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# Journal of

# **Gyan Sagar Science Foundation**



# जीवन परिचय



## परम पूज्य सराककोद्धारक उपाध्याय रत्न मुनि श्री 108 ज्ञानसागर जी महाराज

जन्म तिथि	:—	वैशाखशुक्ल द्वितीय वि सं. 1 मई 1957
जन्म स्थान	:—	मुरैना (मध्यप्रदेश)
जन्म नाम	:—	श्री उमेश कुमार जी जैन
पिता का नाम	:—	श्री शांतिलाल जी जैन
माता का नाम	:—	श्री अशर्फी देवी जैन
ब्रम्हचर्य व्रत	:—	सं. 2031, सन् 1974
क्षुल्लक दीक्षा	:—	सोनागिर जी 05-11-1976
क्षु.दीक्षोपरांत नाम	:—	क्षु श्री गुणसागर जी
क्षुल्लक दीक्षा गुरू :		आचार्य श्री सुमतिसागर जी महाराज
मुनि दीक्षा	:—	सोनागिर जी महावीर जयन्ती 31-03-1988
दीक्षा गुरू	:—	आचार्य श्री सुमतिसागर जी महाराज
उपाध्याय पद	:—	सरधना 30-11-1989, जिला मेरठ (उ.प्र.)



ज्ञान की संपदा से समृद्ध उपाध्याय श्री 108 ज्ञानसागर जी महाराज का व्यक्तित्व एक ऐसे क्रांतिकारी साधक की अनवरत साधना यात्रा का वह अनेकान्तिक दस्तावेज है जिसने समय के नाट्य गृह में अपने सप्तभंगी प्रज्ञान के अनेकों रंग बिखेरे हैं। चंम्बल के पारदर्शी नीर और उसकी गहराई ने मुरैना में 1 मई 1957 को इन महान तपस्वी का उदय उमेश के रूप में हुआ। मात्र ٩७ वर्ष की आयु में ब्रम्हचर्य व्रत और 19 वर्ष की आयु में ग्यारह प्रतिमा व्रत को धारण कर 12 वर्षों तक अपने जीवन को तप की अग्नि में तपाकर कुंदन बनाया। पुज्य पिता श्री शंतिलाल जी एवं माताश्री अशर्फी देवी जी की प्रथम संतान उमेश जी ने 5 नवम्बर 1976 को सिद्ध क्षेत्र सोनागिर में क्षुल्लक दीक्षा ग्रहण कर अपने गुरू समाधिसम्राट आचार्य 108 श्री सुमतिसागर जी के चरणों में स्वयं को सदा–सदा के लिए समर्पित कर दिया। उमेश से रूपांतरित हुए क्षुल्लक गुणसागर जी ने कई वर्षों तक न्याय व्याकरण एवं सिद्धान्त के अनेक ग्रन्थों का चिंतन मनन अध्ययन किया। तपश्चरण की कठिन और बहुआयामी साधना अपनी पूर्ण तेजस्विता के साथ अग्रसर रही अपने उत्कर्ष की तलाश में महावीर जयंती के पावन प्रसंग पर 31 मार्च 1988 को क्षु. श्री ने आचार्य 108 श्री स्मतिसागर जी महाराज सें सिद्धक्षेत्र सोनागिर दतिया (म.प्र.) में निर्ग्रन्थ मूनि दीक्षा ग्रहण की और तब आविर्माव हुआ उस युवा क्रांतिदुष्टा तपस्वी का जिसे मूनि ज्ञानसागर के रूप में युग ने पहचाना। अल्प समय पश्चात ही 30 जनवरी 1989 को सरधना जिला–मेरठ (उ.प्र.) में आचार्य 108 श्री सुमतिसागर जी ने पूज्य श्री ज्ञानसागर महाराज जी को उपाध्याय पद से सुशोभित किया।

