1. Where did we come from?

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It's the oldest question in human history. Everyone's asked it, from philosophers and poets to mathematicians and physicists. Most scientists think that everything that we know and experience around us began at a moment known as the Big Bang, 14 billion years ago. But how can we have any clue about something that supposedly happened so long ago?

From speeding galaxies to ancient gas clouds, there is evidence that we can detect today – the remnants of the Big Bang, that tell a **clear story** about the origins of our Universe.

2. We can see the universe expanding

Graham Relf

We can see that **almost all galaxies appear to be moving away from us**.

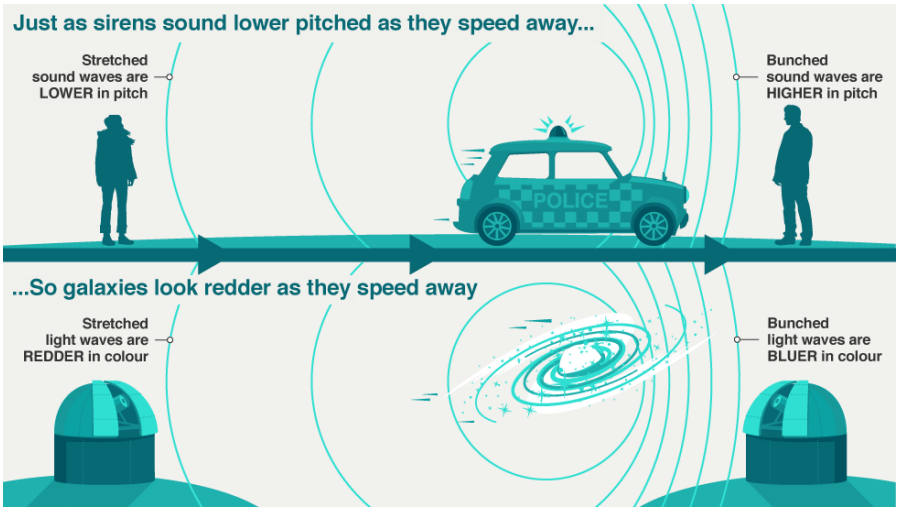
When we look at the night sky, the stars we can see are within our own galaxy. But there are also some fuzzy patches. These are other galaxies like our own – but they are much, much further away than the stars.

Almost all of these galaxies are moving away from us – some at speeds of hundreds of thousands of kilometres every second. If most galaxies are moving away from us, **it means that the Universe is expanding.**

If the Universe is expanding, then in the past it must have been much smaller. Go back far enough, and there was a moment when all the matter in the Universe was **packed into a point** and expanded outwards. That moment was the Big Bang. We can even work out when it happened from the speed of the galaxies: about 14 billion years ago. **We can't actually see the galaxies moving**, **but the clue is in the light coming from them – it is redder than it should be.**

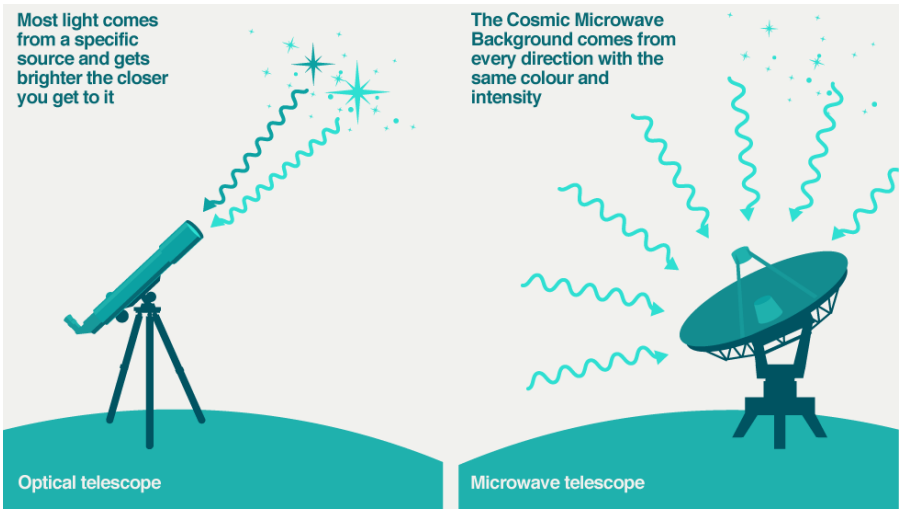
> (**Assumption**: Galaxies do not speed up nor slow down, but drift at a constant assumable rate. All galaxies began at one point. (*What would happen if we went back farther than that?*)

