answer from any of these people there. Whatever answer they give you is for sure, 120% irrational. In other words, you won't be able to picture it. Whether it's quantum or general relativity, you will not be able to picture it.

Because as soon as you picture it, they'll say, oh, you took the analogy too seriously, too literally. You know, you're not supposed to take it that way. This is a mathematical description.

And the only way I can put it into words is by giving you the warped space the canvas.

We can only give you the particle going backward in time.

We can paint the two particles on the screen and say look, two particles at two places at once.

And everybody looks and says are these two particles?

No, they're just one particle. But there are at two different locations. How can that be? Well, you got to take math, you understand.

And so, they give you an irrational explanation. They tell you, they don't understand, that they cannot explain in words. Because they can only express it mathematically through equations and numbers.

People are not listening to that. They're saying, oh, these people are so smart. You know, they understand all this that I don't, but they must understand it. Because look, they can express it in mathematics.

And that's what we have. That's the world today.

Dwayne: Are there any criticisms of the rope model, which you'd like to address here?

Gaede: Well, the rope model is a simple, too simple for people to really say no, I'm not going take it seriously. This is kindergarten stuff. And it is because physics is kindergarten stuff, I always say, I like this because it's simple.

I just came from a conference in Sweden. And I show these two little magnets in these plastic holders. I put them together and they stick together. Okay, this very simple experiment.

Now, this is the entire system. The entire system consists, essentially, of those two little pieces of metal. That's it. That is how simple this is.

Now, I asked people, do you really believe you need to take calculus at the university level? Or linear algebra or whatever? Do you need to take all this math to explain a simple system?

Here, we have just two magnets coming together. Yeah, that's it, there are two pieces of metal, they attract each other. You would think that all you need to do is figure out what invisible thing is here between these two magnets. I can already feel them pulling towards each other.

All you got to do in, in other words, is to make visible what you think Mother Nature has between those two magnets. And because that's the entire system. If these were the only two things in the universe, how does Mother Nature do this?

And the only way you're going to figure it out is by making the invisible, visible. You got to make whatever object Mother Nature is using there visible and then you'll understand the mechanism.

And I'm saying that in this case, it is done with threads. And that's a long story. But it has to do with the rope model.

You cannot do action at a distance. Unless you have some elongated medium, such as a rope. Then you can explain gravity. And you can explain some of these mechanisms.

If you're going to use particles, discrete particles, there's no way you can produce attraction, especially. I can't throw particles at you and pull you. I don't throw rocks at a donkey to pull. If I tie a rope around its neck and pull it then we can understand pull.

But it doesn't work by throwing rocks. I tried it you know, the poor donkey ends up with a lot of headaches, a lot of bumps.

Dwayne: Are there any good books we can read about the rope model?

Gaede: Well, let me tell you something. Yesterday, I was talking a little bit about the fact that I used to be a Marxist at one time. When I was the age of 17, I read Das Capital from Marx. And that's a monster. It's a big book.

A lot of people get scared when they see a book that thick. You got to be brave to read something like that.

Another book is the Bible. I read it three times. And it's a very thick book. And I love the Bible, you know. Not because I'm religious, but because I like it as a historical book.

And this is my book. Another monster. It says, “Why God Does Not Exist”.

You can see by the thickness, that it's a pretty thick book. It’s 514 pages. And what's the issue? The issue is here is the entire model of the rope.

Not everybody can read 514 pages. A lot of those have pictures. I have over 200 pictures because it's a very pictorial theory. You can look at the pictures and understand it pretty much. The words are there just to help you understand what you're looking at. I also have videos and so on.

But the point is that not everybody reads a 500-page book these days. Everybody wants the Twitter version, the one-liner. Tell me how this works and get it over with.

But some things are more complex. You got to know what neutron bombardment is. You need to understand what an object is. In fact, you need to lay the foundations of physics in order to reach some of these higher-level concepts.

And for that, you really need to read and people just want the quick version. But it doesn't always work that way.

So, “Why God Does Not Exist”. People focus on the word “God”. No, you should work, focus on the word “exist”. That's what the book is about.

Because physics is the science of existence. Physics only studies that which exists. And so, you have to understand what an object is and what exists means.