परम पुज्य उपाध्याय 108 श्री ज्ञानसागर जी वर्तमान युग के एक ऐसे युवा दृष्टा क्रांतिकारी विचारक, जीवन सर्जक और आचार निष्ट दिगम्बर संत है जिनके जनकल्याणी विचार जीवन की अनन्त गहराईयों, अनुभूतियो एवं साधना की अनंत ऊँचाईयों से उदभूत हो मानवीय चिंतन के सहज परिष्कार में सन्नद्ध है। जीवन को उसकी समग्रता में जानने और समझने की कला से परिचित कराते हैं। पूज्य गुरुदेव के उपदेश हमेशा जीवन समस्याओं की गहनतम गुत्थियों के मर्म का संस्पर्श करते हैं। परम पूज्य उपाध्याय श्री ने समाज के प्रत्येक वर्ग के उत्थान के लिए अथक प्रयास किये हैं एवं निरंतर जारी हैं। बुद्धिजीवियों को एक मंच पर लाकर आध्यात्म एवं कर्तव्य दोनों पहलुओं को समानता से उजागर किया है एवं डॉक्टर, वकील, आई ए एस तथा विशेष रूप से वैज्ञानिकों को एक मंच पर लाकर जैन धर्म में छुपे विज्ञान एवं उसकी उत्कृष्टता को फैलाया है। इन प्रयासों के लिए वैज्ञानिकों ने परम पूज्य उपाध्याय 108 श्री ज्ञानसागर जी महाराज को 31 जनवरी 2010 को "संसार उद्धारक" की उपाधि से अलंकृत किया है। उनके साधनामयी तेजस्वी जीवन को शब्दो की परिधि में बांधना संभव नहीं है। परम पूज्य उपाध्याय श्री के संदेश युगों तक संम्पूर्ण मानवता का मार्गदर्शन करें, हमें अंधकार से दूर प्रकाश के बीच जाने का मार्ग बताते रहें, हमारी जड़ता को इति कर हमें गतिशील बनाएं, सभ्यशालीन एवं सुसंस्कृत बनाते रहें, यही हमारे मंगलभाव है, हमारे चित्त की अभिव्यक्ति है, और हमारी प्रार्थना भी!



# Journal of Gyan Sagar Science Foundation

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# From the Desk of the Editor-in-Chief



With the blessing of Param Poojya Sarakodharaka Upadhyayrathan Munishri 108 Gyansagar Maharaj ji, we are peased to publish the first issue of the Journal of Gyan Sagar Science Foundation. An attempt has been made to converge, Science, Society and Spirituality in a single forum. Such a move will enable us to strike a balance between materialistic requirements and spiritual understasnding for sutasnining growth and harmonious living. In this issue papers from different disciplines, natural science, Jain philosophy and work at their interfaces are included. The latter theme is reflected from many papers such as, Medicinal plants & Jainism and self interaction of Karma & Genes.

We dedicate *Journal of Gyan Sagar Science Foundation* to our revered Munishri 108 Gyansagar Maharaj ji. The papers published in this issue were presented during the conference "Scientific Development and our Responsibility" held in Mumbai during 7-8 January, 2012. The first conference in this series was held at Bangalore during 29-31 January, 2010. This series of conferences are organized by the Gyan Sagar Science Foundation and are supported by the protagonist and philanthropist of Jain Society.

Journal of Gyan Sagar Science Foundation will publish high quality papers in natural science and Jain philosophy. It is hoped that the Journal will be a medium for creating awareness in the society about the scientific facts and spiritual knowledge for global harmony and peace.





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# Message received from Param Poojya Sarakoddharaka Upadhyarathna





#### Munishri 108 Gyansagar Maharaj ji

New Age knowledge workers and promoting development of the spiritual bliss 108 Upadhyaya Muni Gyansagar

India has emerged as the most happening Nation with a population of a billion with an adequate social and economic infrastructure. Jains in general and specifically the professionals, including scientists and technologists have successfully placed themselves in the web of complexities in the Nation's agenda of multidimensional growth and development.

They are holding the banner of victory of Jain identity amidst the ocean of vast Indian culture and have emerged as symbol of righteousness and active followers of samyaktwa. Their inherent ability as well as strength in maintaining a pace with the new equation, emerging between globalization and development through the knowledge industry has been encouraging.

