

A clear understanding of what we know, don't know, and can't know should guide us to understand world around. [KuU --the K nown, the u nknown, and the U nknowable]

Summary given below is based on presentations. Actual presentation uses pictures, links to web sites and concrete examples.

Four states of known-unknown

<p>Known Knowns</p> <p>{Do not bother. These are things we know that we know.}</p>	<p>Known Unknowns</p> <p>{This is I know also I do not know. Leading to fear of Unknown}</p>
<p>Unknown Knowns</p> <p>{Knowledge is not useful as we are not aware of it}</p>	<p>Unknown Unknowns</p> <p>{Do not bother. Total Ignorance is a bliss}</p>

We all live in the world of Unknown

1. The knowability of the world - limits to the power of human reason. These are things we know that we know. I do not know some things, but I am sure to find out. This Known set is very very small compared to Unknown set.
2. We live in a world where far more is unknown than known.
3. The volume of our knowledge is very negligible with what we have yet to discover
4. More you know, more you do not know
5. I think I will know when I reach the target. This will never happen. {Target is a mirage. Sky touching the earth at horizon. Keep on moving, you observe the same thing}
6. We are confronted by an unknown that moves further and further away from us.
7. I do not know what this is and I shall never know
8. Anyone who claims to know all the answers doesn't really know very much.
9. knowledge is subjective by its very nature. How we perceive is different from how a thing exists in itself
10. The only true wisdom is in knowing you know nothing.
11. To know, is to know that you know nothing. That is the meaning of true knowledge.

Four states of Knows and Knows Not

<p>He who knows and knows that he knows, is a wise man ... follow him.</p>	<p>He who does not know; and knows that does not know, is ignorant . (good student) . So,</p>
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	teach him.
He who knows and does not know that he knows, is asleep ... wake him.	He who does not know; and does not know that does not know, is a fool ... shun or avoid him.

Source: Persian apothegm, Sanskrit Saying, Arabic Proverb, Chinese Proverb

Human perception

Human perception covers just a narrow slice of reality. Our eyes are tuned to a limited band of electromagnetic radiation known as visible light, and our ears can only register a tiny segment of the vast sound frequency spectrum. Outside these ranges lie countless forms of energy—like ultraviolet and infrared light, infrasound and ultrasound—that other animals and instruments can detect but remain invisible and inaudible to us.

Bees can see ultraviolet light patterns on flowers that guide them to nectar, while snakes detect infrared radiation from warm-blooded prey even in total darkness. Whales and elephants communicate through infrasound that travels for miles, while bats and dolphins navigate through ultrasonic frequencies far beyond human hearing. These examples reveal just how limited—and specialized—our senses really are.

Modern science and technology are helping us to expand our sensory boundaries. Infrared cameras, X-rays, radio telescopes, and sound sensors allow us to “see” and “hear” the unseen layers of the universe.

