The Reign of Reason

We insist the past is not wisdom’s sole source...
But among us you’ll find no idol-smasher!
Wielding high thinking, and never brute force,
The reign of Reason let us now usher!

Birth as a measure of worth we reject!
In our world, an upstart’s no gatecrasher!
Equal opportunity is our project.
The reign of Reason let us now usher!

Prayer does not count as contribution.
Of what use is a passive well-wisher?
Our charity will exceed Faith’s ration!
The reign of Reason let us now usher!

To the crowd’s convention we won’t prostrate;
Or slump on desks as a paid pen-pusher!
We’ll educate, organize, agitate!
The reign of Reason let us now usher!
### Day 1 - 19th February

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>10am - 11am</td>
<td><strong>A note of welcome.</strong></td>
<td>Dr. HS Niranjan Aradhya</td>
</tr>
<tr>
<td></td>
<td><strong>Inaugural address.</strong></td>
<td></td>
</tr>
<tr>
<td>11am - 1pm</td>
<td><strong>Debunking Alternative Medicine</strong></td>
<td>Narendra Nayak</td>
</tr>
<tr>
<td></td>
<td>Do Homeopathy, Reiki and Naturopathy work? Is Ayurvedic medicine scientific? What is the allure of these systems to the modern psyche? These and more questions tackled in this session.</td>
<td></td>
</tr>
<tr>
<td>1pm - 2pm</td>
<td><strong>Lunch and Networking</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A sumptuous meal, and a chance to meet fellow participants.</td>
<td></td>
</tr>
<tr>
<td>2pm - 2.45pm</td>
<td><strong>Working Professionals, and advantages via scientific temper.</strong></td>
<td>Pankaj Kulkarni</td>
</tr>
<tr>
<td></td>
<td>Does a more rational outlook help the average professional? What are the ways he can contribute to positive change? These questions will be tackled in this session.</td>
<td></td>
</tr>
<tr>
<td>2.45pm - 3.30pm</td>
<td><strong>Logical Fallacies: How They Help You Win Arguments!</strong></td>
<td>Anil Gulecha</td>
</tr>
<tr>
<td></td>
<td>Arguments consists of premises and conclusions drawn from premises. This talk will demonstrate the nature of fallacies; from ad-hominem to the strawmen, from the chewbacca defense to begging the question, learn why the best defense is a good offence.</td>
<td></td>
</tr>
<tr>
<td>3.30pm - 5.00pm</td>
<td><strong>Lightning Talks</strong></td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td>These are consecutive 10 minutes talks, by you, dear participants! If you'd like to present on a topic relevant to the theme of the event, submit a lightning talk!</td>
<td></td>
</tr>
</tbody>
</table>
### Day 2 - 20th February

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>10am - 11am</td>
<td><strong>Humanism and outreach</strong>&lt;br&gt;What role does religion play in the world today? Is religion the only way? Babu Gogineni will consider these questions, and provide a overview of the Humanist outlook along with examples from his international campaigns on the topic.</td>
<td>Babu Gogineni</td>
</tr>
<tr>
<td>11am - 12pm</td>
<td><strong>Scriptures in the Modern Age</strong>&lt;br&gt;Why were the Vedas and other religious epitomes written? What role do they play in the world today? What role should they play? These and more questions will be tackled in this sessions.</td>
<td>Dr. MN Keshava Rao</td>
</tr>
<tr>
<td>12pm - 12.30pm</td>
<td><strong>Astrology and Vaastu: The Indian Affair with Junk Science</strong>&lt;br&gt;Is there any scientific basis behind the theories of Vaastu and Astrology? Why do the majority of new homes built with 'vaastu compliance' in mind? Does the time of your birth decide your fate? This talk will trace the roots of these theories to their history, test their validity, and point out the modern day ramifications.</td>
<td></td>
</tr>
<tr>
<td>12.30pm - 1pm</td>
<td><strong>Rationalist outlook of Life</strong>&lt;br&gt;Douglas Adams said: &quot;Isn't it enough to see that a garden is beautiful without having to believe that there are fairies at the bottom of it too?&quot; Can one look at everyday events with a purely rational outlook? We'll discuss this and more in this session.</td>
<td>Dolly Koshy</td>
</tr>
<tr>
<td>1pm - 2pm</td>
<td><strong>Lunch and Networking</strong>&lt;br&gt;A sumptuous meal, and a great chance to meet more of your fellow participants.</td>
<td></td>
</tr>
<tr>
<td>2pm - 4.30pm</td>
<td><strong>Pseudo science and the paranormal: Debunking for fun and profit</strong>&lt;br&gt;Remember the Ganesha idols reported to have drunk milk? Or the frenzy over crying statues? Or the golden egg produced by the Shirdi baba? Or the seemingly amazing feats of endurance and miracles? This interactive session will take on all of these. Prepare to be amazed by Shri Shri Guru Baba Narendra!</td>
<td>Narendra Nayak</td>
</tr>
<tr>
<td>4.30pm-5pm</td>
<td><strong>Conclusion and Valediction</strong>&lt;br&gt;A conclusion to the event. Distribution of possible secret prizes. And details on things to do next. Participants are welcome to continue with discussions after the conclusion event.</td>
<td></td>
</tr>
</tbody>
</table>
Speakers

Yukti has brought together experts and authoritative commentators from around the country, in a first of its kind event in Bangalore. Below is a short biography of our esteemed speakers.

