The Human Body Mind and Matter

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Date: 21 May 2015

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[0:00] Thank you Richard, it's lovely to have Richard introduce me and Richard is actually going to be one of four people who's going to join me at Cambridge. If anybody else wants to join me you're welcome, as long as you know the Lord Jesus Christ and you have a desire to witness on the open air, we'll be doing that, when is it Richard, next month?

June the 15th, it's coming up on us quickly. But Emily and who else is coming? Linda's coming, Linda Butters, Emily and there's somebody I've missed, Caleb, that's right, he's coming as well. So if there's anybody else who wants to join me you're welcome.
We also do other open airs at Oxford, Bournemouth and Canterbury. So if you're interested in United Beach Missions which of course operates here as you well know in the summer but it also does open air work under the banner Christian Answer, if you're interested go to the website www.ubm.org.uk and you'll find that there is a Christian Answer tab and John there who's just walked in will tell you where to go if you have problems with computers. John is much better at them than probably most. So there you go. In fact the people who are best at computers are those who are under 10. So I certainly do not qualify. But I'll tell you this, I've been converted twice. Says Gene. Converted twice? What would Peter say? Peter Bromley that is. I'll tell you for why. Because I was converted in 1969, right, when a dear man who's still alive lives near Bournemouth led me to the Lord Jesus Christ and said, Andy you need to admit that you're a sinner, you need to believe that Jesus died for you and Andy you need to commit your life to Christ. I was a church going sinner. I was religious sinner.
That's who I was, right? I was a choir boy but I was a sinner and I needed to be forgiven. And the Lord Jesus Christ opened my eyes in a flash as I realised that the secret to being a Christian is closing with Christ personally in a personal relationship. And that was in 1969 coming up 17. So you can work out my age and all the rest of it. So I don't mind about that. Okay. That was my conversion, right? And that's the one which really matters. It's taken me decades to realise that Windows is hopeless, right? And last year I had some pretty bad experiences with a Windows led PC. And I thought this is it. No more laptops made by whatever, you know, and powered by Windows. I'm going to an Apple Mac. So I was converted into an Apple Mac last year. And I'm very pleased. It's, it doesn't let me down while I'm generally,
I could happen to that I suppose. But it generally has never let me down while I'm doing a presentation. Whereas that's what happened with a Windows led PC. Now I've taught, I've entitled my talk, the human body, mind and matter. And as you can see, I've put up a little sort of impression of somebody about to do the 100 metre race course. But actually what I'm going to do is not quite what I may have done before you may be expecting. Let me just first of all read a verse and then I will explain what I'm going to do. It says in Psalm 139 verses 14 and 15, I will praise thee for I am fearfully and wonderfully made. Marvelous are thy works and that my soul knoweth right well. My substance was not hid from thee when I was made in secret and curiously wrought in the lowest parts of the earth.
[4:06] If you look at that phrase curiously wrought, it has the sense of embroidery, weaving and needlework. And I want to show you tonight in two issues that we are amazingly made.

Now, what I'm going to do is I'm going to talk to you mainly about hearing. I'm not going to primarily be talking about some of the other things which I'm sure Richard heard me on at Carlyle.
But I'm going to primarily talk about hearing. Then I will come to the issue which, if we have time, I'll try and explore to do with the way that mind and information interact, which may stretch you a bit, but it might be of interest to you. Because I'm shortly going to be doing a debate. I've done one already.

I think I've done it twice already. I'm doing a debate next week in Poland. And those of you who are Christians, who do pray for me, I very, very much value your prayers. Because a week today, I will be in Poland at the University of Lublin.
And there's already resistance in the university to have this debate. Would you pray for Professor Steve Taylor, who's another colleague in crime, colleague who speaks on creation? He's also going to be there.
[5:32] He's going to speak on the geology against an evolutionary geologist. I'm going to speak on the intricacy of the way we are made. And in particular, I'm going to address the issue of the mind and where it and the fact that we are not just brain cells, that there is actually something else as well. There has to be a soul, basically. That's really what I'm aiming at.

And it's very interesting when you debate people like that. They don't expect us to put a robust defence of the Christian view of what a human being is. Now, the websites, if you need them, this is a very useful website for getting a lot of information on creation.
So, once you've left today, you say, oh, I wish I got that. I wish I got the other. Well, I'm not saying that all the books that we have are necessarily in Answers in Genesis, but a good number of them are.
And my own ones can be ordered from this website. Just put andymackintosh.org. My website isn't particularly big, but it is gradually going to expand as I get time to look at it.
And then there's, don't forget this website, truthinscience.org.uk. We're just on the point of appointing a gentleman two days a week who will be able to sort of develop the Truth in Science work.
[6:58] And we're really thrilled, actually. I think the Lord has led us in the right direction to actually expand the work. It's becoming a real battleground in education.

And we want to show to people that there is a robust scientific defence of the creation position. And that's what I'm seeking to do in these last three nights. Seeking to show you that there is a coherent scientific defence.
I can't go back and immediately prove to you all that God created everything in the way that I'm sure you understand that I am saying that I believe, which is in Genesis.
But we can show that it does make sense. And in fact, often, I would say always, because there is some coherence in the evolutionary position, but it's rather superficial.
When you actually start digging, you say, well, you know, what are you saying? And I think you'll find that tonight is the case when we look at hearing, which is what I'm going to look at first. Hearing is just utterly stunning when you actually grasp this.
[8:04] When you actually consider what I'm now going to look at now, I hope most of you will be just completely blown away as to what is going on when you listen to something.

