



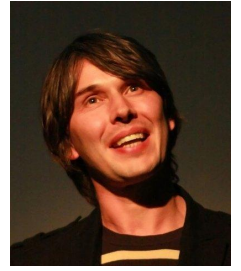
English video activities

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Wonders of the Universe-BBC

Professor Cox explains why time travels in one direction

<https://www.youtube.com/watch?v=uQSoaiubuA0>



First watch the video on Youtube without doing the exercise, then watch it as many times as necessary to complete the gaps with one word:

Back in the _____ century engineers were concerned with the _____ of steam engines.

To answer some _____ questions arose the science of thermodynamics. It's when _____ like heat, temperature and energy entered the scientific vocabulary.

Along with that deeper understanding _____ what is the most important law of Physics for understanding the evolution of the universe and the _____ of time.

It was so profound because it contained a radically new concept, something _____ call entropy. It explains why left at the _____ of the elements buildings collapse. A good way to understand how, is to think of objects not as single things but as being made of many _____ parts.

Entropy is a measure of how many ways we can _____ those grains and still keep the sand pile the same. There are _____ of ways of doing that.

This sand pile has _____ entropy because there are many ways of rearranging it without changing it.

Let's create some order in the universe. Now there are approximately as many sand _____ in the sandcastle as in the sand pile but now anything we do will mess it up.

If you leave the castle in the desert all day it will _____, it will become less ordered and fall to _____.

In principle the wind could _____ build a castle out of a pile of sand. There's no reason it couldn't happen, it's just extremely _____ because there are very few ways of organizing the sand so that it looks like a castle.

It's _____ more likely that when the wind blows the sand around, it will take the low entropy structure, the castle, and turn it into a high entropy structure, the sand pile. So entropy always _____, because it's more likely it will.

By saying that, the second law of thermodynamics is able to explain why _____ only runs in one direction.



What was your relationship with the subject of Physics at school? Did you like how this professor explains things?

Professor Cox explains why time travels in one direction

<https://www.youtube.com/watch?v=uQSoaiubuA0>



First watch the video on Youtube without doing the exercise, then watch it as many times as necessary to complete the gaps with one word:

Back in the 19th century engineers were concerned with the efficiency of steam engines.

To answer some profound questions arose the science of thermodynamics. It's when concepts like heat, temperature and energy entered the scientific vocabulary.

Along with that deeper understanding emerged what is the most important law of Physics for understanding the evolution of the universe and the passage of time.

It was so profound because it contained a radically new concept, something physicists call entropy. It explains why left at the mercy of the elements buildings collapse. A good way to understand how, is to think of objects not as single things but as being made of many constituent parts.

Entropy is a measure of how many ways we can rearrange those grains and still keep the sand pile the same. There are trillions of ways of doing that.

This sand pile has high entropy because there are many ways of rearranging it without changing it.

Let's create some order in the universe. Now there are approximately as many sand grains in the sandcastle as in the sand pile but now anything we do will mess it up.

If you leave the castle in the desert all day it will disintegrate, it will become less ordered and fall to bits.

In principle the wind could spontaneously build a castle out of a pile of sand. There's no reason it couldn't happen, it's just extremely unlikely because there are very few ways of organizing the sand so that it looks like a castle.

It's overwhelmingly more likely that when the wind blows the sand around, it will take the low entropy structure, the castle, and turn it into a high entropy structure, the sand pile. So entropy always increases, because it's more likely it will.

By saying that, the second law of thermodynamics is able to explain why time only runs in one direction.



What was your relationship with the subject of Physics at school? Did you like how this professor explains things?



Wonders of the Universe is a 2011 television series produced by the [BBC](#), [Discovery Channel](#), and [Science Channel](#), hosted by physicist [Professor Brian Cox](#). *Wonders of the Universe* was first broadcast in the United Kingdom on [BBC Two](#) from 6 March 2011. The series comprises four episodes, each of which focuses on an aspect of the universe and features a 'wonder' relevant to the theme. It follows on from Cox's 2010 series for the BBC, *Wonders of the Solar System*. An [accompanying book](#) with the same title was also published. **(information from Wikipedia)**

[Brian Edward Cox](#) ((born 3 March 1968) is an English physicist and musician who is a [professor](#) of [particle physics](#) in the [School of Physics and Astronomy](#) at the [University of Manchester](#) and the Royal Society Professor for Public Engagement in Science. He is best known to the public as the presenter of science programmes, especially BBC Radio 4's *The Infinite Monkey Cage* and the *Wonders of...* series and for [popular science](#) books, such as *Why Does $E=mc^2$?* and *The Quantum Universe*. **(information from Wikipedia)**

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