Narendra Nayak

NN needs no introduction in the Indian rationalist community. His three decades of combating the rife superstition and pseudo science has garnered him widespread affection from his admirers, and vitriol from those he debunks. Quoting Wikipedia:

"He is the founder of Dakshina Kannada Rationalist Association and the national president of the Federation of Indian Rationalist Associations. As part of his campaign to expose the so-called miracles and to debunk superstitions, he has conducted over 3000 demonstrations all over India as well as in Australia, England, and Greece. He has been featured in many television programs including the one on physical feats by the Discovery Channel, Is It Real? by National Geographic, The Secret Swami by the BBC and many others."

Babu Gogineni

Babu Gogineni is a secular humanist from Hyderabad. He was the Executive Director of the International Humanist and Ethical Union. A regular TV commentator on issues of Science, Human rights and Secularism, Babu has lectured in over 28 countries around the world. His campaigns have been featured on New York Times, CNN and BBC. Quoting Wikipedia:

"Babu Gogineni is a regular Television commentator on issues related to Science, Human Rights, Secularism and Democracy, and he has travelled to, and lectured in, 28 countries on these subjects as well as in Communications Skills and Foreign language learning. He was invited in 2001 by the UN as an Expert on Education at the UN's Madrid Conference on Freedom of Religion or Belief in School Education. Babu Gogineni is a popular international lecturer and speaker—and in 1999 he delivered the prestigious Spring Lecture of the National University of Mexico in Mexico City; he was also a member of the winning team at an important Cambridge Union Society's Debate at the University of Cambridge."
Know us

*Nirmukta.com* is an online community of rationalists and free thinkers. It maintains an active blog publishing essays on topics ranging from theological research to freethinking. Nirmukta has a hyper active Facebook community and an engaging forum *Nirmukta.net*. Follow nirmukta on twitter.com/nirmukta.

*Karnataka Rajya Vijnana Parishat*
KRVP was setup with the explicit purpose of the advancement of science, scientific attitude and science education (both formal and non-formal) in Karnataka, especially in rural areas.

*Federation of Indian Rationalist Associations*
FIRA is the apex Indian rationalist body consisting of 80 rationalist bodies. FIRA is committed to the development of scientific temper and humanism in India.

**Bangaloreans note!**

- *Bangalore Freethinkers* meeting is held about once every month at Ashoka Shishu Vihara School, Chmarajpet, Bangalore. The easiest route to get to Ashoka Shishu Vihara School is to get to Majestic Bus stand, and take a bus/auto-rickshaw to Uma Talkies Circle, and then walk up to the school.

- If you’d like to receive regular updates regarding freethought activities and events in the city to be delivered right into your inbox, subscribe to the mailing list Bangalore@sceptics.org
Food for freethought!

A small compilation of thought provoking write-ups by famous freethinkers.

Disclaimer: Yukti does not endorse any of the opinions mentioned here because of the seeming authority of the influential writers. We encourage you to read each piece at your leisure and then ruminate for yourself!

- ‘Pale Blue Dot’ by Carl Sagan
  Carl Sagan was a world famous American astronomer and science popularizer well known for his award-winning 1980 television series Cosmos: A Personal Voyage, which he narrated and co-wrote. Read this piece of elegant poetry to experience the sense of untainted awe that only science can provide us.

- ‘Humanism and its aspirations’
  The most recent of the Humanist Manifestos published by the American Humanist Association (AHA). What is humanism all about? How is it different from other worldviews? Read on!

- ‘The Relativity of wrong’ by Isaac Asimov
  Isaac Asimov was the pioneer of the ‘golden age of Science fiction’. The famous movie ‘I,Robot’ was inspired by his work. Read this article to understand the beautiful subtleties of scientific ‘truths’.

- ‘A letter to my ten year old daughter’ by Richard Dawkins
  Richard Dawkins could well be the most prolific science popularizer and freethought activist of our generation. An evolutionary biologist by profession, read this wonderfully detailed letter written by him to his just-turned-10 daughter guiding her ‘how to think for herself scientifically’.

For more such stimulating articles by Indian freethinkers, do visit nirmukta.com
‘Pale Blue Dot’ by Carl Sagan

Transcript and excerpt from Carl Sagan’s “Pale Blue Dot: A Vision of the Human Future in Space.” In reference to the photo of the same name, Pale Blue Dot, taken by Voyager I on February 14, 1990:

The spacecraft was a long way from home.

I thought it would be a good idea, just after Saturn, to have them take one last glance homeward. From Saturn, the Earth would appear too small for Voyager to make out any detail. Our planet would be just a point of light, a lonely pixel hardly distinguishable from the other points of light Voyager would see: nearby planets, far off suns. But precisely because of the obscurity of our world thus revealed, such a picture might be worth having. It had been well understood by the scientists and philosophers of classical antiquity that the Earth was a mere point in a vast, encompassing cosmos—but no one had ever seen it as such. Here was our first chance, and perhaps also our last for decades to come.