You have atheists and theists. They've been arguing for the last thousand years, about whether God exists or not. And nobody can define the word exist.

You look up the word “exist”. Nobody has a definition that you can use, nobody has a solid scientific definition. And so, I have to define the word “exists” for the purposes of physics. Because physics is the science of existence. And that's what the book is essentially about.

It talks about what exists, especially all this invisible stuff that we can't see. I'm saying that that's mediated by elongated objects that look like DNA.

But I think DNA copied its format. Its structural architecture, from the rope model. Which is what life is. I think it's all related.

Dwayne: Who are some of your favourite physicists? Least favourites?

Gaede: Well, you know, I'm saying that we don't have any physicists. What we have are mathematicians.

Yeah, you can go back in time and find people like Galileo and Newton and how about that Christian Huygens guy. And I think they were trying to get to the bottom of things. I think that they were trying to understand. And that's commendable.

You know, these guys were the first people who really came out of the Dark Ages. You could say they were trying to understand how this universe works.

And they thought through theories, they were brainstorming And, they wrote books and they criticized each other. But I think they were trying to get to the bottom of things.

And we lost that scientific spirit in the 20th century when we went into quantum. People like Niels Bohr and Heisenberg, they try to understand but they took us off on a totally bogus tangent.

And that's when they went in there and they said, look, let's try to imagine what's there in this little invisible world. And what is there? Particles.

And today, we've evolved from there. We say, well, what is a particle? And the guy says, Well, you know, it's not this corpuscle that we had in the days of classical mechanics, rational mechanics.

Now we have an irrational version of the corpuscle. It's a vibrating field. In other words, the famous corpuscle, the quantum corpuscle, is made out of verbs out of motion.

So, what is it that's moving?

Well, you know, it's just a verb. You see, the verb precedes the noun in quantum mechanics. And that's where we have a problem because it's all irrational.

You don't see the object. You are not supposed to see an object; you're supposed to understand it mathematically. But what we have is the vibration of an equation. You have this wave function. What is vibrating? The function? What the hell?

And so yeah, I don't have too many favourite so-called physicists. Because they aren’t physicists. See, physicists are guys who can explain a mechanism Not a guy who describes it mathematically.

And what we've done for at least the last hundred years is just describe.

And so, I don't consider any of them physicists. I dismiss them as mathematicians. I call math-magicians. They do everything with magic. Not even with magic, with irrational explanations.

Dwayne: Do you think physics has reached a dead end?

Gaede: Mathematical physics is at a dead end, from a conceptual point of view. They cannot explain, will never be able to explain it. They admit they cannot explain.

You can divide a lot of these people into two camps. One group says we will never be able to explain. We don't have the intelligence to understand how this universe works.

Because our minds are not built to understand it. Because they say that we are stuck in this limited three-dimensional world and the universe is actually four-dimensional, 526 dimensional, whatever.

It is beyond our comprehension. We will never be able to understand how this universe works.

And then there's the other group says. They say well, keep sending the money and we're going to investigate. Someday we will understand.

And so, I think that's how mathematical physics is divided today, into these two groups.

And it's just, they're at a dead end. In that sense, they, they cannot explain gravity. And they cannot merge the equations of general relativity with the equations of quantum mechanics. That's what string theory is trying to do.

So, what happens in that sense, they're at a dead end. They say, don't expect anything, because we cannot comprehend physics.

Once we figure out physics, how this universe works. We're done with physics. There's no more physics after that. Once we understand how Mother Nature runs, or Father Universe runs his shop, we're done.

We just understand it and it is okay. Now we understand what this universe is, how gravity is done, how light is done, how electricity is done, magnetism. So, we're done. Now we understand and we have no more physics.

After that we can shut down all the accelerator on Earth, we can shut down NASA, the European Space Agency and the Japanese space agency, Chinese, Indian, all of them.

Why? We're going nowhere. We're not going to inhabit the solar system, we're not going to expand into another planet, we're not going to terraform another planet, we're not going to go to another star. There's no possibility of any of that happening. We die here on earth.

And so again, I think we're just spending money and a lot of this stuff, partly to keep a lot of these mathematical physicists occupied, giving them a job.

