



**Sheldon Glashow**, Nobel Prize in physics for the electroweak theory

I am 84 years old. I'm a New Yorker. I have been a professor of physics at the universities of Harvard and Boston. I have four children and ten grandchildren. I'm a Democrat, I detest Trump! I am a practising atheist. I belong to a Jewish family with five generations of scholars

## “A scientist without humanist culture does bad science”



VICTOR-M. AMELA

**Big Bang Theory**  
Sheldon Glashow looks down on me from a height of six foot four to give me the feeling of a subatomic particle. He peers at me analytically through his metal-rimmed glasses, with a curious and insightful attitude; the same attitude that has created a standard model of physics, a conceptual framework forming the basis of our civilisation. I approach him after a session of the Royal European Academy of Doctors, of which he and several fellow Nobel Laureates are members, and he surprises me with both his insult aimed at Trump and his sense of urgency: “If we want to carry on answering questions about the universe, let’s get a move on with the fight against climate change, or we will have extinguished our civilisation within a century”. The speaker of these words is not just anyone.

**Y**ou are called Sheldon, just like Sheldon Cooper...  
Yes, the character from the TV series *Big Bang Theory*.  
**Indeed. A scientist like yourself...**  
And tall and lanky, just like me... because he was inspired by me. I have no objection to lending my name and some characteristic or other, like the way he walks...  
**With one thumb tucked into his belt.**  
I often do that. In all other respects, he is fictional and I am me.  
**A scientist who..., when did you realise you'd be one?**  
I found an old school book from when I was 14 years old, containing comments from my classmates: saying that I would be the next Pasteur, or the next Einstein (he laughs).  
**They already saw you as a scientist.**  
My elder brothers fought the Nazis in the Second World War and it is for that reason that the ten-year-old me studied everything to do with planes, bombs...  
**Is that what attracted you to science?**  
That and my enthusiasm for science fiction. The first atom bomb was dropped when I was 12 years old, but I already knew about atomic energy, and it did not surprise me.

**Which scientist has inspired you most?**  
Galileo, Shakespeare, Einstein...  
**Shakespeare?**  
There is no good science without conscience, or without a profound knowledge of the human soul. And Shakespeare is the best when it comes to that.  
**I'm surprised to hear this from a physicist...**  
Being a scientist does not mean that you are insensitive. A good scientist is a humanist. At least all the good scientists that I know are!  
**I was punished for failing mathematics when I was a child; the other subjects didn't matter.**  
Mathematics might be beautiful, but your teachers were bad. They demotivated you, since you were neither stimulated in mathematics nor valued in anything else.  
**A Nobel Laureate defends me at last!** Feel avenged. We are only civilised if we manage to combine art and science. A scientist who has no knowledge of the humanities will be a bad scientist. And I have no respect for badly educated scientists!  
**How would you tackle a basic maths class?**  
I could ask the students: “What do you know of the Sumerians?”. And then: “Do you know why the unit of time is called ‘a second?’”  
**I don't know.**  
The Sumerians established, eighteen centuries ago,

the seven-day week (which is why Latin speakers called it the *septimana*, from *septem*, or seven) and the 365-day year, and the 360-degree circle...  
**History, knowledge... Thank you!**  
And they divided each hour into 60 portions, based on the period of time for which you can hold your breath...  
**It have trouble holding it for a minute...**  
That's still too long. It's true; we should look for an even shorter period... But those Latin speakers then named these first portions of time *pars minuta prima*: the small first part. And *minuta* is what gave us the word “minute”.  
**Oh!**  
Then the Sumerians subdivided the minute into another 60 even smaller parts, hence *pars minuta secunda*.  
**The second small part... The second!**  
Great! And there was even a third small part, a sixtieth of a second...  
**You also mention Galileo. Why is that?**  
He stood by his empirical observation that the earth rotated around the sun... despite the dogma of the dangerous Italian Catholic Church.  
**And Einstein?**  
In just one year, 1905, he launched three revolutionary theories: one, that light is not a wave or particle; two, that space and time are a single continuum (the theory of relativity) and three, that energy and mass are two ways of expressing the same thing ( $E = mc^2$ ).  
**What does a scientist need to stay at the top of his game?**  
Passion and creativity.  
**And a method, doesn't he?**  
But one open to surprises, with a willingness to encounter and recognise the unexpected. That's what we call serendipity: the flute sounds by chance, but you have to be there to hear it.  
**Give me an example of serendipity.**  
One of my heroes is Becquerel, a French physicist, who in 1897 discovered, without wanting to do so, natural radioactivity. He was looking for phosphorescent materials when he discovered, by chance (and in the dark!), uranium salt, which left a trace on photographic plates: truly radiant!  
**Just like Columbus unintentionally discovered America.** But you do have to board the ship in the first place.  
**What was the discovery that gave you the Nobel Prize in physics?**  
I unified two forces of nature (electromagnetism and weak nuclear): this is the electroweak theory, subsequently verified experimentally in particle accelerators. But none of this matters now...  
**Why do you say that?**  
Because the only urgent thing now is to curb climate change. In 80 years' time, the island of Malta will be under water. If we fail to act decisively, we are lost.  
**As bad as that?**  
Our civilisation will no longer be viable. It will fall apart within a century if we go on like this. Let us free ourselves of this idiot Trump right now, and save our planet!