

# Matter is not made out of matter

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## Introduction

You may be surprised that a nuclear physicist would come to a meeting like this. But you know a nuclear physicist is not somebody who is necessarily connected with one of the most terrible weapons in the world – the atomic bomb. I must admit I am a student of Edward Teller. I got my PhD from Edward Teller in 1956, but without knowing that he was the father of the H-bomb. I was never interested in bombs, but rather in the questions of what is matter and what is the basis of matter. I can tell you, I have spent 50 years of my life doing research to the question of what is matter, and the outcome is matter doesn't exist! Matter is not made of matter!

But don't believe that I am tremendously disappointed about this. When I started to study, I knew that the outcome would be like that. So, I know now how we can really show that matter doesn't exist. And that of course is the main problem now, because our whole science is actually built on the existence of some kind of substance which you can isolate, which you can build on. We have an analytical way of getting about, to know something, to base knowledge on analytical methods. So we are really in trouble if we loose matter in the end.

But you will see it is not so tremendously dangerous in its outcome; it gives us an idea what life actually is. We do not know, when we start from a matter basis, how to get to something that is alive. And you know, modern biologists actually believe life is a very, very, very complicated machine and that is the reason why life is not understood. And you will see – at the end of my speech – that it is just the other way round. We have trouble understanding matter. Life is built-in from the very beginning and that of course brings me very close to the subject matter of this conference, where we talk about the biological and cultural organizations of reality.

I will first tell you a little bit about the modern world picture, well, 'modern' is actually the wrong word because what I present here as 'modern' is something that actually happened 80 years ago and it is very surprising that we do not learn it in school. This is not because we are unsure if we a right, we are right, and it is absurd to scientists that they have never really made much of an effort to teach what was found 80 years ago. A revolutionary change in physics occurred, such that physics is not physics anymore but something different.

We still call it physics and quantum physics, which is actually a somewhat wrong notation for it. But it is in physics where the science was absolutely sure, we are thus on sound ground, on a sound basis. But because physics is so simple in comparison to living systems, when they found something they didn't understand there was no way out of the dilemma. We were faced with a situation where we saw that the fundamental laws of physics, valid up to then, up to 1925, were basically wrong and hence they had to be changed. And, there was no way of avoiding it and hence I have

to tell you a little bit about what is the big change without going into details because it would take too long.

Now, the old science is characterized by something that I read in the book of Edward Wilson, *Consilience: The Unity of Knowledge*. He says the following:

Without instruments humans are trapped in a cognitive prison; they are like intelligent fish wondering about the world outside; they invent ingenious speculations and myth about the origin of the confining waters, of the sun and the sky and the stars above and the meaning of their existence. But they are wrong, always wrong, because the world is too remote from ordinary experience to be merely imagined.

Yes, this guy was right, but he was wrong when he said 'without instruments humans are in a cognitive prison', because also with instruments they are in a cognitive prison. What we later found out, by using science, is that we had sophisticated ignorance, but we were not close to the truth.

The world was at that time – and still is – considered to be a reality. 'World' is actually a word that comes from the Germanic root 'wer-ald', which is a world as seen by a human being; and we say the world is a reality. It's a thing like a substance type of reality. In German we have a different word for reality, '*Wirklichkeit*'. *Wirklichkeit* translated into English means 'the acting'; something that is changing and changing and changing all the time. So we have a different word for reality.

Now, old science takes reality as primary substance and matter, space filling, impenetrable, invariant, everlasting, mobile, with other properties such as charge and so on. Secondly it has form and '*Gestalt*'. *Gestalt* is a little bit difficult to translate into English. Form is form, but you could actually use the expression you have used here 'endogenous'; it's an inside form, there is an outside and an inside form. I call the inside form *Gestalt*. It is the arrangement of matter, which changes in time and obeys certain rigorous laws, the so-called 'natural laws'. And you can see very clearly if you know about matter and you know about the movement of matter, you could, in a way, predict the future and go back to the past and find out where we are coming from. So you really have a picture where you know that you not only understand the world, but also know how to manipulate it. And that is our present standard; this is when the world is really 'reality' and it is not something like the *Wirklichkeit*, as something which is changing all the time.