So, here they are: a mosaic of squares laid down on top of the planets in a background smattering of more distant stars. Because of the reflection of sunlight off the spacecraft, the Earth seems to be sitting in a beam of light, as if there were some special significance to this small world; but it’s just an accident of geometry and optics. There is no sign of humans in this picture: not our reworking of the Earth’s surface; not our machines; not ourselves. From this vantage point, our obsession with nationalisms is nowhere in evidence. We are too small. On the scale of worlds, humans are inconsequential: a thin film of life on an obscure and solitary lump of rock and metal.

Consider again that dot. That’s here. That’s home. That’s us. On it, everyone you love, everyone you know, everyone you’ve ever heard of, every human being who ever was lived out their lives. The aggregate of all our joys and sufferings; thousands of confident religions, ideologies and economic doctrines; every hunter and forager; every hero and coward; every creator and destroyer of civilizations; every king and peasant, every young couple in love; every mother and father; hopeful child; inventor and explorer; every teacher of morals; every corrupt politician; every supreme leader; every superstar; every saint and sinner in the history of our species, lived there—on a mote of dust suspended in a sunbeam.

The Earth is a very small stage in a vast cosmic arena. Think of the endless cruelties visited by the inhabitants of one corner of this pixel on the scarcely distinguishable inhabitants of some other corner. How frequent their misunderstandings; how eager they are to kill one another; how fervent their hatreds. Think of the rivers of blood spilled by all those generals and emperors so that in glory and triumph they could become the momentary masters of a fraction of a dot. Our posturings, our imagined self-importance, the delusion that we have some privileged position in the universe, are challenged by this point of pale light.

Our planet is a lonely speck in the great enveloping cosmic dark. In our obscurity—in all this vastness—there is no hint that help will come from elsewhere to save us from ourselves. Like it or not, for the moment, the Earth is where we make our stand.

It has been said that astronomy is a humbling and character-building experience. There is perhaps no better demonstration of the folly of human conceits than this distant image of our tiny world. It underscores our responsibility to deal more kindly with one another, and to preserve and cherish the only home we’ve ever known. The pale blue dot.
**Humanism and its aspirations**

*Humanist Manifesto III, a successor to the Humanist Manifesto of 1933*

Humanism is a progressive philosophy of life that, without supernaturalism, affirms our ability and responsibility to lead ethical lives of personal fulfillment that aspire to the greater good of humanity.

The lifestance of Humanism—guided by reason, inspired by compassion, and informed by experience—encourages us to live life well and fully. It evolved through the ages and continues to develop through the efforts of thoughtful people who recognize that values and ideals, however carefully wrought, are subject to change as our knowledge and understandings advance. This document is part of an ongoing effort to manifest in clear and positive terms the conceptual boundaries of Humanism, not what we must believe but a consensus of what we do believe. It is in this sense that we affirm the following:

**Knowledge of the world is derived by observation, experimentation, and rational analysis.** Humanists find that science is the best method for determining this knowledge as well as for solving problems and developing beneficial technologies. We also recognize the value of new departures in thought, the arts, and inner experience—each subject to analysis by critical intelligence.

**Humans are an integral part of nature, the result of unguided evolutionary change.** Humanists recognize nature as self-existing. We accept our life as all and enough, distinguishing things as they are from things as we might wish or imagine them to be. We welcome the challenges of the future, and are drawn to and undaunted by the yet to be known.

**Ethical values are derived from human need and interest as tested by experience.** Humanists ground values in human welfare shaped by human circumstances, interests, and concerns and extended to the global ecosystem and beyond. We are committed to treating each person as having inherent worth and dignity, and to making informed choices in a context of freedom consonant with responsibility.

**Life's fulfillment emerges from individual participation in the service of humane ideals.** We aim for our fullest possible development and animate our lives with a deep sense of purpose, finding wonder and awe in the joys and beauties of human existence, its challenges and tragedies, and even in the inevitability and finality of death. Humanists rely on the rich heritage of human culture and the lifestance of Humanism to provide comfort in times of want and encouragement in times of plenty.

**Humans are social by nature and find meaning in relationships.** Humanists long for and strive toward a world of mutual care and concern, free of cruelty and its consequences, where differences are resolved cooperatively without resorting to violence. The joining of individuality with interdependence enriches our lives, encourages us to enrich the lives of others, and inspires hope of attaining peace, justice, and opportunity for all.

**Working to benefit society maximizes individual happiness.** Progressive cultures have worked to free humanity from the brutalities of mere survival and to reduce suffering, improve society, and develop global community. We seek to minimize the inequities of circumstance and ability, and we support a just distribution of nature's resources and the fruits of human effort so that as many as possible can enjoy a good life.