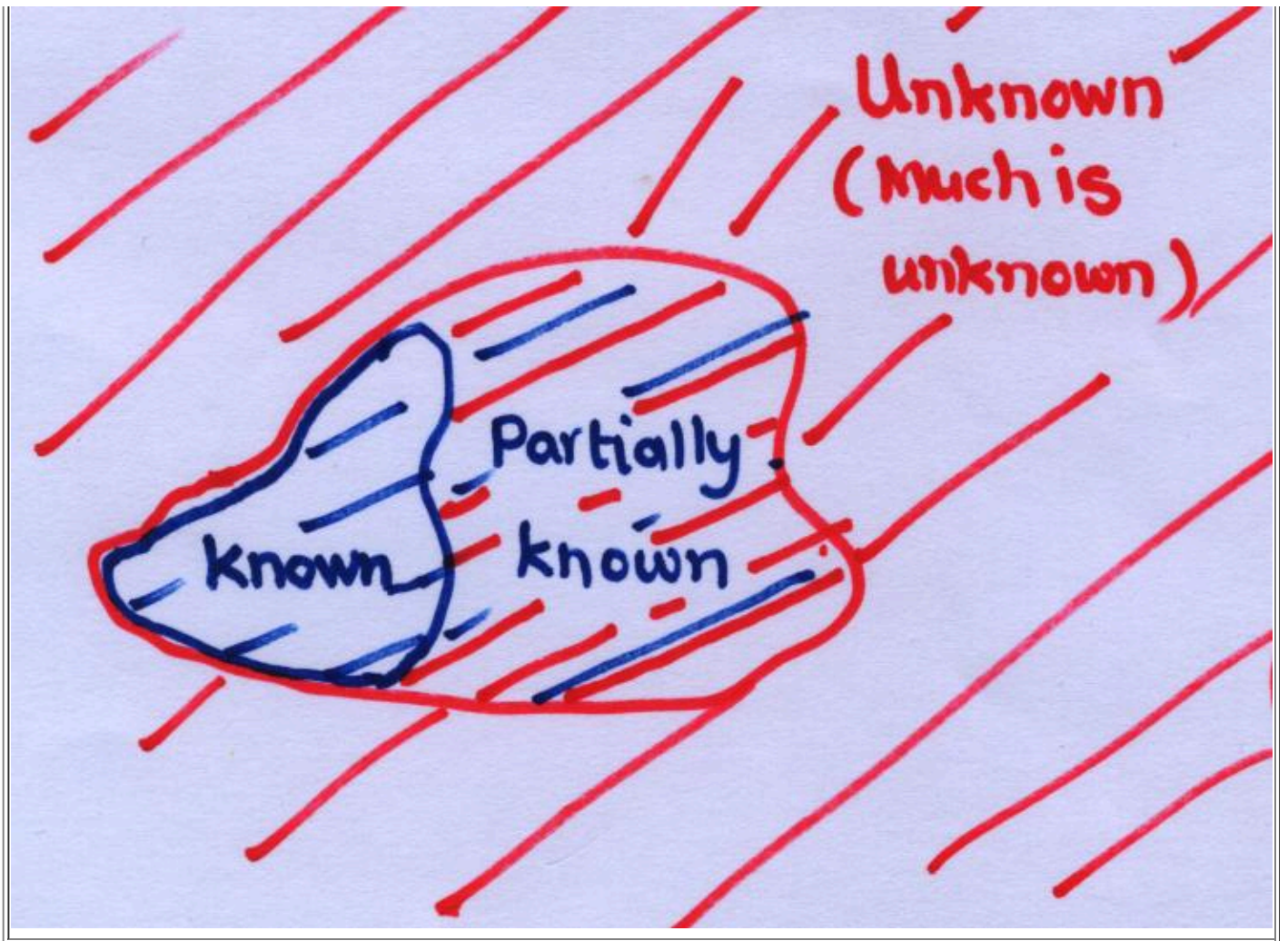
Benefit of Doubt

- Doubt is the child of Unknown and Interest to know
- Doubt is an essential component of developing science.
- Human reason may be compared to a lamp. The brighter the flame, the deeper the shadow of doubt. "Subject everything to doubt" is a maxim adopted by every creatively thinking scientist.
- If there is no Unknown, there will be no doubts and so nothing to do. So practically static world.
- Creativity is not intelligence, it is the ability to do what you did not know through the use of what you know.
- Einstein "If we knew what we were doing, it wouldn't be called research." Similarly "Adventure is going to unknown territory". With partial knowledge, experts must also be expert at figuring out what is the best course of action.

God – Known Unknown

We all can understand that there should be an ultimate creator or some initial conditions to start with. We use the word God, with out knowing anything about God. But we all are trying to define God, which is beyond our capability {God Only Knows}

Partially Known from Known and Unknown



Partially Known

Partially known is a dots game of connecting dots. One has to create their own dots and creates shapes to make some sense.

Each person creating their own theory or solutions, with their own additions.

Few out of many solutions become popular and gets established as authentic. Others are lost for ever.

Most of the problems in the world are partially known types.

Fear of Unknown

- We are all afraid of the unknown to some degree or another. We can use the fear by capitalizing on benefits:
- We will be cautious.
- We provide for uncertainties
- Fear keeps you alive and prepare us to respond to threats and dangers
- Fear makes us to step back and analyze a situation before proceeding.
- Fear inspires action

Also Negative effects:

- We all suffer a lot because of fear of the unknown.

