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This is a graded discussion: 1 point possible

Show Due Dates

EC Lawrence Krauss: Video and Discussion (15min video, discussion)

Erin O'Connor

Apr 27 at 2:32pm

7 7

This is an extra credit assignment. It is not required.

In this short question and answer session, Professor Lawrence Krauss answers questions about the universe and our place in it. I want you to watch it because it basically ties together everything we have studied in this course.

https://youtu.be/b0hx2J5lTeI (https://youtu.be/b0hx2J5lTeI)

(https://youtu.be/b0hx2J5lTeI)

For this final discussion: Watch the whole video. Choose **two** of the questions listed below, one factual and one opinion, which Professor Krauss answers, that most inspire your interest. Each question is displayed in the video before Prof. Krauss gives his answer.

Part 1. Comment on two of the questions, one factual (questions 1 - 5) and one opinion (questions 6 - 17) that Prof. Krauss addresses. For each of your answers, please be sure to address the following:

a) State the question, and why it strikes you as most interesting to you. Also state why you think this question is important to the progress of science.

b) Summarize in one (or at most two) sentence(s) Professor Krauss' answer to this question.

c) React to this question and answer. For one of the first five questions, which are basically factual, give your reaction based on what you have learned in this course, or another science course. However, for the question you chose from numbers 6 - 17, feel free to go to town with your personal opinion.

Part 2. Discussion with another student

Then, after you have written your answers, please read another student's responses and give them a comment. You can agree or disagree, but if you disagree be sure to be polite and positive! If you disagree, state your reasons based on what you have learned in this course, but always remember to be respectful of each other.

Here are the questions, each of which is presented before he answers it, and which are all listed under "More" on Youtube:

Choose one from the first 5 factual questions to discuss:

1) How did the universe begin?
2) How can a universe come from nothing? (
1:15 (https://www.youtube.com/watch?v=b0hx2J5lTeI&t=75s)

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=75s)
)
3) Can we ever know how the universe begun? (
02 (https://www.youtube.com/watch?v=b0hx2J5lTeI&t=122s)

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=122s)
)
4) How can we explain that the universe appears fine-tuned for life? (
2:32 (https://www.youtube.com/watch?v=b0hx2J5lTeI&t=152s)

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=152s)
)
5) If things had been slightly different at the beginning would life still have been possible? (
3:47 (https://www.youtube.com/watch?v=b0hx2J5lTeI&t=227s)

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=227s)

)

Choose one from the second set of opinion questions to discuss:

6) How do you decide what to believe? (

5:37 (https://www.youtube.com/watch?v=b0hx2J5lTeI&t=337s)

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=337s)

)

7) Can science explain everything? (

6:27 (https://www.youtube.com/watch?v=b0hx2J5lTeI&t=387s)

ttps://www.youtube.com/watch?v=b0hx2J5lTeI&t=387s)

)

8) Does science give us certainty? (

7:01 (https://www.youtube.com/watch?v=b0hx2J5lTeI&t=421s)

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=421s)

)

9) Does it matter that science sometimes gets things wrong? (

7:49 (https://www.youtube.com/watch?v=b0hx2J5lTeI&t=469s)

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=469s)

)

10) Do people have ‘faith’ in science? (

8:27 (https://www.youtube.com/watch?v=b0hx2J5lTeI&t=507s)

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=507s)
)
11) What does it mean to live without certainty? (
9:04 (https://www.youtube.com/watch?v=b0hx2J5lTeI&t=544s)

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=544s)
)
12) Are science and religion compatible? Has science removed the need for religion? (
9:22 (https://www.youtube.com/watch?v=b0hx2J5lTeI&t=562s)

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=562s)
)
13) Why is science important? (
10:05 (https://www.youtube.com/watch?v=b0hx2J5lTeI&t=605s)

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=605s)
)
14) What are joys to be found in science? (
10:49 (https://www.youtube.com/watch?v=b0hx2J5lTeI&t=649s)

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=649s)
)
15) What good can science do? (

11:33 **(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=693s)**

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=693s)
)
16) Is 'militant atheism' or dialogue the best approach? (
12:16 **(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=736s)**

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=736s)
)
17) Would you describe yourself as a humanist and what does that mean to you? (
14:00 **(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=840s)**

(https://www.youtube.com/watch?v=b0hx2J5lTeI&t=840s)
)

Credit: Activity written by Jatila Van der Veen.