Humanists are concerned for the well being of all, are committed to diversity, and respect those of differing yet humane views. We work to uphold the equal enjoyment of human rights and civil liberties in an open, secular society and maintain it is a civic duty to participate in the democratic process and a planetary duty to protect nature's integrity, diversity, and beauty in a secure, sustainable manner. Thus engaged in the flow of life, we aspire to this vision with the informed conviction that humanity has the ability to progress toward its highest ideals. The responsibility for our lives and the kind of world in which we live is ours and ours alone.
I received a letter the other day. It was handwritten in crabbed penmanship so that it was very difficult to read. Nevertheless, I tried to make it out just in case it might prove to be important. In the first sentence, the writer told me he was majoring in English literature, but felt he needed to teach me science. (I sighed a bit, for I knew very few English Lit majors who are equipped to teach me science, but I am very aware of the vast state of my ignorance and I am prepared to learn as much as I can from anyone, so I read on.)

It seemed that in one of my innumerable essays, I had expressed a certain gladness at living in a century in which we finally got the basis of the universe straight.

I didn't go into detail in the matter, but what I meant was that we now know the basic rules governing the universe, together with the gravitational interrelationships of its gross components, as shown in the theory of relativity worked out between 1905 and 1916. We also know the basic rules governing the subatomic particles and their interrelationships, since these are very neatly described by the quantum theory worked out between 1900 and 1930. What's more, we have found that the galaxies and clusters of galaxies are the basic units of the physical universe, as discovered between 1920 and 1930.

These are all twentieth-century discoveries, you see.

The young specialist in English Lit, having quoted me, went on to lecture me severely on the fact that in every century people have thought they understood the universe at last, and in every century they were proved to be wrong. It follows that the one thing we can say about our modern "knowledge" is that it is wrong. The young man then quoted with approval what Socrates had said on learning that the Delphic oracle had proclaimed him the wisest man in Greece. "If I am the wisest man," said Socrates, "it is because I alone know that I know nothing," the implication was that I was very foolish because I was under the impression I knew a great deal.

My answer to him was, "John, when people thought the earth was flat, they were wrong. When people thought the earth was spherical, they were wrong. But if you think that thinking the earth is spherical is just as wrong as thinking the earth is flat, then your view is wronger than both of them put together."

The basic trouble, you see, is that people think that "right" and "wrong" are absolute; that everything that isn't perfectly and completely right is totally and equally wrong.

However, I don't think that's so. It seems to me that right and wrong are fuzzy concepts, and I will devote this essay to an explanation of why I think so.

...When my friend the English literature expert tells me that in every century scientists think they have worked out the universe and are always wrong, what I want to know is how wrong are they? Are they always wrong to the same degree? Let's take an example.

In the early days of civilization, the general feeling was that the earth was flat. This was not because people were stupid, or because they were intent on believing silly things. They felt it was flat on the basis of sound evidence. It was not just a matter of "That's how it looks," because the earth does not look flat. It looks chaotically bumpy, with hills, valleys, ravines, cliffs, and so on.

Of course there are plains where, over limited areas, the earth's surface does look fairly flat. One of those plains is in the Tigris-Euphrates area, where the first historical civilization (one with writing) developed, that of the Sumerians.
Perhaps it was the appearance of the plain that persuaded the clever Sumerians to accept the generalization that the earth was flat; that if you somehow evened out all the elevations and depressions, you would be left with flatness. Contributing to the notion may have been the fact that stretches of water (ponds and lakes) looked pretty flat on quiet days.

Another way of looking at it is to ask what is the "curvature" of the earth's surface. Over a considerable length, how much does the surface deviate (on the average) from perfect flatness. The flat-earth theory would make it seem that the surface doesn't deviate from flatness at all, that its curvature is 0 to the mile.

Nowadays, of course, we are taught that the flat-earth theory is wrong; that it is all wrong, terribly wrong, absolutely. But it isn't. The curvature of the earth is nearly 0 per mile, so that although the flat-earth theory is wrong, it happens to be nearly right. That's why the theory lasted so long.

There were reasons, to be sure, to find the flat-earth theory unsatisfactory and, about 350 B.C., the Greek philosopher Aristotle summarized them. First, certain stars disappeared beyond the Southern Hemisphere as one traveled north, and beyond the Northern Hemisphere as one traveled south. Second, the earth's shadow on the moon during a lunar eclipse was always the arc of a circle. Third, here on the earth itself, ships disappeared beyond the horizon hull-first in whatever direction they were traveling.

All three observations could not be reasonably explained if the earth's surface were flat, but could be explained by assuming the earth to be a sphere.

What's more, Aristotle believed that all solid matter tended to move toward a common center, and if solid matter did this, it would end up as a sphere. A given volume of matter is, on the average, closer to a common center if it is a sphere than if it is any other shape whatever.

About a century after Aristotle, the Greek philosopher Eratosthenes noted that the sun cast a shadow of different lengths at different latitudes (all the shadows would be the same length if the earth's surface were flat). From the difference in shadow length, he calculated the size of the earthly sphere and it turned out to be 25,000 miles in circumference.

The curvature of such a sphere is about 0.000126 per mile, a quantity very close to 0 per mile, as you can see, and one not easily measured by the techniques at the disposal of the ancients. The tiny difference between 0 and 0.000126 accounts for the fact that it took so long to pass from the flat earth to the spherical earth.