But what are they doing? They're just telling us that we cannot figure this out. They cannot figure the problem out, that they don't have solutions. They do not have physical solutions; they have mathematical solutions.

So, in that sense, yeah, the “physics” the mathematical physicists have is at a dead end.

But, with a rope, the way I look at it, if that's the way the universe works, we're done. We know how the universe works mechanistically and there's no more science after that.

Once you figure that out, yeah, you can go into more detail and say, well, how does levitation work? Like you have one magnet floating over another?

You can say, well, this is a special case of magnetism. Yeah, then some people go in there and go into deeper little things that they want to try to explain.

But I think the main points are how a magnet attracts and how gravity works. Those I think are covered with a rope model. And it's covered from a mechanistic point of view, you understand it, you're done.

Whether you believe it or not, well, your challenge is to come up with an alternative model mechanistic model that replaces it. That fights against the rope model, without any magic.

And that's the challenge. But other than that, I'm saying that one way or the other physics is as it is at a dead end.

Dwayne: What do you make of black holes? After all, they claim to have taken a picture one. Well, to have made an image of one.

Gaede: Don't make me laugh. See, people are so much into black holes. And I know this because if you answer a question about black holes, you get a million hits.

You talk about how electricity works? You get one or two hits and nobody cares how electricity works. No one cares how one magnet attracts another.

But you talk about time, you talk about black holes, dark matter, man, everybody is an expert. Everybody knows everything about it.

So, what is a black hole?

Well, you got all these bright celebrities today, Brian Greene. He is a celebrity, a poster boy for mathematical physics. Michio Kaku and other big-name rising stars such as Sean Carroll, Lawrence Krauss.

All these are names are coming up that some someone or other has heard about here or there. Just about everyone has heard about one of these guys out there. These people, they're all black-holers. They're all dark energiers. They believe in all this stuff.

So, what is a black hole? What is dark matter? What is dark energy?

All these people have been interviewed. And they tell you, they don't know what a black hole is. And it's not surprising because a black hole is not something. It is not a what, a black hole is a concept. It's a mathematical concept.

It starts out with a star more massive than our Sun. That means it's got more matter than our son. Because it has so much matter, it compresses gravitationally. Okay, it's drawn into its centre.

A normal star, like our Sun, it doesn't have enough matter to squash it beyond a certain point. And it ends up being a little ball, dark ball sometimes, right?

But a black hole is a star that is so big, it just continues compressing. And listen carefully, it compresses until it crushes all matter out of existence. There is no matter.

What it does is crushes all matter into a point, a zero-dimensional volume. There is no structure left. But this structure has lots of mass.

So, think of it is an elephant which weighs sixty tons. So, you crush the elephant to a point. So that there's no more elephant. You got zero volume, but you still have the sixty tons.

And now with these six tons, you can move them around, you can do all kinds of magic.

Also, through magic, you can move ants around. How did the ant move? Well, it's the six tons here that are moving the ant over here. And you say by what physical mechanism, did it do it?

And that's where they fail because they said well, it's done through mass. You got to take a course in math at the university level to see how mass affects something at a distance.

But that's a description, you still haven't told me the mechanism of how a zero-dimensional ultra-massive object (if you can call it an object, it is really a concept) mechanically affects an ant over here.

And so, a black hole is not a physical object. You can't bring a standalone model of a black hole, put it in the middle of the room at the conference, for instance, and say that's a black hole and point to it. What are you going to point to? It is zero-dimensional.

And then of course, you got all those mathematicians who say, well, it's not really zero-dimensional. It's not really made of nothing.

But we got a problem with that because Mr. Chandrasekhar won the Nobel Prize for proving mathematically that a star beyond a certain weight, a certain amount of matter, collapses to a zero-dimensional point and it's all math. That's what he won the Nobel Prize for.

Now, these people want to turn it back to on you. They say that you misinterpret it, you didn't understand it.

There is nothing to understand. He won the Nobel Prize for saying that a black hole is a zero-dimensional volume that has tons of mass. That is what a black hole is. And so, we have a non-object, because it’s zero volume, its structure has been crushed out of existence.