- Even in our daily lives - the unknown prevents us from doing certain things.
- Sales men can use fear tactics to sell products and services. Insurance industry heavily uses this approach.
- With media, industry groups create fear and sell their goods and services. For example, Y2K problem was over publicized and majority of users need not have spent money on new systems. Pharmaceutical industry sells drugs for rare diseases. Astrologers depend on this for their livelihood.
- Fear is a tool that can be used to oppress people. Dictators and terrorists use this method. Even Super powers are scared about course of action by terrorists. They have to spent billions of dollars to tackle one terrorist.
- Fear of Death and life after Death has been used by religious groups to control people and make their subjects obedient to them.
- Fear of the unknown leads to irrational opposition to any change or new way, in spite of many benefits. We also fear change because we fear the unknown to recognize the benefits of change and perceive the gains to be worth more.
- Advice or Suggestion is get over this "fear of the unknown? In order to overcome the fear of the unknown, one will need to confront. Break the change (or any new item) down into digestible chunks, so that you can manage. There is no short cut. There is no one solution. Individuals have to develop their action plan.

Known Unknown: Dark Energy, Dark Matter

- In 1998 the Hubble Space Telescope (HST) observations of very distant supernovae that showed that, a long time ago, the Universe was actually expanding more slowly than it is today. So the expansion of the Universe has not been slowing due to gravity, as everyone thought, it has been accelerating. No one expected this, no one knew how to explain it. But something was causing it.
- Theorists still don't know what the correct explanation is, but they have given the solution a name. It is called dark energy. Astronomers theorize that the faster expansion rate is due to a mysterious, dark force that is pulling galaxies apart.
- More is unknown than is known. We know how much dark energy there is because we know how it affects the Universe's expansion. Other than that, it is a complete mystery. But it is an important mystery. It turns out that roughly 68% of the Universe is dark energy. Dark matter makes up about 27%. The rest - everything on Earth, everything ever observed with all of our instruments, all normal matter - adds up to less than 5% of the Universe.
- Albert Einstein was the first person to realize that empty space is not nothing. Space has amazing properties, like it is possible for more space to come into existence. An "empty space" can possess its own energy. Because this energy is a property of space itself, it would not be diluted as space expands. As more space comes into existence, more of this energy-of-space would appear. As a result, this form of energy would cause the Universe to expand faster and faster. Unfortunately, no one understands why?
- Another explanation is, "empty space" is actually full of temporary ("virtual") particles that continually form and then disappear. No explanation and the mystery continues.

Managing great unknown

- We have to work with unknowns.
- We have to predict what will happen.
- We have to plan and determine what we should do and should not do.
- We continuously develop tools to handle these unpredictable situations
- The consequences of actions are often highly uncertain. So be open minded and solve problems as you proceed.
- Decision-making under great uncertainty. Uncertainty is the situation which involves imperfect and / or unknown information.
- There is no silver bullet theory out there.

Examples

- Managing financial risk - a false sense of security
- Global change - how our activities influence the Earth system. global change issues are complex
- System safety. Nothing is safe!

Decision theory approach

- Making good decisions even with limited information and great uncertainty is necessary
- Use resilience thinking to uncover uncertainty
- Understand future trajectories or course of action
- Scenarios are sets of plausible stories, supported with data and simulations, about how the future might unfold.

Thresholds approaches

- Rank actions based on how risky they are
- Rule out actions thought to have too high a risk of crossing a threshold
- Critical thresholds for system performance and how to build capacity to recognize, respond and even transform in relation to thresholds

Rig Vedic shloka example for Unknown

Rig Vedic shloka below (Rig Veda 10. 129) says that no one knows how was the universe created? This explains limitations on knowing about existence and discussing the vastness of the universe.

But, after all, who knows, and who can say
Whence it all came, and how creation happened?
the gods themselves are later than creation,
so who knows truly whence it has arisen?
Whence all creation had its origin,
he, whether he fashioned it or whether he did not,

he, who surveys it all from highest heaven,
he knows - or maybe even he does not know.

Nobody can claim to have found any ULTIMATE TRUTH. It is not even clear what ULTIMATE TRUTH, means or can be identified