3.Why galaxies look redder than they should



The tell-tale signature of a galaxy speeding away from us can be detected in the same way that we can tell when a police car passes us with its siren on. When that happens, the siren sounds lower pitched to us, because the waves are stretched. Light is also made up of waves, so the same is true of very fast-moving objects like galaxies. If a galaxy is moving away from us, the light waves are stretched. That makes the light seem redder. The faster the galaxy is moving, the redder the light.

4. Capturing the afterglow of the Big Bang



Maggie Aderin-Pocock explains that ripples in the Cosmic Microwave Background hint at the starting conditions that seeded stars and galaxies.

We can't see it with the naked eye, but some of our telescopes can. Our eyes actually only see a fraction of the light in the Universe. **As well as visible light, there are other kinds of light, such as X-rays, infrared light, ultraviolet light, radio waves and microwaves**. They have shorter or longer wavelengths than visible light.

After the Big Bang, the whole Universe was flooded with incredibly bright light. As the Universe has expanded, that light has stretched into microwaves.

A microwave telescope can see this ancient light from the very beginning of the Universe. In fact, a view through a microwave telescope shows **the whole sky filled with a glow**, **day and night**. This glow is called the Cosmic Microwave Background.

5. How starlight differs from microwaves

Unlike the light coming from a star, the Cosmic Microwave Background is **the same wherever you look**, and wherever you are in space.

6. We can peer back in time

An ancient gas cloud was discovered in 2012 near a quasar 13 billion light- years away, seen here as a faint red dot in the center.

Looking out into space is like looking back in time. That is because light from objects that are far away takes longer to reach us than light from objects nearby. **If an object is a million light years away, we are seeing it as it looked a million years ago.**

(*Assumption: Because things cannot speed up nor slow down if they are in motion, they probably were just always at that speed.*)

Modern telescopes are so powerful that they can view objects many billions of light years away, close to the time of the Big Bang.
If the Big Bang did happen, then we'd expect those distant views to reveal clouds of gas which have not yet turned into stars and galaxies.

Astronomers have recently found gas clouds like this in the distant Universe. Some of them are around 12 or 13 billion years old. Even at this incredible distance, we can tell what they are made of by using a technique called **spectroscopy** to analyse light that passes through them. As Big Bang theory predicts, these ancient gas clouds are made of very different stuff to the modern Universe. Most of the chemical elements in the modern Universe are made inside stars.

Because the gas clouds come from a time before stars, they consist almost entirely of the most basic elements, hydrogen and helium.

7. So what caused the Big Bang?

What triggered the Big Bang is a question that still puzzles some of the best scientific minds. Could one of these theories be the answer?

1. **Cycles of death and rebirth:** Often referred to as “the Big Bounce” theory, The universe ‘might slow down’ in its expansion and eventually collapse inward (*a great cosmic reverse!*) due to gravity… creating an unavoidable Big Crunch!!! … before exploding out again in

another ‘Big Bang.’ Maybe this has all happened before?!? Maybe that explains where the material for the ‘big bang’ we experienced now came from?!

2. **Bubbles in a Parent Multi-Verse:** Sometimes called the “Chaotic Inflation” theory. That the universe expanded SUPER-REALLY-ALMOST-UNFATHOMABLY fast for a few seconds before it all just slowed down suddenly to the expansion we now still-cannot-observe, but see tell-tale evidence that it is still expanding.