Now let's go to quantum physics. Here I quote my teacher Werner Heisenberg who, at the age of 24 playing around a little bit (he was pianist), found more or less by accident that this foundation was wrong. He says:

Quantum theory (that is the new theory he found) is such a wonderful example for a situation that one can understand some circumstances in complete clarity and at the same time still knows that one can talk about them only in terms of images and metaphors.

So that was a terrible step in science. Because we always said, 'we scientists, we know what is right and wrong. We don't need to go around and make vague statements like the theologians and all the other cultures; we know what is right or wrong'. And now, we were suddenly in the same boat as the rest, and we also have to use images and metaphors to talk about it. And, because the reality has disappeared and has returned to what in German is the *Wirklichkeit*, it is something that is ever-changing and I will show you exactly in what an extreme way.

From this discovery, several paradoxes emerged. The first one was of course the most astonishing one: matter is not based on matter. That meant in a certain way – if I jump a little bit ahead – it is more or less like saying if you have a computer that you consider as 'hardware' and you know that the most important thing is the 'software'. But in fact this finding tells you that the computer, the hardware is completely unnecessary and that the software is sufficient by itself, and there is some software, which you call firmware, which is read-only stuff like your operating system, which you cannot change. That firmware is actually the hardware, which is not the hardware at all. So, this is the first point. And the second point is there is no object anymore; there is only a relation-structure. Now, that in our language we cannot express. It is only a relationship without saying what is related to each other; only a relationship. So this is completely different. You start from substance in the first case, and now you have to start from the relationship and it only comes out later on that somehow matter comes in as a kind of as-if-language, which doesn't really exist in this case. Now in scientific terms we would say it is a 'non-ontic world'.

The question about what is and what exists is meaningless. It is not only immaterial but 'a-material'. Meaningless is like asking, what is the colour of a circle? Blue? Red? Green? No! No colour? No, it doesn't have a colour. Then we say, who can that be? I pull out my pencil and draw a circle. You see that it's blue. Yes it is blue because I have a blue pencil, the circle has no colour, it is achrome; it is meaningless to ask for a colour. So, in that sense matter disappears. The question about what is and what exists disappears.

Another point, the only thing that happens is the in-between. Hah, in-between is actually nothingness, right? So the nothingness is actually; it has a shape, but it is nothingness. Don't be surprised, you use it daily. If you have a cell phone, have you ever thought about it? What happens if you have a cell phone and you connect with somebody? You are not connected by a wire – no, you somehow tickle the electromagnetic field a little bit. This is not ether, it is vacuum. There is a nothingness which, when you tickle it, gets a *Gestalt*, a form; it gets a certain deformation and this particular deformation your friend sees in Paris as a telephone call. There is nothing really to move from one point to the other. This is the first paradox. But the question that we can still ask is, what happens? This question is still there. Everything is in movement. So, instead of saying matter is made out of atoms, you know, of little things that exist that have only matter atoms, which cannot be taken apart anymore, pure matter has to be replaced by small happenings. So I say 'the acting', the new reality that is not reality is actually made out of 'haps', little happenings, which you cannot actually isolate. This is the second paradox. There is only a holistic structure; there is only one world that cannot be taken apart. Again we have no good word for it; we talk about 'the one' and 'the whole' and we don't know that 'the whole' is something where no part is missing. But there *are* no parts. So it's 'the whole' in a way that I have no language for it, right? So it says the non-separability of the world is – and that is actually what you call in Sanskrit *a-dvaita* – non-twoness. But 'non' is used not in a negative sense but in the sense of not taken apart, there is only one world.

