

Module 4 Lesson 2 - final transcript and srt.

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SPEAKERS

Scott Snibbe, Carlo Rovelli, Prof. Dr., Geshe Tenzin Namdak

C Carlo Rovelli, Prof. Dr. 00:04

The best part of what I find in science is the teaching of being able to question your prejudices. And to realise that something you take for granted might be wrong. So, it is from this cultural world, that I got to Nagarjuna. Of course, many of my Catholic friends have become Buddhist, in fact, my first girlfriend, my best friend, they are all Buddhist in Verona back in Italy. And Buddhism is sometimes a preferred religion for scientists, because it lacks a level of certainty and the sort of dogmatic aspect (that might be present in other religions), that scientists find it hard to deal with. There is nothing like that in Buddhism, it seems to me: there is a path, there's experience, there's a thought. So, often scientists are more open to Buddhist philosophy than other kinds of philosophy connected to religions.

C Carlo Rovelli, Prof. Dr. 01:25

And in Nagarjuna this was particularly strong, exactly because Nagarjuna, for me, it has this side of suggesting ways of thinking about reality by questioning things that might seem obvious. Each chapter of Nagarjuna it's to question something that seems solid and clear, and general and universal, and unquestionable. And then Nagarjuna says it was not so solid, but in fact, there's a question here. So there is a path also, it's not just simply a set of statements - not at all! It's liberating, I find it a really liberating path. At the end of the day, in a sense, only at the end of the book, there's something towards the more eschatological. And even there, it's you know, samsara and nirvana, it's the same thing - they're both empty. It seems just intellectual and critical. Nevertheless, at the end of the book, the path, I found it spiritually liberating, in a sense: there is a sense of lightness and freedom - emptiness in a completely different sense - with which I came out of this book. It's left me with a great sense of serenity, which has nothing to do with quantum physics, in a sense, but this is perhaps the strongest legacy that I got from the book.

S Scott Snibbe 03:12

That's very nice to hear. Yeah, I think, others of us who've studied it had a similar feeling. You

know, you just talked about your biases, which is real in a number of different ways, which is interesting: the biases of different political and religious points of view that you grew up with. And those biases affect how we see reality. Earlier, Dr. Rovelli, you talked about scientists' bias towards seeing the world as composed of objects that are solid and have properties. I want to ask both of you to address this topic of bias, because, again, our interpretation of reality isn't just intellectual: it affects our life and the decisions we make. So, Dr. Rovelli for you, it'd be interesting, I think, to hear how you think this bias towards objectification and properties has affected and shaped the way we do science. And then for Geshe-la to then respond to that, and talk also about the Buddhist's point of view about how our biases towards self- objectivity and other objectivity affect our minds and our emotions and our behaviour. So Dr. Rovelli, you can start first, if you want, talking about this bias towards seeing things as objects with properties - how has that affected science?

C

Carlo Rovelli, Prof. Dr. 04:28

One sees how precisely the bias toward the assumed objects (substance "out there") has been wrecking scientific discovery. But it's not an easy story either, because the history of science, has a lot of turn arounds and has sort of examples also in the opposite direction. For instance, let me just make clear a few things: for understanding the movement of the things in the sky, there was a long time the idea that there were big round things moving and rotating on top of one another, which was very helpful. In fact, it permitted us to make sense of the motion of the skies, and to predict eclipses with spectacular precision, and to predict exactly where the planets are. So it seems a very strong way of thinking, except that it went much better when in the centuries after, this idea of a big crystal sphere rotating was taken away and that they realised that they were in a hypostasis about the real stuff out there, which is actually not there.

C

Carlo Rovelli, Prof. Dr. 05:56

And this happened over and over: when Maxwell wrote the "Maxwell equations" that accounts very well for the light - for the electric field and the magnetic field and allowed us to do radios and television sets all of that - Maxwell himself and others immediately thought: "Okay, so these are equations for the strange things, which is electric field, the magnetic field, which, of course, must be the motion of some material thing out there". And for a long time, that blocked understanding about what the multiplications were, because there's no material thing being stressed and pulled and pushed, which becomes an electric field. So getting rid of this idea of the object down there, was a step that allowed to finally use properly the Maxwell equation - in fact, it's said that this liberated Einstein for doing his theory of special relativity. And [it liberated] quantum mechanics itself, as a mathematical theory.

C

Carlo Rovelli, Prof. Dr. 07:00

So the actual equations that we use to construct the computers to which we're talking, came from the work of Heisenberg, who took exactly the step that I mentioned at the beginning of this story: which is the mystery of quantum mechanics. Somehow, the article on Heisenberg, which was written for "Helgoland", which is the title of my book (which is the island of the northern sea), states: I'm now going to describe how the atom works, and how the electron

moves in the atom by only talking about observable things - and not what the actual object is doing. So this all moved away from a strong realist' blocking - prejudices. But on the other hand, it is not that the idea of reality by itself is wrong, because we use it every day!

