Definitions

Why This Talk?

- Science has dominated thought process
- Religion & spirituality treated as lacking rigor
- Many Scientists don't spend time to understand, and miss benefits from, 'religion & spirituality'
- This talk will examine science, religion and spirituality in the above context and point out that all three of these have positive aspects worth following.
- Goal: encourage 'inquiry' by scientists & help them achieve benefits from religion and spirituality as well.

The main theme of this talk

- Sanatana Dharma is the all-encompassing way of life that includes science, religion and spirituality.
- India's 'educated class', or the 'elite', of the 20th Century have not paid attention to this basic and fundamental point.
- Foreign invaders and their paid agents had systematically put SD (and HR) in poor light which was easily consumed by our 20th century 'elite' (including us!!!!!)
- We thus feel that 'science' (and that too western!) alone is what we need (we ignore our traditions and culture)

The main theme (continued...)

- This talk will attempt to show that:
 - > SD and Vedic religion and all aspects of our culture have scientific basis and bias
 - The western science, on which we are experts, do not have 'well-accepted' theories to fundamental questions of 'origin of universe, origin of life forms, etc. etc.'
 - > The western and middle eastern religions Christianity, Judaism and Islam are all of fairly recent origin.
 - > SD & HR have been the beacon light to all religions that came during the last 'ten thousand years' or so which is not well understood by our 20th century elite.

The main theme (continued...)

- The talk will conclude by stating that:
 - > The vast treasures of our Rishis require careful study by our 'elite'
 - > SD and HR not only will not stand in the way of our pursuing 'science' but also will aid such pursuits
 - > The peace and harmony in life, our birthright, is within our reach

Definitions

- **Science:** From skeins, to know, science knowledge. information based on observation, identification, experimental investigation, and theoretical explanation of natural phenomena; repeatability of procedures
- Religion: The expression of man's belief in, and reverence for, a superhuman power recognized as the creator, and governor, of the universe.
- Spirituality: The state, quality or fact of being spiritual. Of, or concerned with, or affecting the soul. The body of information related to the detailed discussion and understanding of the soul.

Definitions (continued ...):

- Science: Theory, Experiments, repeatability
- Religion: Faith, Scriptures
 - some religions allow freedom of thought, though western religions require 'unquestioned' loyalty.
- Spirituality: Philosophical inquiry

Sanatana Dharma

- Sanatana means "Eternal", Dharma is difficult to translate, 'right and proper conduct' is a good meaning.
- Thus, SD is eternal, existing since time immemorial, includes S, R & Sp all required for happy & peaceful life. Moreover, R & Sp are developed based on scientific & logical reasoning, then experienced & verified.
- Practiced by peoples of Indus Valley
- Westerners called SD as Hindu religion

Sanatana Dharma

- The naming of this practice as 'Hindu Religion' by Westerners causes many problems:
 - 1. Originality of SD is lost (tens of 1000s yrs old)
 - 2. SD has no 'chain of command', so HR without its chain of command raises doubts.
 - 3. HR dated when West named it as HR, so Hinduism is not given its rightful age oldest religion & tens of thousands years old
 - 4. Not fully understanding SD, HR assigned erroneous goals like idol worship etc.

Hindu Religion – World's Oldest religion

- Hindu Religion is not an 'organized' form of religion in the sense of Islam, Judaism, Christianity or even Buddhism
- HR is the name given to 'the way of life' known as 'Sanatana Dharma' practiced by people living in the Indus Valley
- Westerners named such people as 'Hindus' and the 'way of life' as 'Hindu Religion'
- It is thus a religion as well as a way of life.

Max Muller on Hinduism

- Under what sky, the human mind has deeply pondered over life's greatest problems and found solutions that deserve attention of all, including even those who have studied Plato and Kant – I should point to India
- And, what literature we may draw the corrective to Greek, Roman and Jewish thoughts that we have studied to make our inner life more perfect, more comprehensive, more truly human a life, I should again point to India.

Hindu Religion

- Because SD is so vast & is a way of life, there are many paths in SD, making it possible for all peoples to choose path most comfortable and convenient to them.
- Bhakthi, Karma, (Raja) Yoga, Jnana paths
- Scriptures of SD very vast exceeds such texts of all other religions combined by many times over. Nobody knows how much we have!