Mind you, even a tiny difference, such as that between 0 and 0.000126, can be extremely important. That difference mounts up. The earth cannot be mapped over large areas with any accuracy at all if the difference isn't taken into account and if the earth isn't considered a sphere rather than a flat surface. Long ocean voyages can't be undertaken with any reasonable way of locating one's own position in the ocean unless the earth is considered spherical rather than flat.

Furthermore, the flat earth presupposes the possibility of an infinite earth, or of the existence of an "end" to the surface. The spherical earth, however, postulates an earth that is both endless and yet finite, and it is the latter postulate that is consistent with all later findings.

So, although the flat-earth theory is only slightly wrong and is a credit to its inventors, all things considered, it is wrong enough to be discarded in favor of the spherical-earth theory.

And yet is the earth a sphere?
No, it is not a sphere; not in the strict mathematical sense. A sphere has certain mathematical properties—for instance, all diameters (that is, all straight lines that pass from one point on its surface, through the center, to another point on its surface) have the same length.

That, however, is not true of the earth. Various diameters of the earth differ in length.

What gave people the notion the earth wasn't a true sphere? To begin with, the sun and the moon have outlines that are perfect circles within the limits of measurement in the early days of the telescope. This is consistent with the supposition that the sun and the moon are perfectly spherical in shape.

However, when Jupiter and Saturn were observed by the first telescopic observers, it became quickly apparent that the outlines of those planets were not circles, but distinct eclipses. That meant that Jupiter and Saturn were not true spheres.

Isaac Newton, toward the end of the seventeenth century, showed that a massive body would form a sphere under the pull of gravitational forces (exactly as Aristotle had argued), but only if it were not rotating. If it were rotating, a centrifugal effect would be set up that would lift the body's substance against gravity, and this effect would be greater the closer to the equator you progressed. The effect would also be greater the more rapidly a spherical object rotated, and Jupiter and Saturn rotated very rapidly indeed.

The earth rotated much more slowly than Jupiter or Saturn so the effect should be smaller, but it should still be there. Actual measurements of the curvature of the earth were carried out in the eighteenth century and Newton was proved correct.

The earth has an equatorial bulge, in other words. It is flattened at the poles. It is an "oblate spheroid" rather than a sphere. This means that the various diameters of the earth differ in length. The longest diameters are any of those that stretch from one point on the equator to an opposite point on the equator. This "equatorial diameter" is 12,755 kilometers (7,927 miles). The shortest diameter is from the North Pole to the South Pole and this "polar diameter" is 12,711 kilometers (7,900 miles).

The difference between the longest and shortest diameters is 44 kilometers (27 miles), and that means that the "oblateness" of the earth (its departure from true sphericity) is 44/12755, or 0.0034. This amounts to 1/3 of 1 percent.

To put it another way, on a flat surface, curvature is 0 per mile everywhere. On the earth's spherical surface, curvature is 0.000126 per mile everywhere (or 8 inches per mile). On the earth's oblate spheroidal surface, the curvature varies from 7.973 inches to the mile to 8.027 inches to the mile.

The correction in going from spherical to oblate spheroidal is much smaller than going from flat to spherical. Therefore, although the notion of the earth as a sphere is wrong, strictly speaking, it is not as wrong as the notion of the earth as flat.

Even the oblate-spheroidal notion of the earth is wrong, strictly speaking. In 1958, when the satellite Vanguard I was put into orbit about the earth, it was able to measure the local gravitational pull of the earth—and therefore its shape—with unprecedented precision. It turned out that the equatorial bulge south of the equator was slightly bulgier than the bulge north of the equator, and that the South Pole sea level was slightly nearer the center of the earth than the North Pole sea level was.

There seemed no other way of describing this than by saying the earth was pear-shaped, and at once many people decided that the earth was nothing like a sphere but was shaped like a Bartlett pear dangling in space.
Actually, the pearlike deviation from oblate-spheroid perfect was a matter of yards rather than miles, and the adjustment of curvature was in the millionths of an inch per mile.

In short, my English Lit friend, living in a mental world of absolute rights and wrongs, may be imagining that because all theories are wrong, the earth may be thought spherical now, but cubical next century, and a hollow icosahedron the next, and a doughnut shape the one after.

What actually happens is that once scientists get hold of a good concept they gradually refine and extend it with greater and greater subtlety as their instruments of measurement improve. Theories are not so much wrong as incomplete.

This can be pointed out in many cases other than just the shape of the earth. Even when a new theory seems to represent a revolution, it usually arises out of small refinements. If something more than a small refinement were needed, then the old theory would never have endured.

Copernicus switched from an earth-centered planetary system to a sun-centered one. In doing so, he switched from something that was obvious to something that was apparently ridiculous. However, it was a matter of finding better ways of calculating the motion of the planets in the sky, and eventually the geocentric theory was just left behind. It was precisely because the old theory gave results that were fairly good by the measurement standards of the time that kept it in being so long.