Remember my definitions from last night? Evolution, I'm not taking to mean adaptation. I accept that there is room for adaptation. In fact, the genetic information in most creatures has a richness in it, certainly in our ancestors.
Ancestral dogs, ancestral giraffes, ancestral mammoths, stroke elephants, ancestral mice, like the mouse that I saw the other day.
A lovely little mouse. I won't tell you why I saw it. But, you know, they've all come from an ancestral mouse. And, you know, the information would be there for field mice, for all sorts of white mice and all the other mice.
But basically, a mouse gives birth to a mouse. Okay? You got in the message. So that's basically what I'm saying. That is adaptation, but not evolution.
[9:08] The fact that you get white mice and field mice and all the other types of mice. Okay? They're mice. Just like when Darwin was on looking at the Galapagos Islands. He saw that there was one type of finch there.

There was another type of finch over here. Some of the finch had big beaks. Some of the finch had narrow beaks. Guess what? They were all finches. Okay? See, getting the point. That is not evolution in the way I am defining it.
You may use that term for... You may think in those terms for the word evolution. But in the talk that I'm giving, I'm reserving evolution for the idea that molecules became melons and then also became men.

Right? Or that protons became people and even prime ministers and even President Obama. That is what I'm reserving the term evolution for. Whereas I'm saying that scientific experiment indicates that codes are not to come from intelligence.
Just one other little point, which I made the other day. But I'm just going to repeat here. Remember I said, I think it was two talks ago when I talked about the bombardier beetle, that Theodore von Kármán, not a person you will know, and he's not particularly that well known, even in my discipline.
[10:23] But he made a very interesting observation that scientists study or discover the world as it is, but engineers create the world that never has been. In other words, the engineer has the ability to imagine and say, wow, if I put that together with this, I can make a space shuttle.

You know, or I can make an aeroplane, the Wright brothers. Or I can do this or I can do the other. In other words, they're full of imaginations where they actually translate their imaginations into real physics and hardware, which doesn't work initially.
And then eventually does work. And then, wow, you've got something new. Now, that is what we are missing in the evolutionary biology laboratories.
People are not grasping that it's one thing to have all the bits, but it's quite another thing to put them all together and make them work. If you ask the average evolutionary biologist, what does systems engineering mean, they haven't a clue.
That's the average one. Now, there may be some, like Tom Eisner, to be frank. I think he did understand a bit about the need for having everything working. I had some lovely discussions with him in the laboratory in Cornell.
[11:36] He was the one who basically understood most about the bombardier beetle. He didn't agree with me, but we had some interesting discussions. Now, there's another little verse which is relevant to our subject of hearing, which is the main thing I'm going to talk about tonight.

The hearing ear and the seeing eye, the Lord has made even both of them. Proverbs 20, verse 12. Proverbs is full of lots of beautiful nuggets.
It's like a great big box of gold nuggets. You pick up one and you pick up another. And Proverbs is full of them. That is so rich because it is saying to us, have a look at what I've done.
And that's what we're going to do tonight. We're going to look at what is sound. We're going to look about how we hear. And then I'm going to talk about irreducible complexity. I'm going to stretch your brains a little bit on the physics of sound.
It's not that complicated. Basically, you've got lots of molecules that we've got in the air at the moment. It's a lot of it is nitrogen. In fact, most of it's nitrogen here.
[12:45] But there's about a fifth of it is oxygen, which is absolutely essential for us to breathe. When there's a noise, the molecules start sort of bouncing together. And they eventually produce a wave which goes through the molecules as they bounce against each other.

Until eventually, you can see here that the bouncing is going through the air. Waves are perhaps a little bit more visible when we've got something like water.
Sound creates air molecule collisions. Now, when you've got water bouncing against molecules, it actually creates waves that you can see.
The trouble is that these waves are a little bit different to the ones I've just described. Because these waves are to do with bouncing up and down. I'm really talking about waves which go like this, which we call the technical term is longitudinal waves.
As it gets transverse waves. But you get the basic idea that there are waves going through the air. There are waves going through at the moment. If you took all the air out of this room, apart from the fact that it would kill me and you.
[13:55] But suppose you were still alive, right? And I tried to speak. You wouldn't be able to hear me. Because there would be no sound waves bouncing through the air.

Sound has a frequency. It is measured by, for some unknown reason. Well, it is known reason. It's a chap called Hertz who decided that this is the way we would do it. So we use HZ.
Which simply means the number of waves being going up and down or going back and forth per second. And so you just need to be aware of that. Not that you need to remember all this detail.
But if I'm actually drawing the wave going up and down. Mainly because it's very difficult to draw the wave like that. So we're plotting here, if you like.
The pressure going up and then the pressure going down. And the pressure goes up and then the pressure goes down again in a typical wave. And if it's three cycles per second, which is what HZ

means, then it looks like that.
[14:54] If it's six, it looks like that. I mean, I'm just giving you something fairly straightforward, really, in terms of the physics. But many of you won't be aware of that.

