

Q&A with Pervez Hoodbhoy



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Nadeem Qaiser (Islamabad)

Q: Is there hope for a liberal life in Pakistan? How to secure that hope?

A: I think by a "liberal life" you mean personal freedoms such as freedom to choose one's religion or not have one, freedom to choose one's life partner, freedom to choose one's dress and appearance, etc. At present, whether by law or by custom, these are denied by Pakistani society as well as by many other Muslim countries. To achieve these freedoms will take two generations or more of struggle against dark forces. You and I are not going to live to see a liberal Pakistan. But, yes, it will eventually happen because denying these basic freedoms results in extreme violence and oppression, sectarian warfare, and intolerance. People can be made to understand this. To secure eventual freedom, we will have to argue our case against blind belief and cruel, rotten, traditions.

Muhammad Ali (Ph.D student)

Q: I am a Ph.D student in Laser physics. I have a question and I would like to pose it to Dr. Hoodbhoy. The question is what is cold fusion? Does it exist? If so what are the perspectives?

A: Cold fusion was the claim that a nuclear reaction could be made to occur at room temperature, and this would not need the extreme temperatures such as those inside the sun or a thermonuclear bomb. The idea was floated in the 1980's but was soon discredited because no neutron byproducts could be detected, contrary to that claimed by its original proponents. It's now considered a kind of crackpot science.

Ali Zaib (Sr. Systems Analyst)

Q 1: I wish I'd have been your student but I didn't get that chance so far. I follow all your videos on eacpe.org. I'm an 'out-of-the-box thinker' and my opinion about the existence of a God is bit shaky. My question is that I want to know about your belief in details. My belief is like that of Einstein. I'm pasting one of his letters below.

"Dear Phyllis,

I will attempt to reply to your question as simply as I can. Here is my answer:

Scientists believe that every occurrence, including the affairs of human beings, is due to the laws of nature. Therefore a scientist cannot be inclined to believe that the course of events can be influenced by prayer, that is, by a supernaturally manifested wish.

However, we must concede that our actual knowledge of these forces is imperfect, so that in the end the belief in the existence of a final, ultimate spirit rests on a kind of faith. Such belief remains widespread even with the current achievements in science.

But also, everyone who is seriously involved in the pursuit of science becomes convinced that some spirit is manifest in the laws of the universe, one that is vastly superior to that of man. In this way the pursuit of science leads to a religious feeling of a special sort, which is surely quite different from the religiosity of someone more naive.

*With cordial greetings,
Your A. Einstein."*

A: Einstein takes a high-minded, philosophical approach to the question of whether God exists. While he understands the feeling of a divine uplift coming from bowing your head, he resolutely rejects the notion that prayers can affect physical outcomes. This is how all real scientists today view religion. Rather than fully explain my position here in detail, I suggest you visit <http://eacpe.org/articles-by-pervez-hoodbhoy/#science-and-society> and look for my article "[Does Science Make Belief in God Obsolete?](#)".

Q 2: My second question is that I'm a software engineer working hard and earning bread for my family. I am successful in my field but I have a strong wish to study from one of world prestigious universities like MIT, Oxford or Harvard.

Few words of advice for me on how to get there.

A: I don't understand your second question. Why do you want to go a "prestigious" university? The important thing is to learn a subject well. The world of learning is much larger than the 3 universities you've named. It would be nice to go to MIT etc. but not everyone can. There could be multiple reasons – everything from insufficient finances, less than excellent schooling, exam phobia, or bad luck. However, in this MOOCS era everyone can learn – and learn well – without going to a fancy university.

Haroon Baloch (Karachi)

Q: My name is Haroon Baloch. I am from Karachi. I am currently an undergraduate engineering student. I have always admired your talks and work, and have watched many of your lecture videos. I have always thought of you as the "Carl Sagan of Pakistan" because of being the most prominent science popularizer in the country.

My question is that, why there is no effort to change the curriculum of the science books in the intermediate boards of Pakistan, specially Physics and Biology? We are, literally, studying the same course our parents had. And because of the course being so outdated and boring, we are unable to bring up new young science enthusiasts in the undergraduate courses.

A: You are correct about the curriculum but changing that would not cure the disease. It's also that our textbooks, teachers, and examinations encourage ratta. Science needs a culture of inquiry and questioning, not the kind of mind-deadening nonsense taught in our schools. So your real question is: how can you move a mountain? The answer: grain by grain, pebble by pebble.

Baber Naeem (Belgium)

Q: "Kaaenaat ki takhleeq, insaan ki takhleeq ka maqsad kia hai? Aur baad is zindagi kay kia hai? According to science + your opinion.

A: kya kissi maqsad ka hona zarooree hai? Aaj yeh baat hamaray ilm main hai keh puranay waqton main qism qism kay haywanat aur nabatat hotay thay laikin ab bay shumar naslain maadood ho gayee hain. Mujhay un kay honay ya na honay ka koee maqsad ya fayda nahin samujh ata hai. insaan bhi usee maadeh say bana hooa hai jiss say who saray jandar banay thay. Science kehtee hai keh hum deegur jandaron say kisee tarah mukhtalif nahin hain aur hamara anjam bhi wohee hoga.