This is the only religion, which respects life-even the tiniest form of life. Nonviolence is the basic of Jainism Science and which is being used from andinidhan (infinite) for the betterment of the common man and this is more profound than ever in this era of terrorisms.

The current study says that 65% of world population would suffer from food-induced digestive problems and intestinal cancers and also from those diseases, which would be inflicted by the microbial infestations. The study is scare about the split of human race into two or more species and increase of social tensions amongst the groups of newly arrived species. In the midst of the prevailing tensions and circumstances, Jainism has been viewed as the only viable answer for all prevailing problems as this would be helping them to arrive at a consensus and adopt a viable route of survival.

The recent study makes us more alarmed and invokes a new sense of responsibility for reiterating the believe that Ahimsa, Aparigraha and Anekant have to be spread with full force and vigour on the face of the globe, if we want to ensure a sustainable and good quality life for all the life forms. In this movement, I invite the full support and cooperation of the global jains through their knowledge and wisdom to make the people understand that the power of non-violence has to be emphasized as the most amazing idea for the survival of the human race.

Those, who have been involved in bringing about change and see the difference between violence and nonviolence, are firmly committed to a lifetime of non-violence, not because it is easy or because it is cowardly, but because it is an effective and very powerful way of surviving gracefully and honourably.

The time has come, where we need to design a new grammar of networking for the global jains for a constructive reform in the society. The thoughtful, incredible, inspiring. magnificent, matchless, exciting and delightful vision of the knowledge workers of the globe contributing in the field of science and technology need to master the great art of keeping up the good work top of the way and join hands so as to emerge as a collective force, which can catalyze the changes on the globe.

I have great expectations from the conclave of the scientists and technologists, which is going to take place in Bangalaru during the January weekend. I have been given to understand that such an intellectual gathering is taking place for the very first time and I hope that the deliberations of the same shall contribute in a little way to make the homo sapiens happy and spiritually glorified. I extend my best wishes for the success of the mega event and wish a very happy and purposeful new year to all. I express my aashirvaad for the chaturdik janmangal and sarvangeen abhudaya.





### Munishri 108 Gyansagar Maharaj ji

Jain religion is the most scientific in the world and deal with the each branch of the science. It also deals with the common ethics very well and provides the best way to live the peaceful and happy life.

There is always day and night to balance the activities of life and you can say there is always two side of the coin and in similar way there is always Dharma and Karma goes hand to hand to achieve best path of life.

Our Scientist in this country has this privilege to understand the Jain Dharma and learn to implement for innovation and can achieve fast track growth for the Nation. My blessings to all scientist and organizers for their efforts and achieve all prosperity, innovation and happiness in their endeavors.

Ashirwad from Param Pujaya Param Tapasivi 108 Upadhaya Bharat Gorav Gyan Sagar Ji Maharaj



# Message received from Jagadguru Swastishree Charukeerti Bhattaraka Swamiji

#### Shravanabelagola Math

The decision of the Organisers of Sakal Jain Samaj and KJA – M.T. Jain Vidyarthi Nilaya, to hold an all India Scientists' Conference at the silicon City, Bangalore, at the instance of Param Poojya Sarakoddharaka Upadhyaya Shri Gyanasagarji Maharaj is laudable. This is a welcome gesture indeed.

This seminar on 'Scientific Development and our Responsibilities' will surely enlighten people of the Society and also make the enormous significance to the development & contribution of various branches of Science for the welfare of the entire humanity.

"Ahimsa as a path to happiness" and "peace through renunciation" are the cardinal points of Bhagwan Bahubali's teaching. No. one can afford to forget these eternal truths. My blessings to all scientist and organizers for the success of this Novel event in the Jain history. May Peace and Happiness spread World Wide Karmayogi Swastishree Charukeerti

Bhattaraka Swamiji

Shravanabelagola Math



## E-mail Message received from former President of India

Best Wishes from former President of India and a Great Scientist Dr Abdul Kalam

Dear Mr Sanjeev Sogani,

Thank you for inviting Dr APJ Abdul Kalam, Former President of India, at the Symposium scheduled on 29-31 January 2010 at Bangalore. In view of prior commitments during that period, Dr Kalam regrets his inability to participate in the Symposium. However, he sends his best wishes.