Don't get too hung up about all the detail here. But perhaps just remember this bit. As I'm speaking, I'm using a frequency which is somewhere in the region of 400, 500, right up to about 4000, maybe even 5000, 6000.
OK, so I'm using a frequency range. And if we chopped off the top frequencies, you would just hear a burbling noise.
But you wouldn't actually hear my voice. You certainly, if you're on the telephone, you sometimes struggle to say, who is that speaking? Do you know why you're struggling?
Because the telephone line doesn't allow all the frequencies to go down the line. So that's what the problem is when you're on the telephone. Because the top frequencies, which are the important ones, which tell me, ah, it's John who was speaking to me.
[16:05] Oh, no, it's not John. It was Anne, right? Well, the difference is because Anne's got a slightly different, in fact, quite a lot of difference. Isn't that true, Anne?

Apart from the fact that you're a different size, but we're not talking about that. But the way you talk is different, doesn't it? Because obviously a lady's voice tends to be much further up here than a fellow's voice, like Paul.
Where is he? Paul the great singer. Where are you, Paul? Paul! Yeah, when you start singing, you're down here. Oh, yeah. So we know Paul's voice.
So his will carry over a telephone much better than a high-pitched voice. Anyway, that's another point. Point. And of course, there is amplitude. When you've got amplitude, you're just talking about how much you are raising your voice.
Oh, don't get very, very loud. Right? You can still be at the same frequency, but having a much higher amplitude. Don't worry too much about this, but I'm going to make a point concerning our limits as to how we hear.
[17:08] Okay? Normal speech that I'm using now will be somewhere in the region of 20 newtons per meter squared, which we call a Pascal, after the gentleman who gave us a lot of the information about pressure.

It's about, the pressure in this room is about 100,000 pascals, right? That's just the level pressure. And we would therefore, the technical bit is that you've got about 300 on top. Now, this is talking about oscillating pressure, okay?
But it's amazing that the ear is so sensitive that if I stand on this bit of paper, the ear is sensitive to that change in pressure.
When I'm speaking, the number of pascals, if you see there, is tiny compared with the actual atmospheric pressure in the room.
[18:12] Pressure is force per unit area, okay? It's the amount of force that all the molecules are exerting against each other, right? And as you go up a mountain, the amount of force gets less and less and less and less and less, right?

Until you go up to the top of Everest, you're going to need oxygen to help you because you won't have enough pressure there in order to keep alive. So, as you go up, the pressure changes.
And that's the atmospheric pressure. But the ear is able to sense a change in pressure. So, you only need a slight change in pressure, which is oscillating, for you to be able to hear.
So, how do we hear? Well, we've got ears. Did you know that? Well, of course you did. We've got ears. You've got an outer part.
You've got a middle part. And you've got an inner part. We're going to look at that now. Now, the outer part is made of an ear flap. You've got two.
[19:14] At least you should have. There was a famous person who actually got one of his ears chopped off and the Lord put the ear back on again. But the fact that you have two means that you can sense where the noise is coming from.

So, we get stereo ear hearing. I'm going to say ear again. Stereo hearing. But there's something else here, which is really quite amazing, which we still haven't understood properly.
And that is that you've got all these folds and crevices, which seem to be for actually collecting the sound and pushing it down this ear canal.

Let's just consider that ear canal for a moment. The outer ear collects the sound and it puts the sound down the ear such that we can hear.
And as I've already said, the fact that we have two ears means that we can work out where the noise is coming from. In fact, owls have asymmetric ears.
[20:21] Did you know that? It has two eyes looking forward, which is unusual for a bird, but some birds do have that. But its ears are actually behind those feathers.

And one is up here and one is just further down like that. So, they can actually sense where the sound is coming from laterally and also vertically.
And they also have a very silent flight, which is another matter. Now, let me just talk briefly about resonance. You say, what on earth is resonance? Well, next time you have a bath, not a shower, but next time you have a bath, right, you try this motion of moving your hand in the middle of the bath, right?
I used to do it as a child and I got told off for it. Because if you get your motion just at the right frequency, you can get the water to go with you.
And you can just, with a slight motion, push the water over the edge of the bath, which is what I got told off for doing. But I did think it was rather clever. Because that is resonance.
[21:34] Once you get the natural frequency of the bath, you only need just a tiny little movement. And you can start off very, very tiny. And before you know where you are, you've got massive movements of water going up and down the bath.

Well, that's what resonance is. Just to give you an example of this. This, of course, is what I'm talking about here. That sound waves come in and they have, if they happen to hit the natural frequency of a shape, then you've got resonance.
And just to illustrate this, if you get an old Coke bottle, that's probably a bit old-fashioned now, but if you, you could do it with a plastic bottle, I guess. But if you get the, if you run your finger over the top of a glass, you know that you can get it to make a noise.
We just wet it a bit, right? Just run it over the glass. You can get it to sing. And if you do that enough, you know, and you really get the sound going, you can actually break the glass. And this, these two illustrate it.
This is the famous resonance of the bridge. What was it? The Tacoma Bridge. I can't remember which one it was called. Is that the Tacoma Bridge? Tacoma Narrows. Tacoma Narrows, that's right. That eventually collapsed, and as you can see, the glass broke.
[22:49] Now, interestingly, you've got resonance in the outer ear. Do you think it's just a hole? No, it's not just a hole. It's small, and, but it's not, if you put your smallest finger there, you still can't get it down there, which is not a bad thing, actually, because you actually could damage your ear quite badly.