Now, in the case of the holistic structure, our conventional science breaks down because it depends on the possibility of taking it apart, describing the parts and putting them together to get back to the whole. This is not possible. You can do it approximately, as I will talk about in a minute. So, the cosmos is a Whole-Oneness in

a way. Cosmos is actually a word for reality that has only a structure-connection, a structure in this case. In physics we do not use 'cosmos', we say the *Wirklichkeit*, meaning 'that what is changing' or we could also say 'there is only potentiality'. It is only the potential to get energetic footprints. But the footprints are just footprints. And what is behind those footprints, what is behind, is only structure, relationship and structure.

Now the third point is also surprising. The future is open. This means that the future is not already there and we are only ignorant about it and we guess about what might happen in the future. No, the future is not there because it is continuously being created. The reality or whatever that is, I mean this 'other thing', is created new but also in memory of how it was before, so it has some similarity and that is how it works and that is a completely different picture. Because this means we all can be creative. We are not merely a little wheel that somehow turns and goes to the future, but we are here to create the future together. So, we don't have to despair about the future. We should despair about ourselves that we are not cleverer to create a new future, more fitting for ourselves. No, we should not despair because we have this potential; we only have to be aware that we really play an important part; of course not everybody by himself can create a new future but all together.

Because we are in a holistic structure we are part of the same thing; we are not independent of each other. Every thought we have is actually connected with the thoughts in the background. Now, this background has only *Gestalt* and has nothing to do with 'energy', 'mass' and so on. It is only connectedness and here I dare to say immediately that it is what you call 'potentiality'; you could also call it the 'spiritual background of everything' that cannot be grasped because it is purely a relationship. Or you can call it 'love', which is also something you cannot grasp. Actually to say 'love' is already wrong, because it is a noun. It is 'loving', which is 'connecting'; not the 'love' that I take in my hands and with that I destroy the relationship. So, there is only this connectedness, which is in the background. And hence whatever we do for the future we are embedded in this connectedness and we all together to create the future.

In this sense the future is not predictable. There will be infinite ways how the future comes about. But not in a random way, there are tendencies that will go on. I will not go into details but it is not a random future. It is a future that in a way you could call an 'educated guess'; something that results from the present conditions, which have a certain tendency. So, it is not completely open, but it is not fixed either, so our creativity is important.

In this quantum physical-holistic worldview the world is the *Wirklichkeit*, it is potentiality. 'Potentiality', that is the word we use: only the possibilities in various ways to create a future, which is at our disposal; we can turn it in one or an other direction. In this the *Gestalt*, the connectedness, the relationship is primary, and only secondarily will substance, matter and energy appear. And I have no time to show you how the matter comes out. It has to do with relationship; it relates to another relationship; it gets a kind of a crossover and then matter comes about as a kind of a playing together of relationships but not substantially.

You say, 'how in the world did we get to this idea, which is so completely crazy?'. This has to do with the atom that was believed to be the pure mass but that has no *Gestalt* anymore. Atoms cannot be taken apart and we were so happy: now we had found the smallest particle and now we really have the world in our grip, because

if we know pure matter and the relationship of that matter and the corresponding natural laws, than we can predict the future. And then we discovered that it had a structure and we didn't understand the structure. It looked like a planetary system. Everybody said, 'oh, we understand the planetary', but it is composed of electric forces and they behave differently than gravitational forces, and then it did not work and we had no way out.

Then we found out that out the particles the electrons, which run around, do not actually exist. They go around and it looks more like a wave. Now, the particle disappeared in a wave-state. The wave is a relationship structure and the particle is something that I can localize, right? So, now we thought we had found the smallest matter, but the matter disappeared and the form stayed. The form is more important and of course is more complicated.

If you drew a double helix, you could add balls and say they hold together and they tell us how we will become. Now we can add belts and the belts and balls simulate an atom in a way. But they do not exist, they are wrong because there are other complicated things that have a funny structure. They not only have these funny structures, but they expand all over the whole universe. They talk to each other from one end to the other; not only within the circles and the overlaps. They overlap all the way, because there is no disconnectedness. It is more and more connected at one point, but the differentiation doesn't mean a disconnectedness, everything is connected with each other, and we have to keep that in mind if we believe that we understand biology going down to microbiology and molecular biology.