Again, it is because the geological formations of the earth change so slowly and the living things upon it evolve so slowly that it seemed reasonable at first to suppose that there was no change and that the earth and life always existed as they do today. If that were so, it would make no difference whether the earth and life were billions of years old or thousands. Thousands were easier to grasp.

But when careful observation showed that the earth and life were changing at a rate that was very tiny but not zero, then it became clear that the earth and life had to be very old. Modern geology came into being, and so did the notion of biological evolution.

If the rate of change were more rapid, geology and evolution would have reached their modern state in ancient times. It is only because the difference between the rate of change in a static universe and the rate of change in an evolutionary one is that between zero and very nearly zero that the creationists can continue propagating their folly.

Since the refinements in theory grow smaller and smaller, even quite ancient theories must have been sufficiently right to allow advances to be made; advances that were not wiped out by subsequent refinements.

The Greeks introduced the notion of latitude and longitude, for instance, and made reasonable maps of the Mediterranean basin even without taking sphericity into account, and we still use latitude and longitude today.

The Sumerians were probably the first to establish the principle that planetary movements in the sky exhibit regularity and can be predicted, and they proceeded to work out ways of doing so even though they assumed the earth to be the center of the universe. Their measurements have been enormously refined but the principle remains.

Naturally, the theories we now have might be considered wrong in the simplistic sense of my English Lit correspondent, but in a much truer and subtler sense, they need only be considered incomplete.
‘A letter to my ten year old daughter’ by Richard Dawkins

To my dearest daughter,

Now that you are ten, I want to write to you about something that is important to me. Have you ever wondered how we know the things that we know? How do we know, for instance, that the stars, which look like tiny pinpricks in the sky, are really huge balls of fire like the Sun and very far away? And how do we know that the Earth is a smaller ball whirling round one of those stars, the Sun? The answer to these questions is ‘evidence’.

Sometimes evidence means actually seeing (or hearing, feeling, smelling….) that something is true. Astronauts have traveled far enough from the Earth to see with their own eyes that it is round. Sometimes our eyes need help. The ‘evening star’ looks like a bright twinkle in the sky but with a telescope you can see that it is a beautiful ball – the planet we call Venus. Something that you learn by direct seeing (or hearing or feeling…) is called an observation.

Often evidence isn’t just observation on its own, but observation always lies at the back of it. If there’s been a murder, often nobody (except the murderer and the dead person!) actually observed it. But detectives can gather together lots of other observations which may all point towards a particular suspect. If a person’s fingerprints match those found on a dagger, this is evidence that he touched it. It doesn’t prove that he did the murder, but it can help when it’s joined up with lots of other evidence. Sometimes a detective can think about a whole lot of observations and suddenly realize that they all fall into place and make sense if so-and-so did the murder.

Scientists – the specialists in discovering what is true about the world and the universe – often work like detectives. They make a guess (called a hypothesis) about what might be true. They then say to themselves: if that were really true, we ought to see so-and-so. This is called a prediction. For example, if the world is really round, we can predict that a traveler, going on and on in the same direction, should eventually find himself back where he started. When a doctor says that you have measles he doesn’t take one look at you and see measles. His first look gives him a hypothesis that you may have measles. Then he says to himself: if she really has measles, I ought to see… Then he runs through his list of predictions and tests them with his eyes (have you got spots?), his hands (is your forehead hot?), and his ears (does your chest wheeze in a measly way?). Only then does he make his decision and say, ‘I diagnose that the child has measles.’ Sometimes doctors need to do other tests like blood tests or X-rays, which help their eyes, hands and ears to make observations.

The way scientists use evidence to learn about the world is much cleverer and more complicated than I can say in a short letter. But now I want to move on from evidence, which is a good reason for believing something, and warn you against three bad reasons for believing anything. They are called ‘tradition’, ‘authority’, and ‘revelation’.

First, tradition. A few months ago, I went on television to have a discussion with about 50 children. These children were invited because they’d been brought up in lots of different religions. Some had been brought up as Christians, others as Jews, Muslims, Hindus, Sikhs. The man with the microphone went from child to child, asking them what they believed. What they said shows up exactly what I mean by ‘tradition’. Their beliefs turned out to have no connection with evidence. They just trotted out the beliefs of their parents and grandparents, which, in turn, were not based upon evidence either. They said things like, ‘We Hindus believe so and so.’ ‘We Muslims believe such and such.’ ‘We Christians believe something else.’ Of course, since they all believed different things, they couldn’t all be right. The man with the microphone seemed to think this quite proper, and he didn’t even try to get them to argue out their differences with each other. But that isn’t the point I want to make. I simply want to ask where their beliefs came from. They came from tradition.
Tradition means beliefs handed down from grandparent to parent to child, and so on. Or from books handed down through the centuries. Traditional beliefs often start from almost nothing; perhaps somebody just makes them up originally, like the stories about Thor and Zeus. But after they’ve been handed down over some centuries, the mere fact that they are so old makes them seem special. People believe things simply because people have believed the same thing over centuries. That’s tradition.

The trouble with tradition is that, no matter how long ago a story was made up, it is still exactly as true or untrue as the original story was. If you make up a story that isn’t true, handing it down over any number of centuries doesn’t make it any truer!