Hindu Religion

- So much to talk about, so many misconceptions floating around in the West
- Hinduism is monotheistic

 'Ekam Sad, Viprah Bahuda Vadanthi'

 (Truth is one, Men call me by various names)

 Also, worshipping the Infinite, formless, is difficult for many, so 'form' and 'shape' are given to various manifestations of Infinite that are worshipped.

Hinduism – do not promote idol worship

- It encourages worship of God through the idol in the temple (not worship of idols!). After many years of practice and devotion, ultimately succeed to worship and visualize God without aid of temple or idols.
- Swami Vivekananda To drink milk, one uses a cup. For beginning worshipper, a visible form or idol becomes the foundation for his worship. Through the instrumentality of an idol, devotee comprehends divinity.

Hinduism

- Belief in re-incarnation, transmigration of soul
- Law of Karma
- Philosophical systems Shad darsana
- Devotional worship Sankara's Shanmata Ganesh, Kumara, Surya Shaiva, Vaishnava, Shakthi
- Reach Divinity within: Advaita, Vishishta Advaita, Dwaita, ...

Sanatana Dharma

There are various places in Bodhayana, Apasthambha sutras and in Kalpa sutras that show the scientific and mathematical basis.

So vast, many of us have not studied these.

Few examples are chosen to show science bias in:

- 1. Mathematics in veda Mantras
- 2. Sankalpa, Panchanga
- 3. Astrology, Jyothish
- 4. Ayurveda

Vedic Mathematics

- Knowledge of mathematics of practitioners of Hindu religion (and SD) very deep.
- Details of computations are stated in Bodhayana,
 Apasthambha sutras, and in many veda mantras
- Knowledge of computations, arithmetic and geometric progressions, square root calculations, the computations of Yagasala dimensions are all available three or four thousand years ago

Vedic mantras

- Eka cha me, thisrascha me, panch cha me, ..., chathasrahscha me, ashtau cha me, dwadasha cha me, ..., - arithmetic progression
- Eka cha, dasa, shatancha, sahsrancha, ayuthancha, niyuthancha, prayuthancha, arbudancha, nyarbudancha,...
 (Mahanyasa) one, ten, hundred, thousand, ten thousand, one hundred thousand, million, ten million, one hundred million geometric progression

- Veda mantras, Vastu Shastras, Kalpa sutras provide vivid details of strong scientific and mathematical knowledge of Rishis.
- Such scientific bend was used in details of worship schematics including how one should perform havans to ensure that human life moved in harmony with nature.

Worship of Nature

- Sun, Fire, Earth, Moon, Stars, Planets
- All these considered as Prathyaksha Brahman (Directly-perceived)
- All these have direct bearing on our lives
- Worship of these will thus help our lives
- Fire: agni: "agre nayathi iti agnih" (that which helps to lead us forward is agni)

Motion of Sun, Earth, Moon - Panchanga

- Panchanga: Pancha means five, anga means limbs or entities, thus five parts
- Five parts of the day: Thithi, Vaara, Nakshatra, Yoga & Karana
- Related to the motion of Sun, Earth, Moon
- Motion of Planets nava (means nine) graha (means planets) bearing on lives.

The observable facts are:

- Earth's rotation in its own axis in 24 hours gives us day and night.
- Moon rotating in its own axis and orbiting around the earth both these take the same time 29.5 days- 'synodic' lunar month (time taken for moon's position from New Moon to the next New Moon relative to Sun).
- Prathama, Dwitheeya, ..., Full Moon, Prathama, Dwitheeya, ..., New Moon (29.5 days)

- The 'siderial' month (time taken for moon's position from New Moon to New Moon relative to the fixed stars) is 27.3 days.
- For each night, the collection of stars that the moon occupies is known as the 'Moon's mansion'.
- The Indian calendar uses 27 mansions (instead of 27.3) whereas the Chinese and Arab calendars use 28 mansions. These are the 27 'nakshatras'
- Since moon spends each day in one mansion, moon having 27 wives is a 'mythological' story!

- SD has thus used the observable facts of the motions of earth (on its own axis and around the sun) and the motions of moon (on its own axis and around the earth)
- to develop our 'Panchanga'
- the 27 nakshatras, the thithi (two 15-day periods) marking the synodical month of 29.5 days, the seasons and the year.
- The apparent positions of the sun in the celestial sphere (from a fixed observer on earth) give us the 12 solar months and the "12 constellations of the 'zodiac'".