Now, when I say that science only speaks in metaphors, this of course makes my scientist friends furious. Because now they cannot stand there anymore and say 'I am a scientist, I tell you what's right and wrong and you better shut up, because I measured and the facts are like this here'. They don't realize that at the moment they say 'and the facts are like this' what they are really saying is 'they have made the facts'. Talking of 'facts', means that you have made them. How can something that is supposed to be based on facts be something *we* have made? The scientists are like theologians, or they can be like every other scientist and say 'prove that to me because otherwise I do not believe it'. We are in the open sphere.

And don't get depressed, I mean it is a wonderful world where everything is not fixed. Because life has a real chance now to live its own way; it doesn't have to care anymore about the strict laws that scientist tell us to obey; they are just like lawyers who like us to behave according to strict laws. Let's get back to life and say, 'all right, roughly speaking it's fine but not strictly speaking!'.

Now you get to a completely different point of view. That means the world or whatever we call it is actually always one. The question is, if you have always one, why does it look so differentiated? We are actually only one big body, you know? But then, why does it look like there are different people sitting on different chairs? You see, there is a way for this oneness to differentiate. Differentiate without separation, only differentiation. The development of the universe or the development of the cosmos is a differentiation. But, how can it happen that the oneness gets differentiated?

This has to do with the waves that are there, which only have information – don't think about energy, which has nothing to do with it. It has to do with connectedness – as you know now. This kind of connectedness is more complicated than yes-no logic in which there are only two possibilities. But between yes and no

there are intermediate steps. From  $0^\circ$  to  $180^\circ$  it is no and then it gets again 'yes-ic' and then 'no-ic' again. You get a kind of circle. You have a logic, it is not really fuzzy-logic where you say, 'I don't know in which direction, somewhere between yes and no'. No, it has a certain direction but it has all different kinds of angles. Now, think about something going around the circle and you pull it a little bit out then you get the waves.

The wave is only an indication that our logic is wrong, but it is actually a logic in between yes and no; and so if they interact with each other they can interact like waves interact with each other; they can amplify themselves but they also can in a way annihilate each other. So, two different waves overlapping can get zero shadow. You do not get that with ordinary light; if you let it cross, it always gets more light at the crossing and never less. But this kind of interaction is due to two beams interacting at the crossing point; they can get zero, so that the shadow, the separation, is created by a negative superposition of the waves. We you need to remember is that the logic in the background is not the simple one we use, and that this also means that probabilities do not really work anymore; they have to be substituted by something else.

If you picture a metal plate and you put sand on it, through vibration you get a Chladni sound figure. It looks like you get a separation between black dots but it is just a sound figure and not really a separation. Now, think of it, we are all sitting here and we are different black dots. There where it vibrates is actually the separation, but we belong together.

Now, you think I'm crazy. You wonder why this is important for you on the macro level where we really live our lives? That means eight orders of magnitudes bigger. This means that we have a bag full of haps; mix them all up and talk about billions and billions of haps, which before we called atoms. How does this whole thing behave? It turns out that if you take the average of billions and billions of haps and all this liveliness disappears. I get exactly the old physics back. I get the rigorous laws and causality, I get matter and I get energy. I get light, which is exactly the light we know, which behaves the way we know, we can have cell-phone interactions, x-rays and so on. So you say, 'why not forget about it?'. The issue is, is there a possibility to get at what's underneath, to what's actually alive, to get it up, to make it visible in our life?

Now, in order to show that, we need an amplifying system. Of course, one could say in the CERN we have the big accelerator, a kind of super microscope, to look at small particles, but that cannot be the thing. However, this little machine I have here [speaker starts using a pendulum], makes the amplification much easier. This is a physical pendulum and that fulfils all the classical laws of motion and I can predict them.

