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On Neutrinos and Angels

Using a holy text as a physics book makes little sense. But, sadly, it is all too common.

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The news from CERN was stunning: the European nuclear science laboratory had just discovered (September 2011) that particles known as neutrinos — called so because they are neutral and carry no charge — habitually travel a little bit faster than light. This threatened to shake the very foundations of Einstein's theory of relativity, which had laid the basis for the atomic bomb, nuclear energy, and most of modern day physics. Relativity theory starts from the postulate that the speed of light is the absolute maximum that anything can travel at.

Pakistanis are generally unmoved by developments in the world of science. But this time the excitement was palpable. A TV channel called me up, requesting an interview. Fine, I said, specifying the time when I would be available. The producer was profoundly apologetic: this was exactly when they would be interviewing Dr Zakir Naik, an Islamic scholar who frequently pontificates on issues of science and religion. Would I therefore please give another time? Since the good doctor's claim to fame is his understanding of religious texts rather than of physics, I declined and do not know what transpired subsequently.

Speed of light issues have often moved sections of religious people in rather strange ways. Way back in 1973, as a young physics lecturer at Quaid-i-Azam University, I had been fascinated by the calculation done by the head of our department. Seeking the grand synthesis of science and faith, this pious gentleman — who left on his final journey last month — had published calculations that proved Heaven (*jannat*) was running away from Earth at one centimeter per second less than the speed of light. His reasoning centred around a particular verse of the Holy Quran that states worship on the night of *Lailat-ul-Qadr* (Night of Revelation) is equivalent to a thousand nights of ordinary worship. Indeed, if you input the factor of 1,000 into Einstein's famous formula for time dilatation, this yields a number: one centimeter per second less than the speed of light!

These days the internet groans under the weight of claims that the Holy Quran had specified the speed of light 1400 years ago. Dr Mansour Hassab El Naby, said to be a physicist from Egypt, announces that according to his Quranic calculations, this speed is 299,792.5 kilometres per second. He even gives error bars! Another video gives a still more precise figure of 299792.458 km/sec. Given the unrestrained leaps of logic made by the authors, it is not surprising that they all arrive at more or less the same numbers.

Interested readers may also wish to visit an intricately-designed website that has clocked up over 750,000 visitors so far. Chockful of mathematical formulae, diagrams, and pictures, it starts from the premise that "angels are low density creatures" taking orders from a "Preserved Tablet" and says "the speed at which they commute to and from this Tablet turned out to be the known speed of light". To enhance the visual impact, the website has a Java applet showing a white Caucasian scientist who moves his eyes up, down, and around in wondrous rapture. While doing so he sonorously pronounces — in what sounds like an Australian accent to me — that the extra space-time dimensions demanded by the physics of string theory are exactly those predicted in the Quran. The final conclusion: "Einstein's theory of General Relativity proves the Quran right".

Well, there's a huge problem here! No scientist is sure that General Relativity (GR) is absolutely correct. In fact, the phrase "absolutely correct" does not belong to the lexicon of any science, even one as well developed as physics. Excellent as GR is — with hundreds of careful tests — physicists are pretty sure that there are places, such as at the edge of a black hole, where GR simply has to fail. Placing the absolute correctness of Allah's Word on the knife-edge of an imperfect theory is pretty dicey.

Certainly, no working scientist takes seriously any of stuff on Islamic science websites. In spite of their wonderful graphics and scientific appearance, they are wholly unscientific. Science comes from persistently and patiently checking hypotheses, building upon earlier discoveries and knowledge, and systematically sifting out all which cannot pass stringent tests of logic

and observation. For example, experiments at CERN consume the working lives of some of the most brilliant people on earth, require billions of dollars of equipment, and stretch human capacities and ingenuity to the limit. When real scientists eventually publish a result, it comes from solid evidence and not from uncontrolled spurts of imagination and strident assertions of faith.

Returning to neutrinos: today we do not know if the results from CERN on faster-than-light neutrinos are actually correct. Like most other particle physicists, I am sceptical. Explanations will surely be forthcoming once similar experiments are done in other laboratories; time will tell. But right or wrong, this is just another interesting puzzle for physicists to mull over. With deep foundations, the edifice of science has survived bigger earthquakes.

On the other hand, if the CERN results are right, “Islamic scientists” like Dr Naby would need to do much explaining. High above in the heavens, neutrinos would easily out-chase angels — the messengers of Allah — because, if Islamic websites are to be believed, angels are limited by the speed of light. So does that mean these naughty neutrinos are outside of God’s control? Using a holy text as a physics book makes little sense. But, sadly, it is all too common.

Worried by the cancerous growth of claptrap masquerading as science, the late Carl Sagan, one of my heroes, spoke to Bible Belt Americans with matchless eloquence:

“I worry that, especially as the Millennium edges nearer, pseudoscience and superstition will seem year by year more tempting, the siren song of unreason more sonorous and attractive. Where have we heard it before? Whenever our ethnic or national prejudices are aroused, in times of scarcity, during challenges to national self-esteem or nerve, when we agonise about our diminished cosmic place and purpose, or when fanaticism is bubbling up around us — then, habits of thought familiar from ages past reach for the controls.”

Pakistanis need to listen again, and yet again to this. Sagan is also speaking to us.

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