And would you believe it? That roughly one inch long tube is just right for resonating to the sound of human speech.
Human speech, as I said earlier, is in the region of 4,000 cycles per second. It actually has got a lot lower bits as well, but that's not where the problem is, because those lower vibrations, when you hear a lorry going by, you have no problem hearing that.
The problem is always hearing the higher frequencies, right? And your ear resonates with the higher frequencies, okay? So you have no problem hearing the trundle of the rumble of sound, which is coming from me, but what some of you, and it's no fault of yours, your own, but what some of you may have difficulty with, particularly when you're getting old, like over 20, did you know that your hearing begins to deteriorate?
In fact, it even deteriorates, less than that. You're beginning to lose the upper frequencies, and you need to have all the help to hear the higher frequencies, and that is designed for that.
[24:33] Let's come to the middle ear. The middle ear has an amazing structure. This just blows your mind away before we even get to the most complicated bit, which is still coming, right?

But this is pretty amazing. We've got three little bones in there which are connected to the eardrum. The eardrum is what is going to initially vibrate.
Remember that you've got resonance with the tube which the sound has come down, so it naturally wants to resonate at about 4,000 cycles per second, which is just right for human speech.
Hardly surprising because we're dealing with the human ear, right? Now, actually, I'm primarily dealing with here all mammals. So I need to be fair to the evolutionist.

All mammals have this system as well. However, their tubes are different leading up to the eardrum, and their hearing will vary.
[25:39] It won't be in the same range as our range. We need to do more research on this, and I haven't yet worked out all the lengths of all the other creatures, but I know a cat will hear right up to 100,000 cycles per second.

A dog will hear right up to 40,000 cycles per second. We hear up to 20,000 cycles per second. Now, there's a certain person in this room who blows a whistle, and he blows a whistle at about, I think it's in the region of 10,000 cycles per second.
Actually, that person could get a dog whistle, but I don't think it would work because he uses it to call his wife. But you'll have to find out afterwards who it is, but I'm sure some of you might guess. But I was wondering whether he might begin to get a dog whistle, but the problem is the dog whistle wouldn't work because his poor wife wouldn't be able to hear it, and so his team still wouldn't be on the table.
So we've got an eardrum here, and the eardrum vibrates, right? It vibrates at a definite frequency, and that frequency, as I said, is somewhere in the region of 4,000 cycles per second.
[27:00] Now, there is three little bones behind here. One of them's the hammer, right, which is attached to the eardrum. The eardrum's vibrating, and normally when you're going to get a drum to vibrate, you've got a stick, haven't you?

You bang the drum, and it vibrates. This time, you've got to think of this in reverse. The vibration is already happening because the airways are coming in, you know, and pushing against the drum, the membrane, and you've got what really looks like a drumstick behind it, but it is attached, and this bone is moving.
Then it actually moves against another bone, which is separate but slightly attached, called the anvil, and then that anvil is connected, but it's hinged, really, to another bone called the stirrup, or the stapes.
Now, this is just amazing because this is shaped exactly right such that when this is moving, it actually pushes against this anvil bone, or the incas bone is the technical term for it, so it does this motion.
This bone is moving like that. This bone moves in sympathy, but as a result of the motion of this bone, this moves an awful lot more than that bone, and there is a definite reason for that because this stirrup, because it looks like a horse's stirrup here, a saddle, this moves in now a lot greater distance, and this moves into liquid.
[28:41] We're shortly coming to liquid. Now, this is really stunning because the evolutionist tells you the jawbone of a reptile gradually moved and became these three bones, which never grow in a mammal.

They are the same size as when you were born as a baby. They're the only bones in mammals which never grow. It's the three little bones in the ear.
And yet the evolutionist insists that the jawbone of something like a crocodile, whatever reptile they're thinking of, and reptiles have a different jaw arrangement to mammals, and they say that these jawbones moved and became the three little bones in the mammalian ear.
Do you know, I think that story is a wonderful story, but it isn't true. My engineering mind tells me that is just not going to be the case because it's one thing to have the little bits.
It's quite another to shape them and to make something which wasn't there before. Do you remember what I said about von Karman? Engineering is making something which wasn't there before.
[30:11] It's not just describing something and saying, oh, this changed into that. That's waving the evolutionary magic wand. We're not interested in magic wands.

We're interested in hard engineering facts. That's what we need in order to understand what, to be frank, is an engineering system, but in a living creature, which is us.
Remember, these are the bones which never change size. Sorry, I've only got a picture here of an American coin, but this is a five-cent coin, which, as you can see, these bones are utterly tiny.
Now we're going to come to the inner ear. Now, the inner ear is full of liquid. It's not water, but think of it like water. If I actually have a moving surface, which is going to cause pressure on the water inside, and remember this stirrup is going in and out, then we need to address a particularly important point.

Let me ask you whether any of you can guess what it might be. I talked about sound going in air as pushing the molecules together, and then they push apart again.
[31:31] And it does this all the way to Martin's ear, right? Oh, and he hears the sound, okay? That's what's going on between my voice, my larynx, and the ear when he hears my voice.