However, this is not really true. There is one point up here, if I put it there and I ask what will happen: will it go down to the left or to the right? I have to say I am not sure or better, I should say it depends. I have to make sure to really put the centre of gravity of this pendulum exactly in the middle, which is the centre of the earth and the rotation axis in line with the left and right, only then can I predict it. So I have to be very careful when establishing the initial condition to be able to predict whether it falls to the right or to the left. So this position of the pendulum is a so-called chaos point. This is the point where I have to be very precise to make a prediction. A little change or deviation here will cause the pendulum to go to the left or the right. That is what is

known as the 'fluttering of a butterfly's wings', which can ultimately cause a typhoon or a hurricane.

Now, this doesn't mean that the butterfly causes the typhoon. You need a weather condition, which resembles a kind of location that we call 'unstable equilibrium'. Unstable equilibrium sounds negative. You could also call it a sensitivity point or sensibility point. At that point the pendulum has a high, very high sensibility. It depends on the outside forces whether it falls to the right or to the left. So I not only have to look whether it is in the middle, it also depends on whether I stand to the right or left of it. Or somebody just puts his hand to his nose or a car goes by outside and then my calculation is wrong.

That means that the pendulum knows exactly what is in the background, the very, very small forces in the background of it and so here it makes contact to the field underneath, which in a way can be shown by quantum mechanics. Now, this is only one point where the pendulum can say. 'here I am free'. One moment free, but when it falls down it is in the situation that we call dead matter, it goes slower and slower and at the end it will be quiet, it will be dead. Once free, but dead right away!

However, I can improve the situation by pulling out two supports here. Now you will see in this case I have not only one point of instability but in fact I have now an infinite number of instability points if friction were not there. So now it really becomes alive. Now, you have to know to become more alive, pull out the supports instead of tightening the screws, as we do with our machines if they do not work. It is just the opposite; make it freer and then it has many more possibilities to find a solution to the problem. Still the pendulum in the end will hang down and be dead. With this manipulation I have only extended its life by a few minutes and I want to have it a little longer. Only five minutes alive and then dead is too short.

Have you ever thought about why we walk on two legs instead of four? I mean, it is completely unstable, right? Now, because I love freedom [speaker makes one step forward and stops on one leg] of course I fall right away; but once free and then I'm dead; fine, life was worthwhile. Now, I have another leg and that thinks the same way and both decide life is too short. And now, if they cooperate I fall, I fall, I fall but since I have two unstable situations and two of these things are connected to each other, if they do exactly the opposite, so they cooperate, I get a motion where I do not fall. That is life! Differentiation – not everybody has to be unique but different; then one finds the other and they start a corporate game. In that way you never fall. Whenever one is falling, the other one will catch us. So, what you have to do in order to really get to what we call life, is to have more than one system. Differentiation and cooperative integration to a new system. This is actually the whole secret of the development of life.

If we get into an unstable situation, we realize that we get this bifurcation, which in classical physics is called chaos. For them it is chaos when you get there but for me it is not chaos. Chaos is exactly the point where I touch the information outside, which is not energetic. That is so to say the spiritual level. We have to put ourselves in this unstable situation to suddenly get the sensitivity from the background. So it is like for a computer. You have internet in the background but you have to sensitise your computer to the waves that are coming. Then you can use all this information. It doesn't have to come through you.

So the whole universe is like an internet of which we are part. And through our sensibility we get the knowledge from inside, not from the outside. But it needs dynamic stabilization, and I forgot to mention before that dynamic stabilization is when I walk and I fall. 'I fall, I fall, I fall' is not exactly true; I fall, I stretch my leg and then I can fall again. Dynamic stabilization means you are feeding an energy; that is the reason why we have to eat. That is where the energy comes in.

Energy has nothing to do with spirituality; spirituality has to do with the sensibility to touch the background field. Energy is only there to put us back into the sensitive situation. We need it all the time; the moment we don't have the energy we will be right on the ground, like the pendulum that hangs down after a few minutes. So it is very important that we do not put so much emphasis on the energy. Energy is necessary but only to make us sensitive enough to find the background field.

So, the phenomenon of the mesoscopic living system has to do with exactly this kind of energetic feeding of the system. That is the reason why this table is actually in the ground state, it is somewhat dead but it is not completely dead. If you look inside you see that there is still a lot of life in it. This rock probably has less life.