C Carlo Rovelli, Prof. Dr. 08:05

I mean, if I see the chair, and then there's a mirror there, and I see the chair in the mirror - then there's a very good sense in which the chair in the mirror is less real than that chair over there. In spite of the fact that the real chair there is not real, in some sense, nevertheless, is much more real than the chair in the mirror! And we don't want to give up this notion of reality, okay? But I can throw over your head an imaginary thing, and you won't say anything, but if I throw over your head something real, you will complain! So this notion of reality is useful. Okay? It is a conventional notion of reality, which we want to use. We don't want to say that there's nothing real. Of course, there's something real, but in its conventional real, in the sense. In a way, this can be articulated and reduced to something else: it depends on something else. And in science, the opposite mistake was also made.

C Carlo Rovelli, Prof. Dr. 09:09

[Ernst] Mach, who is a philosopher who liberated Einstein and Heisenberg and allowed them to make their great steps, overdid it (famously!) by saying, by writing and convincing many people that it was silly to think that there are small atoms. And he was denying the interest of the entire atomic theory, thinking that it was overplaying the notion of reality. But it was not, because atoms turned out to be a very, very useful concept for thinking about reality. So it seems to me: the subtle articulation that Geshe was talking about, between the various levels of emptiness (and please correct me if I'm wrong), should not block us from using the notion of "this is real", "this is not real" - case by case within context, but in a very effective way. When I'm awake has something in common with the reality of my dreams - [this is what] I learned from Buddhism in a sense, but this doesn't take away the fact that I better distinguish routinely my dreams from my awake [state].

S Scott Snibbe 10:37

Yes, Geshe-la, would you like to respond a little bit to that and talk about the notion of bias? How bias affects our mind in practical ways: this bias towards seeing self and other, and the other things Dr Rovelli talked about?

G Geshe Tenzin Namdak 10:54

What appears to our mind, actually, is being influenced by previous ways of thinking about an object or conceptualizations, or whatsoever. So, that means: whatever appeals to our mind is, of course, influenced by what we call previous habituation patterns. Right? So that's definitely true. And we see that also throughout Buddhist philosophy: there's a great agreement upon this aspect that what appears is actually this bias by our own kind of mental perceptions. So that's true for most (not all), but most kinds of Buddhist's schools of philosophy. And that actually prevents us from questioning, yeah? And that's very important: to question things.

What appears to the mind, is that reality or not? And if so, what aspect is reality on a conventional level, and what aspect is real to my ultimate level? Yeah, we have to make these distinctions very clear.

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Geshe Tenzin Namdak 11:48

For instance, if you think about Carlo Rovelli's example of the chair in the mirror, there's two different things. In the School of Nagarjuna, we have conventional truth divided up in two different aspects. Yeah? From the point of view of ordinary perception, as he calls it: from the point of view of ordinary perception, the chair in the mirror is not really real, right? But the chair, which is in front of us is more a real aspect of the conventional reality, according to that perception of that particular individual. Right? So there, you have a distinction in conventional truths of those who are real, and not real. Yeah? Then if you take a step further, then you go to the actual chair: the actual chair has a property, i.e. you can sit on it, it's hard, it's solid, etc, etc. It is kind of a process of particles that are in a period, which is more or less table, so that makes our chair, right? So that reality at the conventional level is true, otherwise, we won't be able to sit on it, right? (It will break down or something like that.)

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Geshe Tenzin Namdak 12:52

So, in the philosophy of the "consequence school", we make a distinction between two layers of conventional reality: one, which is not real, like the chair in the mirror, and one that is real like the chair. But that doesn't imply that the chair exists from its own side. Yeah? The chair is in the nature of those three levels of dependent origination we just discussed. And that also proves that the chair is empty of inherent existence. Right? So that's the ultimate reality. And the ultimate reality connects with the conventional reality. So when Nagarjuna talks, for example, about the reappearances - and says that things are like an illusion, right, like a dream. Of course, our dream is a mistaken form of consciousness. That's why it's an illusion, our waking consciousness is slightly different. But when we talk about how things appear, like an illusion, they're not reality, what we mean is the inherent appearance: that things appear from their own side. And that aspect is an illusion.

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Geshe Tenzin Namdak 13:55

For example, our feeling, our body exists, right? If you bump your head against the wall, or you fall off your chair, you can feel there's a body there, right? So that means there is a conventional body. But what is the illusion is that the appearance of that body has an existence from its own side, because that's not real, right? (In the ultimate sense.) So that means that our mind is biased by how things appear as separate from our consciousness: things appear from their own side, right, without dependence - without dependence on anything else than itself. Right? And at the quantum level, we can examine that and see that that's not a reality. There is an interdependence, but that what appears to us, especially in the physical day to day world, things appear very solid out there, "all by themselves", without dependence. So that reality we call kind of an illusion. But the table is there. The chair is there, the body is there, the mind is there. But the way it appears: that's actually what we call this illusory appearances - it appears very concrete out there, right?