And all we have is an is a mathematical concept. And that's what a black hole is. And that's why no one can tell you what a black hole is.

The punch line is that it is a circular argument. Because when you go to high school, college, they ask you what is mass? You ask can you define what mass is? Well, mass is the amount of matter or a measure of the amount of matter in an object.

And here, Mr. Chandrasekhar says that all matter has been crushed out of existence, but we still have mass. So, what is a black hole? It's a bunch of mass but no matter.

And then you got to define mass. What is mass? They have at least seven definitions of what mass is out there. You can use any one you want to make your case and you're okay. And nobody will challenge you.

Dwayne: I know right? Mass without mass. That is a big contradiction.

Gaede: Of course. It is no longer rational. What is rational? You know, it's important to define the word rational, because I'm saying that science is rational explanations. Of mechanisms, in the case of physics.

So, it's rational explanations. What does rational mean? I mean, rational, Bill, is that your opinion.

Well, we have to distinguish good and bad, right? Wrong, correct and correct, true, false, from rational, irrational. Rational, irrational have objective criteria.

And people say how can that possibly be? That's your opinion Bill! Yeah, there are rational criteria. And again, you can take this to whatever limit you want, but the rational criteria are as follows.

The first point, you cannot move an abstract concept in physics, for the purposes of physics. I cannot say that love moves mountains. Not literally, not in physics. I can say that a heart moves a mountain because a heart is a physical object and a mountain is a physical object.

I cannot say that a concept such as love, moves a mountain. I cannot say that I warped time with gravity. I cannot say that I pushed a mass. I cannot say that I transferred information or energy.

Mathematical physics only has irrational proposals because they're in the business of moving concepts.

And that's the first criteria, the first objective criteria for irrationality.

A second one is using undefined words. Or using words, inconsistently. You have a definition here, another one there.

Case in point, the word point. What is a point? Well, if you going into geometry, you go into mathematics, they'll say, well, the point is, what is the point?

The guy says, let me show you. And he takes the chalk and hits the blackboard and he says, that's a point. Okay, a dot. Well, not really, a point is really a location. A location?

Well, really, it's a set of coordinates. So, you take these two coordinates, whatever is there, wherever these two crisscross, that's what we call the point.

But what happened to the dot? Well, you're taking it too literally! You know, the point is not the dot! Don't look at the dot, that is there to represent the point!

And so, it's a circular argument, they're not using the term consistently. They are pointing to a dot; you can understand that because you can see it. And they say, well, but don't worry about the dot, that is just a pictorial representation of what a point is.

And so, it's a circular art, and they're not using their terms consistently.

And again, you know, you'll find that they don't have a definition for the word energy. They don't have a definition for the word mass. And they don't use these terms consistently. And that's another objective criterion for what is irrational.

And then the third one that I usually mention is that the theory doesn't follow from the hypothesis, from the assumptions.

The prosecutor, he presents a knife at the beginning of his case. Here is the knife! He calls it exhibit one. Plop, he puts it on our judges' desk.

And then he goes with his theory and he says the victim was poisoned to death.

What do you mean he was poisoned to death? You presented a knife and you talk about poison?

So, the theory doesn't fall from the assumption. And that's also irrational.

So, there are criteria for what is rational what is irrational in physics. Physical interpretations must be rational in order to be part of rational physics. Otherwise, we have irrational, I don't call it physics, I call it religion.

Dwayne: Okay, I got a question for one of my listeners here. How does rope theory explain the result of the Michelson-Morley experiment? It indicated that there was no medium through which we travel? The rope theory seems like a medium.

Gaede: Michelson Morley. Yeah, they did their ether experiment. I think their final one or the most important one was in 1887. What they did, they had this interferometer and they sent light in different directions.

They found out that in one direction, as well as in the other direction, it didn't matter which way the earth was moving, etc. There was no ether wind.

In other words, there was no background. Which is essentially, a bunch of particles. That's all the ether is. Everybody that mentions the word ether is referring to directly or indirectly, implicitly, to a bunch of particles that form like a background.

And the issue is that, yeah, there is no background in that sense. What you have, is atoms that are moving. I can't say through space because space is not a medium.