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Reply

Sarah Savage (https://canvas.sbcc.edu/courses/46681/users/375381)

May 7, 2022

2. How can a universe come from nothing?

a. I find this interesting because the idea that the universe could come from nothing goes against how humans experience reality. You just can't get something from nothing. It doesn't

make sense to the human mind. This question is important because the answer tells us where we originated and what happened at the beginning could give us a more solid understanding of how the universe works, including helping us develop a universal theory of everything.

b. Dr. Krauss explains how gravity can have both positive and negative energy. If we start with nothing, the total energy is balanced and equals zero. He states that the existing universe still has zero total energy, and that's what makes it possible to create something from nothing. Ultimately, there was an energy balance before the universe was created and an energy balance after. He also states that if using quantum mechanics to model a universe spontaneously created from nothing, it would look identical to ours. While that doesn't prove it, it makes it highly plausible.

c. I have a hard time wrapping my head around the idea that the universe came from nothing, but I do understand the concept of having an energy balance. I'd really like to learn more about this, which I think means I really need to learn the math behind it in order to truly understand it. I do think that Dr. Krauss is wrong about one thing. There does need to be faith involved in science, just not the type he referred to. The general population needs to have faith in the scientific community in order to accept these types of difficult to grasp concepts, because we can't all be experts in physics.

13. Why is Science Important?

a. This question strikes me as interesting because I wholeheartedly agree with his first response to it - that science is essential to learning about the world and about ourselves as people. This question is important because it's important for humans to know the answer in order for us to keep science as a priority in our civilization. If humans were to stop believing in science's importance, then science would not progress, and humans would not progress.

b. Dr. Krauss explained that we are all natural born scientists. Babies and kids especially are constantly testing out their ideas in order to learn about their environment and their place in the world. The scientific process is how humans learn. He also stated that knowledge only comes from the empirical study of the universe followed by reasoning.

c. The answer to this question is something that needs to be taught to every child on this earth, so that humans grow up holding science as a priority in all things we do, particularly politically. If our leaders don't value science, they won't make decisions holding science as the priority and reasoning to back up their decisions. The only hope we have for a long-lasting civilization is for us all to believe in the importance of science.

Reply

(http

Abigail Jacobs (*She/Her*) (https://canvas.sbcc.edu/courses/46681/users/367167)

Sunday

Hi Sarah!

Your answers are so well done!! I especially agree with 13a, I think that science is essential to well everything. I am a psychology major and in studying human behavior the scientific method is used all of the time. The research, the foundation, and the knowledge gained are all a part of science, without it where would we be? We wouldn't have light, fire, fans, cooling systems, and many many more essential things to our daily lives. It is crazy but true that without science we would be nowhere, without people questioning the unknown we couldn't know anything. I would say that much of the world that we have created relies on science.

Reply

Abigail Jacobs (*She/Her*) (https://canvas.sbcc.edu/courses/46681/users/367167)

Sunday

#1 If things had been slightly different at the beginning would life still have been possible? I think this question is very interesting because it addresses the idea of whether or not the earth was created in a certain way, everything is unknown and uncertain. There could be other planets out there that support life like ours but are probably not the exact same as our planet. The planets aren't curated by one person and designated for life or other purposes, they just happen. I think that if the beginning of our planet's life went a little differently there could still be life because we have found other planets out there that could support life. Meaning that the exact blueprint and timeline of the earth is not the only way to have what we have.