The Zodiac

- Specific set of twelve constellations
- Sun, Moon, major Planets found here
- Centered on the 'ecliptic'
- Each constellation extending to 30 deg.
- Shape looked like that of animals, hence the name of each constellation that of animal & the set as Zodiac (animal house)
- Belief that stars & planets exerted influence on human affairs, hence relation to astrology.

The Zodiac

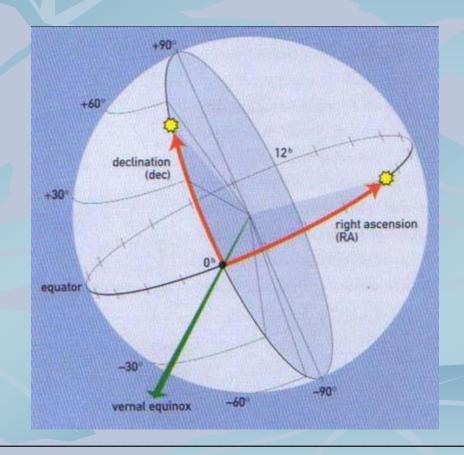
- Band 8 deg wide on either side of ecliptic.
- Precession of earth has shifted positions of constellations east, so they no longer agree with the original signs.
- First Point of Aries is no longer the vernal equinox, it points to wards Aquarius
- Song, 'The Age of Aquarius'!

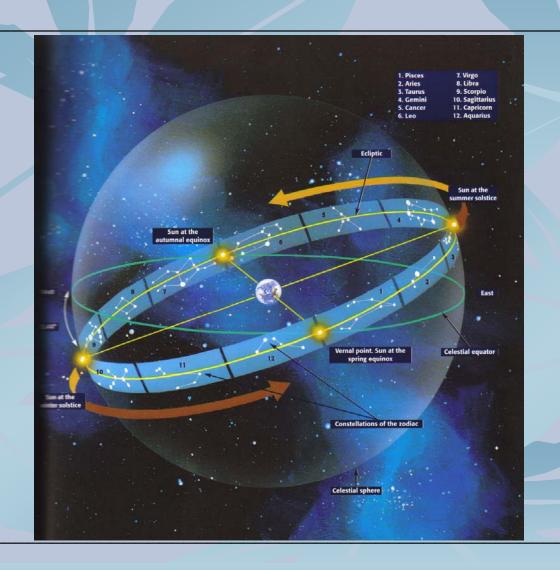
Zodiac signs

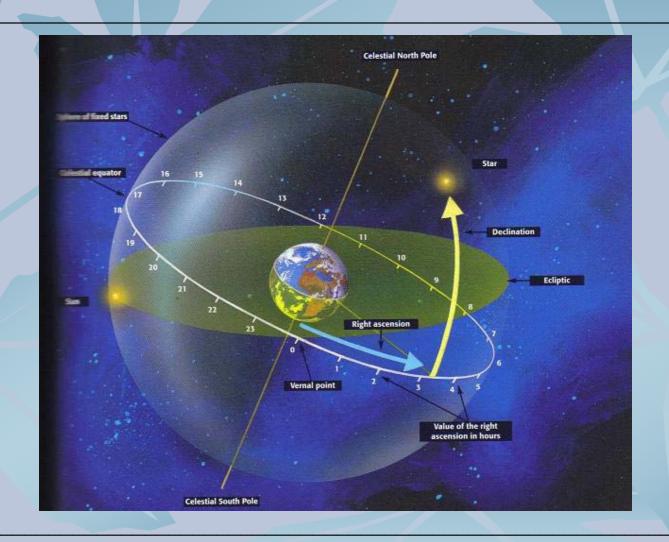
- Aries, Taurus, Gemini, Cancer, Leo, Virgo,
- Libra, Scorpius, Sagittarius, Capricornus, Aquarius, Pisces
- Vernal Equinox (March 21/22), Autumnal Equinox (Sept 21/22) Equal day & night at Equator
- Summer Solstice (June 21/22), Winter Solstice (Dec 21/22) –
 Sun stays still before reversing