But we've got an issue, because we're now going to go into liquid. Does anybody know what the difference is, essentially, between any gas and liquid to do with pressure?
Anybody spotted an issue? Peter? You could compress a gas, but you can't compress a gas. Exactly! Bang on! Brilliant! You must have done physics as well as theology at university. Wonderful. That's exactly the issue. Now, when you are an engineer, you know instantaneously when something has got brilliant engineering.
It's when you see the detail which takes account of these types of issues. And now you're going to be blown over by what the great designer has done. This cochlea is full of liquid, right?
[32:42] Now, it's called cochlea because it looks like a cockle shell, but actually we're going to open it out in a moment, and you're going to see something amazing, even more so in a moment. But I'm just dealing with these ossicle bones, right?

Now, you're going to see these moving. This is a very old 1940s whatever film. So I've taken the sound off because I just... Well, you've still got a very old electric bell. Now, can you see?
This is the first bone moving, right? This is the anvil bone, and this is the stirrup. Now, notice that the stirrup, in terms of its amplitude, is moving more than the first bone, right, that I mentioned, which was attached to the hammer.
Now, the hammer is moving a small amount, but the stirrup is moving a much larger amount. That is being amplified by this anvil bone, and the shape of that anvil bone is vital.
Roughly, the amount of energy used is the area times the amplitude, or if you like, the width times the amplitude.
[33:45] And roughly, the width times the amplitude here is approximately the same as the width there times that larger amplitude. Why do we need a larger amplitude? Because we're moving into water.

Not water, into liquid, but think of it as water. Now, do you see? There is another membrane moving. This is the oval window, but this is what's called the circular window.
They're mentioned up here as well. The circular membrane is absolutely essential because the liquid is incompressible. Let me illustrate, in case you still don't understand this point, because I realise that I'm stretching some of you a bit.
Get a bicycle pump. If I had one, I should have brought one with me. And I must do that when I do this talk. I always forget to think of ways of illustrating. But I'll talk about this illustration.
Get a bicycle pump, right? Put your finger over the end. John, you'd love this one, because you'll love the next bit that I'm going to talk about. Right? You put your finger over the end, right? And you squeeze the pump.
[34:46] You'd be able to put the handle in, wouldn't you? Right? Now, put the handle in. Get a bucket of water. Pull in the water, right? Now you've got a water pistol, haven't you?

You and David would have a fine time. You'll probably do it when you go and see him on Saturday. Okay? You'll probably demonstrate on him. He says, I've just learnt how to get a good water pistol, right? But forget about using it as a water pistol.
Put your finger over the end. Now it's full of water. Would you be able to put the handle in? And the answer is, hardly at all. Because water and all liquids are essentially incompressible.
If you push this way, the water's got to have somewhere to go. So the wonderful design of the cochlea is such that the great maker, who is the Lord himself, has thought of that.
If he hadn't, if this was evolving, you'd immediately blow the shell of the cochlea. Basically, you'd break the inner ear. And that would be the end of any thought of hearing.
[35:43] So this is one amazing example of the design of the ear. But we've already just started.

If you thought that was complicated, now we've got to the real issues of hearing. Because inside that cochlea, you have a membrane, which is running all the way through the cochlea like this, but we're sort of spreading it out.
That basilar membrane is like an xylophone, right? Anybody played with an xylophone? That's a child, be honest. Come on. Yes, Joe, you've played with me.

So has Ian. P.T. I'm sure you have. You know what I'm talking about. Anyway, you know what I'm talking about. An xylophone. Bing, bing, bing, bing, bing, bing, bing, bing, bing. You played with your grandkids the other day, didn't you?
Some of you. And some of us have played with our nieces and nephews. They love to play on it. Did you know that you've got an xylophone in your ear? And the basilar membrane is the xylophone.
[36:54] I'm going to now play this, and hopefully you will begin to understand. The cochlear now uncoils, and we look at the basilar membrane, and now see what happens when we play individual tones. Now a chord.

And finally, something really complex. So you get the point.
There is actually, essentially, a keyboard in your ear. Now, in order to explain this, I'm going to do something now, which I haven't done before, but I hope this will help you.
What I'm going to do is to play you, and I'll show you what I'm going to play in a moment. I've got to put something on the screen for you to try and...
I'm going to actually play a sound, okay?
[38:05] If we can get this done, right? Oh dear, I thought it would. Yeah. Oh dear. Why won't that work? Oh dear. Right, although I've got the wrong one.

And new session. Okay. Yeah, this is not so easy, but I'll try and do it. Let's see.
Yeah, there it is. Right. I'm going to play you this, right? The problem is I've got to bring it over here. Hopefully it will work.
Right. Now, you will see here a keyboard, right? This is like the keyboard of a piano. That's middle C, right?
And this is the next C up. This is the next C up. These are basically octaves, right? And what you're going to see on the screen is me speaking the words which you'll hear.
[39:10] It is a delight to be in this beautiful ancient city of Whitby. Okay? Now, you can see that right up here, these frequencies are...

Oh dear. These frequencies... Somewhere here. It doesn't show it there. But these frequencies are...
Yeah, it did have it there. Yeah, it's written up there. You can see that the frequencies are way up 12,000 cycles per second. So as I was speaking, you can see that speech is mainly in the 4,000 region.
Right? The fact that it's got also much higher frequencies as well is because there are sort of what we call modulations of my speech. But there's also speech way down here in the hundreds.
So let me just show you what happens if we now play middle C. Right? I'm going to do this again. And I'm now going to play you a number of sounds.
[40:14] I'm going to play you middle C first. Then you will hear the next note in the chord, which would be E. And then you'll hear G.