Space is absolutely nothing, vacuum, emptiness, I define it as that which has no shape. If something is that which has shape, nothing is its antithesis. It's that which has no shape.

And so now we can use these terms consistently. And so, there is no such thing as space. And therefore, there is no such thing as ether that fills space.

My universe, the one that I'm proposing through the rope model, is atoms interconnected by what I call electromagnetic ropes. That means there's this twined, double thread. Two threads that are twined and they connect every atom in the universe.

And what happens is the atom now moves slides along the rope as it eats rope. And, again, a picture's worth 1000 words. If you look at my model, if you look it up there, you'll see that the rope itself makes the atom.

So, think of sliding a beat along an abacus. The beat slides along the wire there, it doesn't eat up in the wire. In other words, it just slides along and the wire goes behind it.

And that's more or less what's happening with the rope model. The atom is made of these threads itself. And as the atom glides through the rope, the rope goes around it and behind it.

So, the atom is sliding along the ropes at the same time and it is pumping and torqueing the rope. There are several mechanisms there that are going on simultaneously.

And again, you would have to look at the model from a pictorial point of view. So that you understand it much better than merely having it explained.

So, what happens is if an atom slides along, of course, there's no ether, there's no resistance. Light always travels at the same speed no matter what direction, no matter what, no matter what material it goes through.

See, we have something called refractive index. And that's important in this context. The worldly wisdom today is that when light goes from a lighter medium, from a dense, less dense medium to a denser medium, like from air into glass or into water, we know it refracts.

You put a pencil in water and you see that the pencil is broken. That's called refraction. And how does Mother Nature do that little magic?

People say, well, very easily, light is traveling at a different speed in this denser medium.

That's the explanation we have today. And for this, we created a big table known as the refractive index. For every material, we have a different speed of light.

The rope model has a somewhat different proposal. It says look, light always travels at the same speed from atom to atom. It always travels at the same speed, anywhere in the universe between any two atoms.

I don't care what the atom belongs to. If it belongs to a crystal, to a metal, the water to air, it doesn't matter, light between any two atoms, always travels at 300,000 kilometres per second.

And that's the little equation c = frequency times wavelength. What changes is the frequency versus the wavelength. When the wavelength of it gets longer, there's less frequency. And when the frequency increases, the wavelength gets shorter.

And as the equation of a rope. Here's a limited amount of rope. I torque it very tight and you get lots of links. And each link is short.

Now I untorque it. Now every link has become longer, we have much fewer licks. In other words, less frequency, a greater wavelength. And that's the equation of light. Light always travels at c, at 300,000 kilometres per second.

So, all that happens between any two atoms, whether they go through a dense medium, light, medium, whatever, is that what we change is the frequency for the wave. There is no medium out there that retards light.

Retards the speed of light like a particle going through some kind of medium such as water or molasses. There is no such thing. It is not a particle trying to get through molasses.

What it is, is the torsion changes. In other words, if you expand the link, it becomes longer and you have fewer links.

And so, there is no ether out there that's acting as a molasses. Which is essentially what the Michelson Morley experiments (they did a series of experiments) essentially showed. They showed that there is no background, no bunch of particles.

The universe is not a sandbox where light has to go through different layers of sand. More dense sand here, less dense sand here and so on. And here you have a solid in here, you have a liquid in here, you have gas.

And so light has an easier time to go through gas and it has to go through a solid. Why? Only because what changes are the frequency and the wavelength in each one of these mediums.

There is no such thing as the refractive index. As I like to say, the refractive index is a Ptolemaic explanation for what light is doing.

And if you know who Ptolemy was, you'll know what I'm talking about.

Dwayne: Yeap. I have always thought that actually. Well, I think that was the last question. I think we will end it here for now. But we might do this again.

Gaede: Okay, well hopefully someone is enlightened a little bit and has the curiosity to go beyond what they've heard from the establishment. And they look into this. And they say, well, good.

You don't have to believe in me. All you have to do is understand. That's what I'm saying. And maybe they go out there and they understand and say, ok, this is interesting.

Yeah, at least it gives them a different vision of the universe as a minimum, I think because you won't find this in the official literature. None of this.