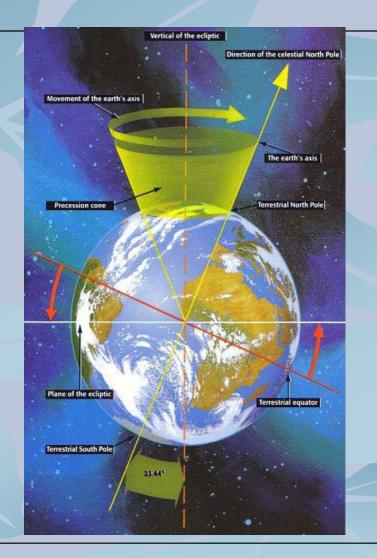
Ecliptic is inclined to equatorial plane at 23.44 degrees, thus motion of Sun (from a fixed position on earth) seems like going from 23.5 deg N latitude (Tropic of Cancer) to 23.5 deg S Latitude (Tropic of Capricon) – Uttara Ayana & Dakshina Ayana

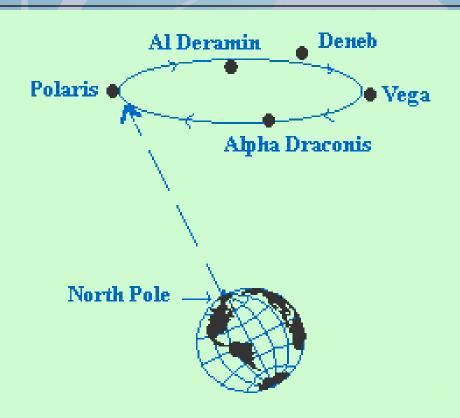
Celestial Sphere pictures





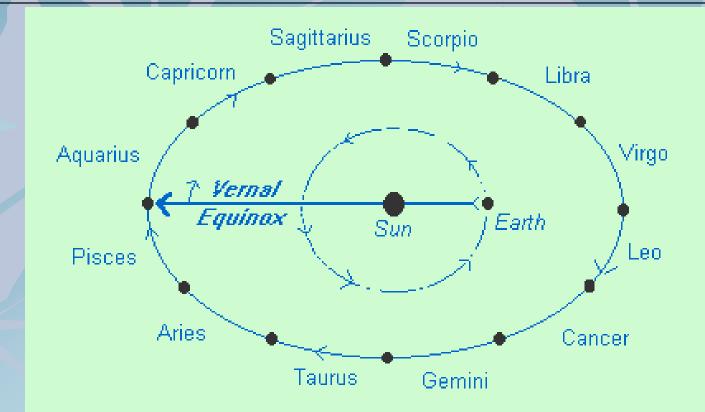






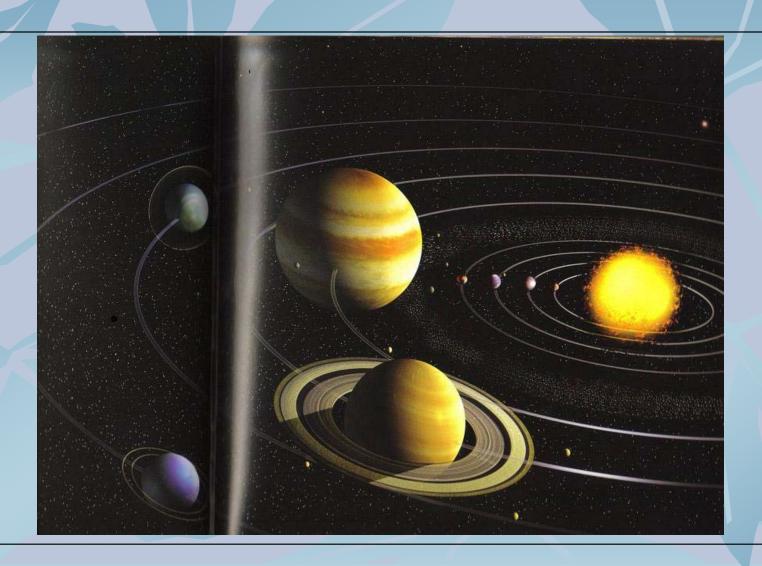
Precession of the North Pole Axis

(It takes 25,800 years to complete one cycle):



Vernal Equinox Dawns Aquarius

(Vernal Equinox takes 25,800 years to transit all twelve ages)