And then you'll hear the top C. And then we'll play it together as a chord. And then you'll begin to see what's going on in your ear. Right? So I'm going to play this and put it on the screen.
And I want you... That's the old one, which will go in a moment. Now, just see what happens here now as I play this. Okay. Oh, what happened there?
That's not quite what I... Yeah, I think it was working, but it was probably playing the last bit. That's it. Right, that's the chord.
And now together, it makes a noise, which is a bit difficult for you to ascertain. But that actually, that last bit was a chord.
[41:18] It probably wasn't coming through so well because of the amplification. But on the computer, it does sound like a chord. Right? So that is what's happening, though, in your ear.

Now, if you now play something else like a piece of music, you'll begin to see that your ear is automatically splitting up all those sounds into their individual frequencies.
That's the bit that I now want you to see as I play this next piece. Right? Now I'm going to play you a bit of music. And it doesn't really doesn't really matter what music we play, but I'll play you something which hopefully won't blow your ears apart.
So I need to find it. Here we are.
This should work. Right. Now we'll play this.

[42:33] This is where as you are listening to this music, your basilar membrane is picking up all the frequencies of the violins, all the frequencies of the cellos, all the frequencies of all the instruments which are playing, all their individual frequencies.

What you do not realise is that every single bit of your basilar membrane is taking one individual frequency and sending it to your brain, which I'm now going to look at in a little bit more detail. can't stop it. Right, stopped it there.
That's the problem. But that's a very useful programme because basically what that's doing is that it's what you've got in your inner ear is a membrane which for every single frequency is vibrating one little bit of the keyboard, right?
But this is where it really beats any, the technical term is frequency analyser that any electronic engineer makes today. If you've got an electronic engineer in the audience, he knows or she knows that you actually need a time lag.
[44:07] you've got a bit of a time lag in order to understand which frequencies are being used so you can split them into the various frequencies that you're hearing. The amazing thing about the human ear is that as soon as a sound is made, it immediately splits it up into the different frequencies.

If only I could just open your mind as to the complexity of what's going on here. It's a mechanical frequency analyser that you have in every single ear here, represented here tonight.
So, you have a keyboard. So what was going on just now when we played the music was that the high frequencies at the same time as the low frequencies were vibrating this xylophone in your ear. It's absolutely unbelievable as to the instantaneous accuracy of the ear in being able to isolate the different frequencies which are involved.
Remember what I said about von Karman? Engineers create the world that never has been. This is utterly stunning. Let me now just illustrate this by a little video which perhaps will help you.
[45:18] Here's these ossicle bones, here's the tympanic membrane moving and you've got the stirrup going in there and you've got this liquid inside here and you've got this basilar membrane which in this particular video is not shown but it's vibrating at different points.

you'll see in a moment that different parts of the membrane are vibrating depending which frequency is being played. That's happening now in your ears as you hear me.
I haven't got a musical voice but when Paul speaks he's got a wonderful musical voice. I can hear the deep 200 hertz but I can also hear frequencies up here.
For some of you you've got more baritone voices so they tend to be in this region. Others have real soprano voices and they're way up here. We all have different characteristics in our voices and because we identify a person by their voice we have an ear for who's speaking.
Let me ask you a question tonight. You don't just have physical ears. If you call on God you have spiritual ears.
[46:32] One of our problems is we don't listen. Back to the main point though. Inner ear we haven't quite finished. In fact there's an organ here which I'm not going to be able to deal with in terms of its depth.

but there is an amazing organ which is called the organ of Corti. It is this organ. Running along the basilar membrane is another membrane above it.
These two membranes have between them what's called the organ of Corti. And inside the organ of Corti are hairs called cilia.
We have actually moved from the mechanical motion of bones well mechanical motion of the air to the mechanical motion of bones to sloshing movement of liquid to a mechanical motion of the basilar membrane.
Now we've got another membrane on top of the basilar membrane so when the basilar membrane moves up there is this other membrane at the top and between the two of them there is this organ of Corti it's called.
[47:40] We don't need to perhaps go into huge detail here suffice to say that we're going to now move into chemical energy right because the chemistry of this liquid is such that it is easily ionised right we're going to move into chemical energy and finally into electrical energy and this all evolved.

This was due to some reptiles thinking oh I can't hear properly in air. I tear my hair out which is why I haven't got much over such statements.

You see when the hairs in this organ of Corti move in one direction a potential difference is created between one adjacent hair and the next one one hair and an adjacent hair next to it.
This potential difference then causes an electrical signal to be sent into the nerves which then goes to the brain.
Remember we're just dealing with one frequency let's say 4000 hertz right maybe it's the violins playing that note and that note has to get to the brain so the basilar membrane is busy vibrating at 4000 hertz here right whereas the cello over here is vibrating at 400 hertz or whatever it is okay and so these two signals are being sent to the brain both by the individual organs of Corti causing individual hairs to move in a particular direction and would you believe it there is a mechanical spring connecting the two adjacent hairs together such that when the hairs are gone over there they come back again.
[49:27] Isn't that astonishing? If you didn't have those springs you wouldn't be able to hear. Who made these sillier. And by the way if you listen to something too loud you've broken the spring.