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Geshe Tenzin Namdak 15:03

So, we have to make a very clear distinction that in the conventional truths, there are things that are completely wrong: like the chair in the mirror, and thinking that's the [actual] chair - that's a wrong form of consciousness. But perceiving the chair itself is not a wrong form of consciousness. But then if we go into the relation to the ultimate reality, and see how the chair appears out there, all by itself, very static, without dependents, there's nothing else going on than just solidity: that appearance is not reality. And we see that in quantum mechanics: that's not the reality, because we see what's going on behind our appearance of that solid chair, and realise there's much more going on, right? So in that way, we have to make a clear distinction between, what actually on the conventional level we consider as real and not real, and what we on an ultimate level, consider as real and not real.

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Geshe Tenzin Namdak 15:51

So, on a conventional level, we all agree upon - if you're a scientist or not - generally speaking, that the chair in the mirror is not real, and that the chair itself is real. From an ultimate point of view, then we have to discuss a bit more. And then I think what we find now in quantum mechanics: that there's so much more going on behind the surface than what appears to us. But it appears very solid, but if we examine that solidity is not really there with the object, right? So that aspect, that's what we actually try to see and examine - that's very important. Because we are biased by this habituation pattern of seeing things as very concrete out there, objective, all by itself. But the more you examine, you'll see it's not really there. We often indicated, for example, if you have a scarecrow somewhere standing in a field, from a distance it looks like a human being. But the more you examine, the closer you get, you see, "oh, it is not a real human being", right? So this here, same thing: from an ultimate perspective, if we look at the chair we say: "A chair is out there". But then when you examine on the quantum level, it's not really "out there". So the closer you get, the more actually you start to understand this ultimate reality.

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Geshe Tenzin Namdak 17:05

Yeah? So, that's a kind of an interpretation of how you can see the distinctions between real and not real in the conventional sense, right? (With the chair and the mirror.) And on an ultimate sense that things appear very concrete out there, but the closer you get, the more you analyse - and that's what Nagarjuna eventually says - you cannot really find it. Same on the quantum level, you only see a process: there is no real, solid thing to be found - it's just a process. Right? So that's a kind of reality which the biased aspect of our mind prevents us from seeing (that reality). But now, from the point of view of reasoning, using the language of epistemology, or by using the reasoning of mathematics as we see in science, we come to a step to question things, right. And that's very important, because without questioning, we will never come to an understanding of reality on a conventional and ultimate level.

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Geshe Tenzin Namdak 18:02

So yeah, that's why inquiry is very important, as the Buddha himself said: "Don't believe whatever I say because I'm a well-renowned and respected person - you have to analyse! Like you analyse a piece of gold by breaking it down, rubbing it, melting it. Check what the saying is"

you analyse a piece of gold by breaking it down, rubbing it, melting it. Check what I'm saying." So that's an innate part of the Buddhist doctrine. And I also agree with Carl Rovelli, that when I was a university student, studying hydrology, then moved into this aspect of Buddhism, then I thought, "Oh, that's very interesting". It's right, in one way it's very scientific. Also, as His Holiness Dalai Lama often indicates, Buddhism has many secular or universal aspects - like mind-science or psychology, right? And philosophy, as we are now discussing at the moment, so you don't have to become a Buddhist to analyse and study that.

S

Scott Snibbe 18:53

Very nice. Geshe-la, you just mentioned His Holiness the Dalai Lama, and we've been able to see the Dalai Lama on video a lot lately. And he has quite often said that, he complements his own meditation on emptiness with quantum mechanics - the quantum mechanical understanding. So we've been talking mostly about how the Buddhist philosophy can help understand quantum mechanics. But how is modern physics complementing Buddhist philosophy and meditation if His Holiness is meditating on quantum mechanics?

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Geshe Tenzin Namdak 19:25

I think very much. Because, also in the monasteries and nunneries His Holiness has said: "You study quantum mechanics, to understand emptiness better." So, it's true, the more reasoning we can use - or the more evidence, either in a kind of epistemological way, or from the point of view of empirical evidence - the more we study, the more we understand. I think that's really true: for me personally, also, the view of law of cause and effect, karma, emptiness - when I read about quantum mechanics or read about certain forms or interpretations of what is consciousness in modern science, it is very helpful and interesting to also see the bridges, but also see the differences. And then with the differences, you actually learn quite a bit from other interpretations that we don't have in our [Buddhist] texts, right? The Buddha never talked about quantum mechanics as we have only understood this in recent time.

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Geshe Tenzin Namdak 20:26

So, if you understand quantum mechanics then we can talk about similar things. So it's a different way of an approach and reasoning: like the process between the individual particles is of more interest than individual particles, right? So those kinds of aspects help us to understand that there is no "inherent particle" at all. If that's not existing on the quantum level, then on the coarser level - because everything is made out of quanta - things have kind of similar kind of properties, right? So it helps us actually to understand that objects don't really exist, the way it appears inherent and from their own side, if you look at the quantum level. So yeah, I think I find it very helpful as well.