- The division of the 24-hour day into minutes and seconds followed the sexagesimal system of the Mesopotamians (60 minutes in an hour and 60 seconds in a minute).
- The year-names also 60-based.
- Seven days (vaara) in the week
- Six seasons in the year used by ancients
 - Varsha, shishira, vasantha, greeshma, hemantha, sharad (ritu)

- Nakshatra: Twenty-seven (27), the Moon's Palaces corresponding to 'siderial' lunar month of 27.3 days. The names given by our ancient Rishis are: Ashwini, .., Revathi
- Yoga or Nithya Yoga: Union or spatial relationship between longitudes of Sun and Moon. There are 26 Yogas and specific interpretations are assigned to them.
- Karana: Each day's thithi is split into two.
- These are ways to identify favorable/unfavorable influences occurring around us at specific times of day.

- Nakshtra, Rasi: 27 Nakshatras are divided into the 12 Zodiac constellations (or Rasi) as follows:
- Ashwini, Bharani & first Pada of Krithiga: Aries (Mesha)
 - Last three Padas of Krithiga, Rohini & first 2 Padas of Mrigashirsham:
 Taurus (Rishabha)
 - Last 2 Padas of Mrigashirsham, Ardra, and first 3 Padas of PunarPusa: Gemini(Mithuna)
 - Last Pada of PunarPusa, Pushya & Ashlesha: Cancer (Karkataga)
- Similarly, next 9 stars in the next 4 Rasis
- And the last 9 stars in the next 4 Rasis.

Sankalpa (Decision) to perform Puja:

- Power of thought (Manas), spoken word and action Manasa,
 Vacha, Karmana
- All pieces needed to complete Sankalpa
- Parthiva nama samvatsare, Dakshina Ayane, Greeshma Ritau, Kanni Mase, Krishna Pakshe, Dwadashyam, subha thithau, Brigu vasara yukthayam, Maka Nakshatra yukthayam, shubha yoga, shubha karana, visheshana, vishishtayam

Jyotish or Vedic Astrology

- Jyotish means light (of nature)
- Developed by Maharshi Parasara
- Theory behind Jyotish is that life runs in repeatable and recognizable patterns.
- By tracking, and recording, events and cycles in nature, we can forecast likely behaviors under similar cycles and patterns in future.

Meena	Mesha	Edava	Mithuna
(Pisces)	(Aries)	(Taurus)	(Gemini)
Kumbha		Karkataga (Cancer)	
(Aquarius)			
Makara	Names of Rasis		Simha
(Capricorn)			(Leo)
Dhanu	Vrishcika	Thula	Kanni
(Sagittarius)	(Scorpio)	(Libra)	(Virgo)

Jupiter	Mars	Venus	Mercury
Saturn			Moon
Saturn	Owner	Ownership of Rasis	
Jupiter	Mars	Venus	Mercury

Rahu	Kuja		
			Saturn
	Graha Sthithi		
		Venus,	Sun, Ketu
		Guru	Mercury

Jyothish Chart

- The chart shown represents the planetary position for September 29, 2005
- To create the birth chart for a baby born on September 29, 2005, two additional entries must be made on the chart, that of Lagna & Moon.
- Lagna refers to the Rasi of Sun at the time of birth & Moon's position is assigned based on the Rasi where Moon is at time of birth.

- Consider the birth of child in Los Angeles at 7:49 am on September 29, 2005
- Sunrise at LA on Sept. 29 is at 6:49 am
- Sun is in Virgo (Kanni rasi) from Sept. 17 to Oct. 17. Since 12 days are already past after Sun has entered Virgo, Sun has only 18/30 or 0.6 times the duration left in Virgo or 1.2 hours or 1 hr. 12 mts. From 6:49 am till 8:01 am, Sun is in Virgo, so at child's birth Sun is in Virgo. Lagna in Virgo.
- At 7:49 am, Maka Nakshatra (Leo), so Moon in Leo.
 Assigning these two entries complete horoscope of child.