So be careful as to what you hear. Actually that applies spiritually. Be careful what you hear. God will speak to you a number of times but there comes a time when he says you're not going to listen to me.
Do you stop speaking? Beware. God is very gracious but when he's spoken to you once, twice, three times, thirty times, a hundred times and you're still refusing to listen.
Don't presume on God's grace that he will speak to you again. God is very gracious. I've proved it because I was a religious sinner and they're pretty hard to break.
So look, the hearing here is just stunning. Just have a look at this. This is a little video clip which is basically summarising what I've just said.
[50:45] This is the basilar membrane and then there's this other membrane on top which is pulling the hairs over to one side and every time those hairs move in that particular direction it sends a little signal, an electrical signal going eventually to the brain.

I am utterly stunned when the more I think about hearing, the more I am utterly amazed.
All the evolutionist can do is wave his magic wand and say somehow, in some way, a reptile got this ability to change into mammalian ear.
Let me just show you briefly what a reptile and a mammalian ear look like by comparison. I've got a diagram up here which might just help. You see, the reptile hears, it is true by an eardrum, but it has a direct link from the eardrum to the inner ear.
by a stapes, which is similar to our stapes there, it's saying in this diagram actually it's not similar at all because it's a direct link, right?
[52:01] So it gets a vibration here and it goes straight into the inner ear. Why have mammals got that? Because mammals hear much higher frequencies generally than reptiles.

It's not that reptiles can't through their bones sense higher frequencies but just as our ears are designed for 4000 hertz, reptiles are more looking at optimum hearing in the region of a few hundred hertz at the most.
Okay? That means cycles per second in case you've forgotten. The thesis of the evolutionist is that these bones, that bone moved and eventually became, sorry that bone moved and eventually became the malleus or the hammer, that this bone moved and eventually became the anvil or the incus and I can't find the, oh yeah that this bone just shortened and became the stapes.
I frankly do not agree. I think the science is telling me immediately that that is an impossibility. That you are trying to just simply say this happened simply because you want it to be the case.
This really brings us to the issue of information and irreducible complexity. In the context of the ear I've been talking about those bones.
[53:37] Now if we talk about a watch which is an illustration you know that unless you have all the bits working together a watch will not work. That is Paley's argument from the 1600s.

The evolutionists think oh we've dealt with Paley years ago. They haven't. Paley's argument still stands today. William Paley wrote that if you were to find a watch in the sand you would immediately realise that that watch must have been made by somebody.
when I look at the human ear or the mammalian ear in general it immediately tells me that there is design. The invisible things of God are clearly seen being understood by the things that are made even his eternal power and Godhead so as it goes on to say so that they are without excuse.

The argument from design is a very powerful argument and cannot be gainsaid as the evolutionist thinks. To be fair the evolutionists have actually addressed this matter of hearing and Richard Dawkins in his book The Greatest Show on Earth The Evidence for Evolution chose not to say much about hearing but he did make this point in his footnote.
The lower jaw are single bone in mammals. The reptilian lower jaw is more complicated and thereby hangs a fascinating tale that I reluctantly omitted from this book. In an amazing feat of evolutionary ledger domain the smaller bones of the reptilian jaw were co-opted into the mammalian ear where they constitute an exquisitely delicate bridge to transport sound from the eardrum to the inner ear.
[55:22] Well that last bit is correct. But what's going on here? The smaller bones of the reptilian jaw were co-opted into the mammalian ear?

That's just verbiage. And he used the word legitimane. Do you know what legitimane means? Look it up at the dictionary. Sleight of hand. A synonym is artfulness, chicanery, conjuring, craftiness, cunning, deceit, deception, hocus pocus.
I like that. Manipulation, trickery. Have you seen this gentleman? He looks like an overgrown schoolboy. People are getting younger these days when I see them.
Sorry, I shouldn't say that if he was here. I'd be a bit naughty of me. Apologies to Brian. He was a pop singer. And he talks about the ear in one of his videos.
This is what he says. has continued. Around 210 million years ago, the first mammals evolved. And unlike our friends the reptiles here, mammals have a jaw that's made of only one bone.
[56:35] A reptile jaw is made of several bones fused together. So that freed up two bones which moved and shrank and eventually became the malleus, the incus and stapes.

So this is the origin of those three tiny bones that are so important to mammalian hearing. If you have to resort to flick books, I wonder whether you're really still proving your point.
So I would suggest to you that the evidence is overwhelmingly in favour of a design position when we consider the ear.
The issue underneath all this is information. You have in every single cell of your body a storage system in the nucleus of the cell which is actually determining how amino acids are brought together in order to extend and make a protein.
That includes even the proteins which make the bones, which also make other parts of the body like the muscles, like the skin and everything else.
[58:02] That is essential for building the machinery in every single cell of your body which of course includes the hearing system.

When we actually analyse this system it's involved of triplets of DNA letters. These are called bases or nucleotides.
Guernine, guernine, adenine stands for a particular amino acid. Cytosine, adenine, thiamine stands for another amino acid and so on and so forth. And by lining up all these amino acids eventually you get a protein.
This is coded information. And this is telling us that not only do we have matter and energy which the evolutionist accepts as fundamental quantities, we actually have a third fundamental quantity. Do you know what that is? It is information. This computer as I said earlier was designed by a gentleman who is now gone and died but his team are still making them, Steve Jobs and his merry men.
[59:14] And it operates using a coded system which the reason why it works so well is because there isn't a secondary layer in between the high level information, well there is one but it's a very tight system, it's a Unix based system.