#2 Can science explain everything? I find this to be the most interesting because I grew up in a very religious family with a Christian background but I also believe in science and I am the type of person that has to believe to see. Science works the same way too, yes you can have theories but people are always trying to prove or disprove them, therefore, trying to find the answer with evidence to pack it up. He talks about consciousness and things involving psychological research that is not yet understood and he says that we don't know if these will even be understood or answered. I think this is a good way to look at science as it is about the unknown, there isn't a definite yes or no for most things.

Reply

Franco Diaz Campo (https://canvas.sbcc.edu/courses/46681/users/403036)

Monday

Hi Abigail,

I think the same as you in your second question because I've grown up in a religious family, and I know that sometimes it is tough to have faith in something without seeing it. However, the truth is that science works differently than religion, so they are separated. It is essential to understand that science always tries to prove them wrong, which is not the same in religion because they are clinging to an idea, and of course, religion is bad in many things, but they react differently to search for a "truth."

Reply

Franco Diaz Campo (https://canvas.sbcc.edu/courses/46681/users/403036)

Monday

QUESTION ONE

1. Can we ever know how the universe begun? I think this question struck me a lot because it is a question we've always asked ourselves, it is something we will probably not know until the day we die, and it is one of the biggest questions in science.

2. The answer he gave to this question is that he doesn't know, and he gave a specific explanation, and it is that we could understand only if we try it.

3. It impressed me a lot this answer, and I thought he would say a different solution; I thought he would say something like, "Yes, we already are doing experiments at the NASA, and there is a small option that it is the truth." The real thing is no, we don't know anything about this universe, but the actual item, and a thing that I've learned in this course, is that it is impossible to know something without trying it and doing experiments. As he said, technology grows, and every day we try something new, we get new learnings.

QUESTION TWO

1. Do people have ‘faith’ in science? This was an excellent question to analyze because we always think that we need to have faith in what science says, but the actual thing is that not even they have a degree of certainty that it's true.

2. The answer he gave to this question is that science and religion are different because science always tries to prove they are wrong, and in faith, it is done differently.

3. I think we always think about whether science is the right thing, genuinely telling the truth, or if what they say has sense. The actual question is that we can't have for granted that it is always right because we are humans, and we can make mistakes. The important thing about science is that they try to prove them wrong, and until they don't have a degree of certainty of

what they say, they can't grant it is true. Thanks to technology nowadays, we prove that some things are wrong in science, and when they find a mistake, they fix it and continue doing experiments.

Reply

(http

Malcolm Tircuit (https://canvas.sbcc.edu/courses/46681/users/427388)

Yesterday

Hi Franco,

I think it's always important to doubt yourself on whatever you believe to be real. That is the only way we can really grow in our understanding of things. I totally agree with you when you said "we are humans, and we can make mistakes". I think that is very important to keep in mind considering that we are just lonely lifeforms on a rock in space trying to figure things out. There will be bumps along the way but hopefully we can overcome them and learn from them.

Reply

(https:/

Malcolm Tircuit (https://canvas.sbcc.edu/courses/46681/users/427388)

Yesterday

1:

The question I chose was "can the universe come from nothing". I chose this question because it has always fascinated me and I think this is one of the biggest questions humans can strive to answer through science. Lawrence Krauss answered this by saying that one possibility is that the universe we live in has zero totally energy and thus allows it to spontaneously come into existence. I think this question is very interesting. Learning a lot about matter, anti-matter and energy in this course has helped me to better understand what Lawrence Krauss's answer to this question was.

2:

I chose the question of "can science explain everything" because I think it is a great topic to discuss. I think this question is something that can drive people to discover more and push the bounds of what they think they can understand. Lawrence Krauss answers this question by saying "we don't really know". There is always more to learn and maybe sometime in the future we will be able to answer the big questions that we never thought were possible to answer. I think this should empower us to learn and grow as a people.

Reply