Rahu	Kuja		
		Saturn	
	Graha Sthithi		Moon
		Venus,	Sun, Ketu
		Guru	Mercury, Lagna

Planetary Motion:

- Saturn takes 2.5 years to move from one Rasi to the next (this planet moves the slowest, "shanaih gachchathy" moves slowly, so the name "Sani" for Saturn).
- Jupiter takes one year to move from one Rasi to the next.
- Other planets stay much lesser time in each Rasi (or changes Rasi faster).
- The effect of Jupiter and Saturn are therefore watched carefully.

- While reading the 'horoscope', all the position of planets, whether they are in their own houses, who they are together with in a Rasi, who owns important Rasis of one's family impact and so many aspects will be looked into.
- However, the effect of Jupiter and Saturn as well as which planetary Dasakala is currently occurring and so on are watched carefully.

- Saturn presently is in Karkataga Rasi
- Counting from one's rasi, when Saturn is in 4th, 7th and 10th
 Rasi, the period is known as 'Kandaka Sani'
- Counting from one's rasi, when Saturn is in 12th, 1st and 2nd Rasi, the period is known as '7.5 yr Sani' because the length of time in 3 Rasis together of Saturn is 7.5 years.
- During these periods, worship of Saturn (Sani) is recommended, performance of 'navagraha' homa etc.

- Jupiter in 9th Rasi is 'Bhagya' Rasi and beneficial results will occur during that one-year
- Jupiter in 11th Rasi is also quite good.
- Many other positions are also good, one must consult with 'learned' astrologers to find favorable or beneficial periods to undertake important aspects.
- While these are general indicators, the relative positioning and inter-relationship of effects of all planets are needed to obtain good forecasts.

Human life span is considered to be 120 years and are assigned among the Navagraha as follows:

- Ketu 7 years Rahu 18 years
- ■Venus 20 years Jupiter 16 years
- Sun 6 years Saturn 19 years
- ■Moon 10 years Mercury 17 years
- ■Mars 7 years Total = 120 years

Determination of Dasakala

- Based on the star in which the child is born, the child starts with that Dasa.
- For our example of child born on Sept. 29, 2005 in LA at 7:49 am, the child's star is Maka, the beginning dasa for Maka is Ketu
- If the child is born at the start of Maka nakshatra, the first dasa of Ketu will run for the full 7 years, that is child's dasakalam from the day of birth till the child completes 7 years will be Ketu dasa.

- If the child is born sometime later, after Maka nakshatra has commenced, time elapsed since the beginning of Maka nakshatra is noted and the time remaining in Maka nakshatram is used to find how much of Ketu Dasa remains.
- Maka nakshatra occurs from 7:30 am on Sept. 29 to 10:20 am on Sept. 30. Since the time of birth of child is 7:49 am, Maka nakshatra remaining is 26hrs. 31 minutes (out of a total of 26 hrs. 50 mts). Ratio of 26h31m/26h50m = 0.9881987. Thus, garbhashishtadasa = .988 * 7 yrs=6.9174 yrs. = 6 y 11 m 0 d 6 h 15 m 25 s

We can now develop the dasakala of this child as follows:

$$2005 - 09 - 29$$

6 – 11 - 00 Garbha Shishta Dasa

$$2032 - 08 - 29$$
 Venus

After Venus Sun(6), Moon(10), Mars(7), etc.

Sankalpa, Jyotish, Puja

- As shown, all these are based on science.
- Science positions these planets in the various constellations.
- Science has tracked the repeatability of the planetary effects for the past 4000 to 5000 years. Our Rishis have codified them in 'sthotras, sookthas and sutras'. Jyotish experts have studied them and can analyze and forecast the effect of planetary positions, repeatability of their influences on person's birth chart.

Sankalpa, Jyotish, Puja (continued ...)

- Just like scientific weather predictions do sometimes fail, astrological predictions also may fail.
- The more knowledgeable the Jyotish expert is, the more accurate the time and other details of birth are known, the greater the chances of better forecasts.
- The person's general interests, general characteristics, problem areas can all be properly analyzed.
- Suffice it to say that Jyotish is based on Science.

Sankalpa, Jyotish, Puja (continued ...)

- The objective here is not to defend each and every astrologer and each and every prediction made for each and every individual.
- Jyotish Expertise (Knowledge, track-record, conservative-to-liberal viewing of charts), accurate birth records all these contribute to success of forecasts. Again, one has to look at this qualitatively (as opposed to quantitatively).
- Our Rishis are intellectuals, they have derived everything scientifically.