But the computing is actually governing what this computer does. It's even true of Windows based PCs even though they go wrong so easily. But you know there is software which is governing the hardware.
You cannot actually make a system work if it's going to use coded instructions just by having the hardware. hardware. You've got to have the information system as well.
In an information system the code or the language is not the same as the material. And the message that I'm speaking now, it's an illustration, is governed by an English language but the message is bigger and should be much more than just the language.

The language doesn't make the message. So there are at least two levels when you've got an information system. You've got a language which is transcendent, not the same as in other words, the material on which it's written.
[60:37] And you've then got a program or a message or some sort of, you've got something you're trying to convey which is using for the DNA, it's using a DNA code.

For me, I'm using English. Do you see that message means that there must be a mind behind it? And this is what people are completely missing in the evolutionary world.
They're fighting tooth and nail for the thought that information is not the same as matter and energy. And yet all computer scientists know that information is actually not the same as the hardware. The software was not made by the hardware but was made by minds, even Windows PCs. You know, even Windows 7 and Windows 8, the last time you kicked the computer it didn't do anything, did it?
Because the information is the problem. So, look, if I get a lava lamp and suddenly it goes from 22, right?
[61:42] You say, oh, that's a fluke. But if you suddenly went to 23 and then it went to 24 and 25, you say, hey, somebody's talking to me. The little green men are after me. You know, you need to pay that fine.

We intuitively know information is present if we do not perceive that there is a natural law behind it. A message is different to the language.
You say, well, what on earth are those dots and dashes? Ah, this might help. If we translate it into English it says, John loves Mary. I think Mary would have preferred that to that.
She might even have preferred a hug. But there we go. It got the message over in a language she could understand. So coming back to the human ear, the human ear is really governed in its development by an information system which says that exactly the right shape of the hammer bone, exactly the shape of the anvil bone and all the rest must be in place for the system to work.
Remember I started with this at the beginning. I will praise thee it says in Psalm 139 I am fearfully and wonderfully made, marvellous of thy works and that my soul knows right well.
[63:14] But I have been saying as I've been giving this talk are you listening? I've been saying just as I've been talking about hearing, you've got spiritual ears.

They're not made like your physical ears but you've got them. The Bible says that I can't hear because of my wrongdoing.
It cuts me off from hearing God. but that God has not made us such that we cannot hear at all. We are separated from him but he shouts the very first question that he said at the beginning.
The first question of course that somebody ever said was the devil who said hath God said? But shortly afterwards God utters his first question and do you know what he says to the whole of the human race Adam where are you?
And he's saying that tonight to you. He's saying Judas where are you? He's saying Jean where are you?
[64:34] He's saying Joe where are you? He's saying John where are you? In case you think it's just James he's saying Andy where are you?

Peter where are you? Is there somebody here tonight who's listening to my voice and I'm just a messenger and you're actually hearing God's voice because he's saying to you where are you? You're separated from me. And look friends you could do what this fellow is there and say I refuse to listen to God's voice but actually eventually you will stand before the bar of God anyway.
Why put off that moment when you must stand before him? He says now look come to me and as he says come to me you look at his hands and you see that they are nail pierced holes in his hands and in his feet I'm speaking metaphorically and you know I am.
He reminds you that he not only called you saying where are you? He also said I know where you are and I'm prepared to die for you.
[66:00] I'm prepared to go to a cross for you. He actually stretched out those same hands and received those wounds on the cross that you might believe. Tonight I unashamedly ask you on my last night where are you and have you considered the Lord Jesus Christ and his wonderful love which sent into a cross that you might be forgiven.

I unashamedly say to you that the one who created the marvel of hearing is Christ himself. and he now asks you to use those same ears to listen to the word of God read which I've read tonight and

to listen spiritually to his voice which is saying you need to come to me.
You need to come to the cross. You need to grasp what I did for you on that cross that I loved you because I knew that unless I went to that cross you would be lost for an eternity.
Let me bring you one last conversation which involved ears. In Luke 16 I've mentioned it on one of the other nights there was a conversation that took place.
but this time there was a separation which could not be bridged. There was one man who was lost and another man who was safe.
[67:37] It says he was in Abraham's bosom. This man who was lost says Lazarus Lazarus father Abraham help me.

he says there's a great gulf fixed. He says well look send somebody back to my brothers that they don't come into this place. My dear friends however much you call in that place it won't change anything.
There comes a time when God has been so gracious and called you and called you and he says they will not come. Now don't get me wrong God has not lost control he knows those who are his but he does not take the delight in anybody perishing.
Never let it be said that although God is sovereign that he takes a delight that anybody should be lost. He takes no delight whatsoever. He will not have anybody in that sense his heart would say to be lost and yet God knows that not all will come.
The way is narrow that leads to life. Some just refuse and will not come. Please don't do that tonight. Open your ears.
[69:01] Christ wants to save all who come to him and will simply welcome you as a sinner to himself.

May God bless you all. Thank you for being patient tonight. If you have a question I'm sure we can take one or two questions but may I just say now rather than after the questions I do have a booklet here.
And I don't want to have a nine minutes for to see