Now here, on earth the source of our energy is of course the sun. So the sun provides us with the energy. But it is not really the energy; the energy is completely unimportant because it is conserved. It is the order structure of the sun energy in comparison to that order of the energy that is emitted back into space. This is exactly the same energy because otherwise we would get hotter and hotter here on earth. It is the kind of orderly structure that is in the background of it.

I will just say a few words about the evolution of the living system. This is actually the paradigm of the living. The paradigm of the living necessitates creativity. It has to start out with something that you can call a holon or fulcrum. It doesn't really mean that it is 'whole' but it is a way of an entity that is a more or less closed system; like a person sitting there or a culture, in our context here. It has the tendency to emancipate, to differentiate. Just like us, being part of a culture we are asked to develop our abilities and each should try to be different to the others. This is very important: different, different, different, right?

But then, after the differentiation, comes the second step. We shouldn't differentiate and then fight against the rest; we should then rather look for possible ways of cooperation, so that there comes a cooperative integration that is also a creative process. I call it creative 'competition', because the word 'competition' originally means to look together for a solution not against each other. This is important for life: you differentiate and then you get into a bigger system in which the differentiation is not really killed but left there and organized in a harmonic way. In a certain harmonic way they play a game together, which is to the advantage to the whole organism. This doesn't only hold for the human beings but also holds for society, for culture. I mean the holon is also a culture. So differentiate the cultures and make a new culture, which in a way still contains all other cultures, and you will get a system that has a higher flexibility. In a way it has a space in which it can create itself.

Our biosystem, as a metaphor, is a sort of house of cards. The card house indicating that the basic elements are all instable. They have a tendency to collapse. The sun is in a way continuously displacing the cards in order to keep the balance. The sun uses the energy to do this.

And here we are, jumping on the top, believing ourselves on a mountain top, taking ourselves for the creators of the universe. We do not realize that we are just the crown of the house of cards, which will collapse if we keep pulling out cards while thinking, 'why do we need this animal?', 'why do we need this plant?', just because we do not understand the structure of it. We do not understand that all these cards together are necessary for the stability of the whole thing. And it is dynamically stabilized only by friction.

I should say something about structures. If we get to higher structures, if we get this kind of cooperative integration in which way are these higher structures? We always think that a lattice is a highly ordered system. No it is not, it is very primitive, if I see a part of it I know the rest of it. The double helix is really a more complicated system. If I know a certain piece of it I do not know the rest. So, in this sense, we are on a higher level. Let's use another metaphor for it. The double helix is like a poem. A poem has a high structure, it is very sophisticated. Of course you can say it is made of twenty-six letters or something like this. But you see the arrangement of the letters gives meaning to words, which I do not see if I count the number of letters. There is a code in a double helix and I can, like the letters in a poem, change A with Z and B with Y and so on. I mean from the physics point of view it has the same kind of structure, the same information, the same kinds of bits, but we don't understand anything, right? And that is how we look at nature. We say, 'high variety', wonderful. Well, God was very playful and we as human beings, with our rational minds feel obliged to put some order in the nonsense. And we finally have full control over our world because we put some order in it.

So, that is in a way the point. You see the complication is only in form. It has nothing to do with the symbols, which is actually the same thing. But there are two different things in it. The arrangement of the letters plays a role but I also need the code in order to do that. As you know, a CD only has two numbers: 0 and 1. With 0 and 1 we can now paint all the pictures; and all the music is with 0 and 1 and the articles are with 0 and 1. Of course, if I have the Saint Matthew Passion and I put it there and say it is a picture, then I will probably get a funny picture, it wouldn't make sense. So, you see again, the arrangement of the symbols has to do with spirituality, that has to do with content, with information. It has nothing to do with energy. Because if you write a very intelligent article, you don't need more electricity than for writing a stupid one.