- Ayur Veda Life Science all that needs to be known about 'Ayus' or 'Life'
- Ayurveda is the Vedic Science of healing for both body and mind and word (mano-vak-kaya)
- Notice, how, science of healing talks about healing of body AND mind (and word).
- Masters of SD knew that if one were to achieve the goal of Moksha – either by Bhakthi, Karma, Raja or Jnana Yoga or in combinations thereof, one needs an excellently functioning body & mind (and word).

Ayur Veda

- Concept of Seven Chakras (Muladhara, Svadhishtana, Manipura, Anahata, Vissuddha, Ajna and Sahasrara)
- Concept of Nadis (or Channels)
- Concept of three Doshas (Vata, Pitta, Kapha)
- Concept of Diet
- Concept of Asanas, Pranayama, Pratyahara
- Concept of 'mouna vratha' (silence for extended periods)

Ayur Veda - Mantra Purusha

- Sound is the original form of all energy
- Space (which is mere consciousness) gives rise to prana (aakaashad vayuh; Taittiriya Upanishad)
- All aspects of mind have their corresponding sound vibration
- Mind Thoughts words & sounds
- Each person's mind has its own sound pattern.
- Soul has its own mantric vibration; when we learn it, we can awaken all the powers within.

Ayur Veda - Mantra Purusha

- Human body is a sound body; by sound, work on its energies.
- Human body can be represented by letters of Sanskrit alphabet, "Mantra Purusha".
- 16 vowels head; 25 consonants four limbs and trunk; semivowels, s, h, etc. (10) tissues, prana, mind
- Reciting Mantra Purusha daily helps to energize all parts of the body, then to calm them down etc.

- Charaka Samhita 400 B.C. Kayakachikitsa (internal medicine). Notion that life is 'field of intelligence and pure knowledge'. This field is self-aware; it is the Knower as well as object of perception (what level of knowledge & foresight 2,500 years ago!).
 - > According to Charaka, this is part of what is to be treated by the physician.

- Sushruta Samhita 300 B. C. surgery
 most comprehensive and frequently quoted definition of health is from Sushruta
- Ashtanga Hirdaya 600 A. D. by Vagbhata

Ayur Veda

- The goal here is not to dwell on Ayur Veda but to emphasize that treatment of diseases is to be achieved by treating body and mind together, by using all the Vedic knowledge of related information including Sanskrit language.
- Notice the 'unified' field of science (medical treatments), religion, spirituality inherent in the complete development of science to cure!

Dhanur Veda (Science of Weaponry) – Describes various weapons, how to make them, how to use them effectively etc. Manual of warfare & weapons. It is said that Oppenheimer learnt Sanskrit so that he can understand Dhanur Veda, which he did & which helped him greatly.

- Gandharva Veda Natya Sastra, Music, Arts
- Classical Music mathematical emphasis
- Kautilya's Artha Sastra: 4th Century B.C.
 - Treatise on Government written by PM of Emperor Chandragupta Maurya (often compared to Machiavelli's Prince 1469 A.D.), noted for details of administration.

- Astronomy (Air, Space and Inter-Planetary Travels) Arya Bhatta in "Aryabhatiyam", 5th Century A. D.
 Far earlier than in Copernicus (who is credited by West in 1540 A. D. for stating Earth is not fixed but revolves around Sun), Arya Bhatta propounded and adopted that Earth, not Sun, revolves around the latter.
- Vastu Sastra Science for Buildings
- Excavations from Mohenjo Daro, Harappa indicate town planning, architecture, water systems, civic administration details

Science

- From time immemorial, scientific interest and curiosity have produced scientists.
- Many early pioneers in East and West have contributed to early understanding.
- Contributions of East did not get recognition in West (language?, means of communication?, or ?)
- The middle ages saw the dominance of Church in Europe and the stifling of independent research.

- Prevalent thoughts in 1500s by 'Western Church doctrines'
 (Western Science not yet evolved by then)
- Sun goes round a fixed earth.
- Copernicus, Galileo stated otherwise (invited wrath of church!)
- Our Rishis knew few thousands years ago that earth rotates, going after things that move is futile, they wanted 'permanency', hence looked internal and discovered truths about Self!
- Our Scientists 'must not therefore doubt' our Rishis!

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