Bin Saleem

Q: "Kia chaand ka 2 tukray hona, aur sooraj ka palat aana scientific haqeeqat hai?"

A: Agr aap ka dil yeh kehta hai to iss ko bayshuk manain, iss main koee harj nahin. Laikin yeh na umeed karain keh science issay qabool kareygi. Yeh sainsi usoolon aur mushahidat kay ain munafi hai.

Waqar Ahmad

Q: When an electron (or any charged particle) is at rest, it experiences only electric force but in motion, it experiences both electric and magnetic forces. What happens to electron when it is in motion that it also experiences an additional force? How to explain it to an undergraduate and graduate student?

A: That a charged particle in motion experiences a velocity dependent force while in a magnetic field is no more mysterious than a charged particle experiencing a force in an electric field. Neither are explainable in terms of anything more basic. It's like asking why things fall down. Anyway, to convince someone that there is a magnetic force, take a magnet and place it at different point along a tube light. Watch the fun! Do not do this with your computer screen because you will ruin it.

Jam Sadiq (Fulbright Scholar)

Q: Respected Sir, I am a student from Mathematics Deptt at Quaid-i-AzamUniversity. I have completed my M.Phil in Maths and now I got admitted at Rochester Institute of Technology New York under Fulbright Scholarships 2013-14. I got admission in Astrophysics because I worked on Black holes in my M.phil thesis.

Sir my question to you is that I want to learn physics But do not know how? I have studied some text books on Physics but I just cram those books I have no clear concepts. I studied physics in my F.Sc and B.Sc but with no passion just for passing exam but now I want to learn it but don't know where to start keeping in view I want to learn physics deeply. I have not done any practicals in BSC and therefore I have no clear concepts. I have watched your lectures in URDU on physics but need more clear concepts deep theory. How you learn physics. What should I need to get conceptual physics?

I am passionate to learn some knowledge during my P.hD. at RIT in USA. Hope you will give me some advice and help me.

A: Try the Khan Academy lectures in physics and math. They are very good. Also, many good MOOCS.

Ali Gilani (Jaranwala)

Q: Can Pakistan really survive 21st century with all the social rot, Aren't we decaying at the core, Isn't it against the natural law?

A: Short of a nuclear war, Pakistan will indeed continue to survive in the decades to come even if the present rot continues. However, unless we learn to fight the rot with appropriate tools, Pakistan will get increasingly more oppressive and difficult to live in for sane people. And if we don't control our population growth then it will become hellishly bad.

Jamal (Jamoskey) Safi

Q 1: Dear Professor Hoodbhoy,
My name is Jamal (Jamoskey) Safi. I've a major interest in STEM (Science, Technology, Engineering, Mathematics) and I'd like to become a physicist. I'm an admirer of you and I'm wondering if you are willing to answer a couple of questions (as seen below):

Considering that you've signed the Humanist Manifesto III (Humanism and Its Aspirations), my question is: What does Humanism mean to you (as a life stance or philosophy)?

A: For me, humanism means giving equal status to all humans irrespective of race, class, religion, etc. It also means giving precedence to reason and evidence over assertions of belief and faith. Humanists can live in peace with people of different beliefs and views, without insisting that everyone becomes like them. To my mind, at the philosophical level, the greatest advance made by human society was to create the UN Declaration of Human Rights. I strongly recommend that those who have not read it, google it up.

Q 2: Is there any advice you would give for young aspiring physicists (or scientists in general) to be successful in their careers?

A: Aspiring physicists, chemists, computer scientists: learn your mathematics well, do the end-of-chapter problems in your textbook, don't be satisfied that you have understood a fact without exploring different ways towards establishing it, allow your brain to be possessed by a problem, look at "big" questions in science even if you will not work on them.

Granaz Baloch (Gawadar)

Q: Why human thinking become restricted when it discussed other religion? Is religion more important than humanity? Why we become confused between religion and science in our life? What are the reasons and how to overcome this?

A: Like nationalism and various ideologies, religion was historically necessary for bonding groups together. This enhanced the chances of a group's survival and prosperity. To keep the group's discipline, it was therefore necessary to impose restrictions on group members and punish those who think differently. Some neuroscientists say that we have "belief genes" and are programmed to believe in something "big", whatever that is. The belief gene was advantageous for tribal peoples who had to fight together to survive. But it is now very dangerous because exceedingly powerful weapons are commonly available and each "tribe" (meaning nation, religion, ethnic group) can now destroy on a large scale. This is why it has become urgent to overcome our primal instincts and start believing in the oneness of all humanity.

Emad Ahmed (Malaysia)

Q 1: God commands each atoms and molecules individually, and then miracles happen. I don't think world is a giant clock. What is your opinion on that?

A: The clockwork universe was killed by quantum mechanics. Strict determinism is dead but has been replaced by laws of averages. Unfortunately, this still does not leave enough space for miracles to happen. Miracles require that the laws of physics be abandoned.

Q 2: What are your views on medium of instruction for Pakistani Syllabus?