I want to make a comment with regard to sustainability. Sustainability is a kind of... well, I don't know how you feel about it. It is not a very exciting word, it is not where you jump up and say, 'YES I like sustainability'. And in German it is even worse. You say '*Nachhaltigkeit*', which means you hold it and hold it. That is the reason why we really should use another term. It is a dynamic process that we want to guarantee and not the status quo. So, we want to have vitality, creativity, productivity, resilience, robustness; this is what we want to keep because we are in a dynamic system. So I actually prefer instead of sustainability, to say 'letting the living become more alive!'. That is actually the ethics of our behaviour. Not only to be sufficient or happy with what we have, but bring more life into it, open new dimensions. That reminds me of what Albert Schweitzer once said: 'I am live, which wants to live, amidst of life, which wants to live!'. That is exciting, you know. That is what we really want.

Now, we come to the spiritual living osmos, where you realize the spiritual part is actually the potentiality in the background or whatever you want to call it. You can also call it 'love'. And the living part is the non-predictiveness of the future, which is not identical to randomness. Creativeness is allowed, but not arbitrary creativeness. That is the picture we have in our minds.

In the last COMPAS workshop in Holland, we drew a circle and I found it was very interesting to do that. I have made it a little more sophisticated now [speaker points to an image of a circle]. Everyone can find on which point of the circle he stands. Certainly the scientist starts at three o'clock position here and he goes clockwise. You develop a language that you can manipulate. Our Indo-Germanic languages are really noun-languages because we want to use a language to get the apple off the tree and so avoid starvation. So we actually have an apple-plucking language and we hope to explain the universe with that kind language. That is of course not possible. So you go in this direction around the circle. Then you also use words like 'hope' and 'love'. They are not really nouns, but we use them as nouns without realizing it. If you talk of love as a noun it is like you have a concept and you have it in your closed fist. Try to imagine love as something that you can hold in your hands. Then it is all lost because it is a relationship type of a thing. In this way we kill everything of that kind.

So it is a dual world where subject and object are really separated. Now the other way is to go in the other direction around the circle, and I have used only verbs because we cannot really use nouns. So, you have a sensing, a perceiving, changing, loving, living, a being intimately aware. In German we have a verb called '*Ahnen*'. '*Ahnen*' is something that happens before you get the intuition. If you say '*ich ahne*' it is like saying 'something dawns on me'. '*Ahnen*' in German is, by the way, the same word as 'ancestors'. As I learned in the workshop in Holland, in Ghana people are in contact with and listen to their ancestors ('*Ahnen*'). We use this too, but without really making the connection to our ancestors. From there you get to something like emptiness because there is nobody observing anymore because there is no subject.

Those people who believe in duality and do not feel comfortable in this sector, I can take the other way round (the circle) because that is precisely my field of expertise. So, we get to the six o'clock position and six o'clock is where quantum mechanics comes in. Here I can show that I actually get into a holistic picture and it is a kind of 'a-duality'; it is constructed because it is still a duality, because physicists use a language here that is not our normal language but mathematics. You don't have to be afraid of it. Mathematics is a language that is only based on relationship. So don't ask the question 'what is?', but rather 'how is it related?'. Mathematics is a pure relationship language. And then, from the nine o'clock position onwards, we get a kind of a mirror image of what is happening between zero and the three o'clock position. Now I can talk about it but I have the same difficulties I have on the other side: I have to talk in terms of metaphors and images; but here I use mathematical imaging. And what I did now was not a mathematical imaging but I made an image of the mathematical image in order to tell you about it in the metaphors of our daily life.

So, here we find ourselves and we realize the difficulties we have, which have a lot of similarities with my circle. Now you know that I can imagine a circle, you can draw it on a paper and it has a colour; but that is alright, because you made it in the blue colour that you always use in your culture, but someone else could say 'no, my

colour is red'. Don't start a war because one circle is blue and the other one is red. You know it is just embedded in a different culture. But it is interesting that despite all the different ways we talk about it, everybody knows it is limited in a certain way. If something doesn't work out, pull the supports out instead of fixing it or tightening it up. All conflicts are solved not by restrictions but by openings.

Thank you!