Most people in England have been baptized into the Church of England, but this is only one of many branches of the Christian religion. There are other branches such as the Russian Orthodox, the Roman Catholic and the Methodist churches. They all believe different things. The Jewish religion and the Muslim religion are a bit more different still; and there are different kinds of Jews and of Muslims. People who believe even slightly different things from each other often go to war over their disagreements. So you might think that they must have some pretty good reasons – evidence – for believing what they believe. But actually their different beliefs are entirely due to different traditions.

Let’s talk about one particular tradition. Roman Catholics believe that Mary, the mother of Jesus, was so special that she didn’t die but was lifted bodily into Heaven. Other Christian traditions disagree, saying that Mary did die like anybody else. These other religions don’t talk about her much and, unlike Roman Catholics, they don’t call her the ‘Queen of Heaven’. The tradition that Mary’s body was lifted into Heaven is not a very old one. The Bible says nothing about how or when she died; in fact the poor woman is scarcely mentioned in the Bible at all. The belief that her body was lifted into Heaven wasn’t invented until about six centuries after Jesus’s time. At first it was just made up, in the same way as any story like Snow White was made up. But, over the centuries, it grew into a tradition and people started to take it seriously simply because the story had been handed down over so many generations. The older the tradition became, the more people took it seriously. It finally was written down as an official Roman Catholic belief only very recently, in 1950. But the story was no more true in 1950 than it was when it was first invented 600 years after Mary’s death.

I’ll come back to tradition at the end of my letter, and look at it in another way. But first I must deal with the two other bad reasons for believing in anything: authority and revelation.

Authority, as a reason for believing something, means believing it because you are told to believe it by somebody important. In the Roman Catholic Church, the Pope is the most important person, and people believe he must be right just because he is the Pope. In one branch of the Muslim religion, the important people are old men with beards called Ayatollahs. Lots of young Muslims are prepared to commit murder, purely because the Ayatollahs in a faraway country tell them to.

When I say that it was only in 1950 that Roman Catholics were finally told that they had to believe that Mary’s body shot off to Heaven, what I mean is that in 1950 the Pope told people that they had to believe it. That was it. The Pope said it was true, so it had to be true! Now, probably some of the things that Pope said in his life were true and some were not true. There is no good reason why, just because he was the Pope, you should believe everything he said, any more than you believe everything that lots of other people say. The present Pope has ordered his followers not to limit the number of babies they have. If people follow his authority as slavishly as he would wish, the results could be terrible famines, diseases and wars, caused by overcrowding.

Of course, even in science, sometimes we haven’t seen the evidence ourselves and we have to take somebody else’s word for it. I haven’t with my own eyes, seen the evidence that light travels at a speed of 186,000 miles per second. Instead, I believe books that tell me the speed of light. This looks like ‘authority’. But actually it
is much better than authority because the people who wrote the books have seen the evidence and anyone is
free to look carefully at the evidence whenever they want. That is very comforting. But not even the priests
claim that there is any evidence for their story about Mary’s body zooming off to Heaven.

The third kind of bad reason for believing anything is called ‘revelation’. If you had asked the Pope in 1950
how he knew that Mary’s body disappeared into Heaven, he would probably have said that it had been
‘revealed’ to him. He shut himself in his room and prayed for guidance. He thought and thought, all by
himself, and he became more and more sure inside himself. When religious people just have a feeling inside
themselves that something must be true, even though there is no evidence that it is true, they call their feeling
‘revelation’. It isn’t only popes who claim to have revelations. Lots of religious people do. It is one of their
main reasons for believing the things that they do believe. But is it a good reason?

Suppose I told you that your dog was dead. You’d be very upset, and you’d probably say, ‘Are you sure?
How do you know? How did it happen?’ Now suppose I answered: ‘I don’t actually know that Pepe is dead. I
have no evidence. I just have this funny feeling deep inside me that he is dead.’ You’d be pretty cross with me
for scaring you, because you’d know that an inside ‘feeling’ on its own is not a good reason for believing that
a whippet is dead. You need evidence. We all have inside feelings from time to time, and sometimes they turn
out to be right and sometimes they don’t. Anyway, different people have opposite feelings, so how are we to
decide whose feeling is right? The only way to be sure that a dog is dead is to see him dead, or hear that his
heart has stopped; or be told by somebody who has seen or heard some real evidence that he is dead.

People sometimes say that you must believe in feelings deep inside, otherwise you’d never be confident of
things like ‘My wife loves me’. But this is a bad argument. There can be plenty of evidence that somebody loves you. All through the day
when you are with somebody who loves you, you see and hear lots of little tidbits of evidence, and they all
add up. It isn’t purely inside feeling, like the feeling that priests call revelation. There are outside things to
back up the inside feeling: looks in the eye, tender notes in the voice, little favors and kindnesses; this is all
real evidence.

Sometimes people have a strong inside feeling that somebody loves them when it is not based upon any
evidence, and then they are likely to be completely wrong. There are people with a strong inside feeling that a
famous film star loves them, when really the film star hasn’t even met them. People like that are ill in their
minds. Inside feelings must be backed up by evidence, otherwise you just can’t trust them.