3. **There is No Cause:** Professor Stephen Hawking’s preferred theory is that the Big Bang didn’t come from anything. That there is no such thing as time before the Big Bang – that it would be like the idea of a point NORTH of the North Pole. This makes way more sense than to simply believe that there is a Creator.

WHY DOES MODERN SCIENCE CHOOSE THE BIG BANG?

Because of the non-observable (*but definitely indicated*) expansion of the universe. Because nothing is more scientifically sound than taking things for granted, ESPECIALLY if it is not directly observable.

But doesn’t the claims about where we spend eternity seem also unobservable, untestable, unrepeatable, and unscientific?! Aren’t these claims also *definitely indicated* in Scriptures?

Why not sacrifice our future eternity because it can’t be put in a test tube. Seems like a legit doubt. Except, if the Bible is correct, what have you lost? Only the most important part of who you and I are. If the Bible is wrong, than what have you really lost? Nothing that really matters, for nothing truly really matters in this scenario.

WHY IS THERE MORE MATTER THAN ANTI-MATTER?

(*Where did matter come from, anyway?*) No matter how perplexing the question, science has (if not now, with enough funding, soon!) the answer. In the first moments after the Big Bang, the universe cooled, conditions became “just right” to give rise to the building blocks of matter – The quarks and electrons of which we are all made. *Seems legit, no matter HOW unobservable, untestable, or unrepeatable.*

The current authoritative postulation seems to be that “*in the very hot and dense state shortly after the Big Bang, there must have been ‘processes’ that gave preference to matter over anti-matter.*”

While Stephen Hawking’s ‘there just wasn’t anything before’ answer may seem like a cop-out… but it actually sounds a lot more plausible than the Nickelodeon explanation like this.

This question seems to be kind of the big push on the scientific house of cards. Because all conventional, observable, repeatable, and testable scientific laws we know and use revolve around the fact that ‘Matter can change form through physical or chemical changes, but can only be CHANGED, and never created. Matter is always ‘conserved.’ The same amount of matter exists before and after the change – never additional matter created. Call it “the Law of Conservation of Mass.”

WHEN DID THE BIG BANG HAPPEN?

13.8 Billion years ago was the exact unobservable, untestable, unrepeatable, and borderline unfathomable moment the Big Bang happened. The cool thing is, ask this question a thousand years ago, and numbers that big won't have changed a bit. LOL! The magic sauce to the claims of the 'Big Bang' seems to be 'unfathomable amounts of time.' Doing the same thing, the same way, endlessly, SURELY will produce different results because… TIME!

WHERE DID THE BIG BANG HAPPEN?

If 'space' was created by the Big Bang, then WHERE could it have happened?!? Well, I guess 'technically' it happened EVERYWHERE, since everything was in a singular point that just… unprovoked by nothing, exploded, creating everything.
The theory that everything exploded everywhere all at once is quite common, but quite impossible to accurately model or 'reverse' as an 'event' on any scale, let alone with the outcome of creating life.

But then, if you listen between the lines, this is the scientific way of saying, "I have no idea."

Realistically, it is not possible to just 'reverse' the expansion of the universe on a computer model to see where 'that point' would have been, because the 'expansion' of the universe is not exactly observable, remember? It is only 'hinted at' because of **red shift** (*the Doppler effect scientists apply to the color radiated by stars.*). And since not ALL stars seem to be drifting in the same manner, speed, or direction, this also would make 'reversing into a single point' somewhat problematic.

It would be like reversing the burning cinders of a firework to determine at what point/location it detonated. It would be impossible. Actually, maybe it would be *easy* with fireworks if someone could observe them and document it…
… but then, that is beginning to sound an awful lot like the Biblical account, isn't it?

I don't think any rational being would deny that the universe had to have happened quite suddenly. The debate seems to revolve around whether it was an unexplainable and unlikely explosion, or a purposeful and powerful creation. The consequences of this debate seem to hinge upon the acceptance of personal responsibility for our sin, answerable to an Almighty Creator, or whether we can sin our entire life and get by with it.