A: Medium of instruction: I think that maximum flexibility should be allowed. English is far more developed than any other language for the communication of modern thought, particularly science and philosophy. However, the mother tongue is far better suited for the earlier stages of learning. So we will have to learn a mix and become adept at both. Teaching Arabic as a third language, which is now being contemplated, would be a disaster.

Q 3: Will you be visiting Malaysia soon? I want to personally meet you.

A: No plans for Malaysia.

Hassan Jawad (Lahore)

Q 1: I'm Hassan from Lahore and I m a Control System engineering working in a multinational company. I have great respect for Pervaiz Hoodbhoy and I have following Questions for him.

As per scientific principles one cannot accept or deny any idea/belief/hypothesis without complete experimentation in that domain. After that one can reject or accept any hypothesis. Man is in the process of discovering this universe, the purpose of this universe and the Creator of this universe. Up till now we have just discovered a tiny part of this universe and more we are discovering, more we are acknowledging our ignorance. So I have a question for all those atheists 'whose beliefs are based on science' that their denial of Creator is an open violation of scientific methodology. Until humans will discover each and every bit of this universe, one cannot deny the existence of Creator. One can say that up till now he has not able to find the clue that leads his to the belief of Creator but one cannot say that there is no God until he has proved it scientifically in the lab. Please clarify it?

A: In a laboratory we seek new physical principles, or verification of old ones. Nobody will ever discover God in a laboratory. There can never be proof that God exists or does not exist; these are matters of pure belief. Belief, in turn, is largely inherited from one's social group. So Hindus have 5000+ gods, Christians have 2 (and sometimes 3) gods, Parsis worship fire, etc.

Q 2: For someone who doesn't believe in God, what is the purpose of his life? Who will decide the fundamentals and principles that one should follow to live his life? If someone has no fear of judgment in after life and this is the only life one has to live and enjoy, what will stop him to violate the rights of others?

A: Some pious people are very good people but thieves and murderers can also be genuinely pious. Likewise, atheists can be caring or cruel. Piety has nothing to do with social behavior. For purpose of life, see my response above to Baber Naeem.

Q 3: Are Genghiz Khan and Mother Teresa are both in same state after death? One who lives to kill the people and one who lives to serve the people, both will die and vanish in the same way? If yes, Why to live your life to serve others?

A: You behave badly/well because you have been conditioned to do so by your environment. Promised rewards of the Hereafter may be enough for the foolish madrassa lad who dons his suicide jacket before visiting a rival mosque/madrassa. But they carry little attraction for people who are able to think with their own minds, and who can be very good and compassionate while having no particular belief. The end point for Changez Khan, Imran Khan, Mother Teresa, and me is going to be the same.

Majid (Peshawar)

Q: Hello Sir, I'm Majid from Peshawar. Currently residing in Mirpur AJK. I'm a Network Engineer.

In my early years of academic learning, I was a huge fan of your Science show (Israr-i-JahaN) which was aired on PTV couple of years ago. That one show inspired thousands of youngsters, due to which most of them pursued their career in science. What do you think, Is there any chance to revive similar kind of show? I think Science/Education will be really helpful in these times of intolerance and bigotry. I firmly believe that rationalism and concrete based scientific methodology is the only panacea for this troubled nation.

Your kind response will be awaited.

A: You probably mean 2 decades rather than 2 years! (Bazm-e-Kainat in 1994, Asrar-e-Jehan in 2003). Anyway, I wish others would get into this. Technically, making science movies has become so much easier because cameras and video editing have been revolutionized. I think young Pakistani academics and film-makers should get together to make inspirational videos. HEC, PSF, etc should provide sponsorship.

Umaima Ahmed (The Blogger, Lahore)

Q 1: Sir, my questions to you would be:

How feasible would it be to soften Pakistan's nuclear policy in terms of the latest hegemony building in the region?

A: Ideally both India and Pakistan should give up their nukes. We know that that is not going to happen. Also that India, like Pakistan, has developed a horrible disease called nuclear nationalism. At the present time we can only manage the symptoms and suggest means to reduce the chances of an unwanted or accidental nuclear war. In this regard, I think we should call off our plans for tactical nuclear war-fighting. Small, mobile nukes will be widely dispersed and hidden. Hence they are prone to individual commanders making their own decisions and starting off a nuclear exchange without authorization from the highest level. For more, see articles at: <http://eacpe.org/articles-by-pervez-hoodbhoy/#nuclear-weapons-and-energy>

Q 2: Do you think that a true form of democracy can flourish in the country without addressing the fundamental flaws in the system, like feudalism, symbiosis of state and religion and politics of dynasties where there are almost no opportunities for an ordinary person?

A: You correctly state that some conditions in Pakistan are inimical to democracy, and that real democracy requires doing away with feudalism, dynasties, religious fanaticism, etc. But the flawed democracy that we have presently is still infinitely better than the murderous military dictatorships seen by Latin America (Pinochet, Noriega) or what Pakistan saw under Zia-ul-Haq. Should the Taliban take over, we would yearn for the corrupt but soft regimes of Zardari and Nawaz Sharif!