Inside feelings are valuable in science too, but only for giving you ideas that you later test by looking for
evidence. A scientist can have a ‘hunch’ about an idea that just ‘feels’ right. In itself, this is not a good reason
for believing something. But it can be a good reason for spending some time doing a particular experiment, or
looking in a particular way for evidence. Scientists use inside feelings all the time to get ideas. But they are
not worth anything until they are supported by evidence.

I promised that I’d come back to tradition, and look at it in another way. I want to try to explain why tradition
is so important to us. All animals are built (by the process called evolution) to survive in the normal place in
which their kind live. Lions are built to be good at surviving on the plains of Africa. Crayfish are built to be
good at surviving in fresh water, while lobsters are built to be good at surviving in the salt sea. People are
animals too, and we are built to be good at surviving in a world full of … other people. Most of us don’t hunt
for our own food like lions or lobsters, we buy it from other people who have bought it from yet other people.
We ‘swim’ through a ‘sea of people’. Just as a fish needs gills to survive in water, people need brains that
make them able to deal with other people. Just as the sea is full of salt water, the sea of people is full of
difficult things to learn. Like language.
You speak English but your friend speaks German. You each speak the language that fits you to ‘swim about’ in your own separate ‘people sea’. Language is passed down by tradition. There is no other way. In England, Pepe is a dog. In Germany he is ein Hund. Neither of these words is more correct, or more truer than the other. Both are simply handed down. In order to be good at ‘swimming about in their people sea’, children have to learn the language of their own country, and lots of other things about their own people; and this means that they have to absorb, like blotting paper, an enormous amount of traditional information. (Remember that traditional information just means things that are handed down from grandparents to parents to children.) The child’s brain has to be a sucker for traditional information. And the child can’t be expected to sort out good and useful traditional information, like the words of a language, from bad or silly traditional information, like believing in witches and devils and ever-living virgins.

It’s a pity, but it can’t help being the case, that because children have to be suckers for traditional information, they are likely to believe anything the grown-ups tell them, whether true or false, right or wrong. Lots of what grown-ups tell them is true and based on evidence or at least sensible. But if some of it is false, silly or even wicked, there is nothing to stop the children believing that too. Now, when the children grow up, what do they do? Well, of course, they tell it to the next generation of children. So, once something gets itself strongly believed – even if its completely untrue and there never was any reason to believe it in the first place – it can go on forever. Could this be what happened with religions? Belief that there is a god or gods, belief in Heaven, belief that Mary never died, belief that Jesus never had a human father, belief that prayers are answered, belief that wine turns into blood – not one of these beliefs is backed up by any good evidence. Yet millions of people believe them. Perhaps this is because they were told to believe them when they were young enough to believe anything.

Millions of other people believe quite different things, because they were told different things when they were children. Muslim children are told different things from Christian children, and both grow up utterly convinced that they are right and the others are wrong. Even within Christians, Roman Catholics believe different things from Church of England people or Episcopalians, Shakers or Quakers, Mormons or Holy Rollers, and all are utterly convinced that they are right and the others are wrong. They believe different things for exactly the same kind of reason as you speak English and someone speaks German.

Both languages are, in their own country, the right language to speak. But it can’t be true that different religions are right in their own countries, because different religions claim that opposite things are true. Mary can’t be alive in the Catholic Republic but dead in Protestant Northern Ireland.

What can we do about all this? It is not easy for you to do anything, because you are only ten. But you could try this. Next time somebody tells you something that sounds important, think to yourself: ‘Is this the kind of thing that people probably know because of evidence? Or is it the kind of thing that people only believe because of tradition, authority or revelation?’ And, next time somebody tells you that something is true, why not say to them: ‘What kind of evidence is there for that?’ And if they can’t give you a good answer, I hope you’ll think very carefully before you believe a word they say.

Your loving,

Daddy
Your honest Feedback

Name:
Contact details (email and/or Phone):

1. First things first, how was the lunch?!

2. Anything that you might have found objectionable or offensive?

3. Which event on the schedule was the most enjoyable? And Why?

4. And the least?!

5. Have the talks and interaction helped you to develop a fresh perspective on freethinking, secularism, humanism and scientific temper? If not, why? If yes, how exactly?

6. Any comments or suggestions on the format of interaction at the workshop (which in this edition was on more on the lines of presentations and monologues).
7. Please give us your inputs on the logistics and planning of the event? Was it professional and well worked out to attract more like minded people in future? Any suggestions?


9. Any inputs on the costing of the event? (Please note that this was a not-for-profit event and the fee was determined just about to break even the cost of logistics and outreach)

10. A major hurdle that any freethought movement faces in our country is to bring together like minded people on interactive platforms such as Yukti. How do you think we can reach out to more people in Bangalore?

11. Please describe your Yukti experience in one word, Yes ONE word only!

12. Please feel free to detail any shortcomings and suggestions. Note that your feedback is truly valuable (unlike most event feedback forms!)