Regards,

Sheridon



# Jainism and Science

Jainism is perhaps one of the most scientific religions in world and therefore it is still relivant to the society and the world. I do not find any contradiction between Jainism and science. It throws ample light on the real nature of substance or matter as propounded by Jain thinkers. Jain metaphysics approves of the scientific axiom that nothing is destructible.

That means nothing can be created out of nothing, or out of something, which does not at all exist in one form or the other. The Jain doctrine is pertinent when it advocates that the universe is uncreated, real, eternal, and infinite with no beginning and end. The modern science has confirmed that this universe has automatic working process and the matter is never destroyed; it only undergoes changes into different states or modes. This is the law of nature.

The Jain thinkers expressed their views that plants and vegetables, earth, water, fire and air have souls and are endowed with only one sense organ of touch. Sir Jagdish Chandra Bose had clearly proved in early 19th century in "Private life of Plant" through his scientific experiments beyond doubt that plants and all green vegetation also have life like human beings, and also experience feelings of joy, sorrow, anger, and fear like us. Webster and other scientists have already supported this view. Later on, Bose also proved the view of Jainism that there is life and growth in stones, which is also approved by scientists. The Sammurchana Jivas of Jainism are called abiogenists in science.

The Jain doctrine of Karma is fully substantiated by the obvious disparities among living creatures. This doctrine makes the transmigration of souls a proven fact, and establishes their continuity and immortality. The Karma doctrine of Jainism also does away with the necessity of any outside agency, an invisible all pervading, omnipotent and omniscient supreme being, creator, destroyer, preserver and dispenser of justice, for the purpose of punishing or rewarding living beings. Scientists also feel no need of any unknown hand to interfere with the automatic working of the universe.

The world-renowned great scientist Einstein in his work "The Theory of Relativity" has already supported the Anekantavada theory of Jainism.188. Scientists also support the theory of Lokakasa and Alokakasa of Jainism. Likewise, scientists on the basis of sound implements like gramophone, Radio and T.V., Casettes etc, prove its theory of sound or word as concrete. Like the Jainism, the European mathematicians Cantor Piano and Frege have accepted the reality of space and time

Modern scientists had to assume an invisible element called "Ether" as the medium to transmit sounds and words across thousands of miles. This is the theory of Dharma and Adharma in Jainism, which has been propounded by Jain thinkers long ago. 190. The most remarkable contribution of Jainism relates to their analysis of atomic linking or the mutual attraction of atoms in the formation of molecules.

The principle of vegetarian diet (Sakahara) and vegetables and food habits is also totally supported by medical doctors. Jainism ordains its followers to drink water after proper distillation with the view to avoid the killing of germs of water. Through microscopes scientists have found innumerous tiny germs invisible to the naked eye moving to and fro in water. Jainism lays stress on taking meals before sunset in defense of the vow of non-violence. The modern science also tells that after sunset many tiny living beings come into existence in the atmosphere. These beings enter our food and drinks, and thereby enter our digestive systems. The physicians and Ayurvedic literature also supported Jain's viewpoint on day dining.





# **Introduction & Aim**

Gyan Sagar Science Foundation formed in September-2009 for bridging the science and society with the blessings of Param Pujya Sarakudhharak Shri 108 Gyan Sagar Maharaj Ji. We have 41 founder members most of them are the eminent scientist of India

We want to use a immense literature available in Jain religion. We want to bring all scientist from all discipline of Science and Researches on Jainism at one plate form and achieve the task with following few suggestions:

- Form a few panels of Jain scientists in each field who have studied life science, physics, chemistry, and astronomy but lack knowledge about Jain viewpoint/explanations.
- Jain scholars can recommend appropriate books in Jain religion on those topics to study.
- After Studying Jain literature scientist can offer explanation based on current status of science in terms of what issues can be justified and what cannot be justified.
- Jain philanthropists can fund scientific projects to explain certain phenomenon which are not previously proved /established by science but has been explained in religion.
- Publish the results in peer reviewed journal.

We believe this would help in long run "Indian Science" which used to be the most innovative in the world. Jain Society always in forefront to spend the money for the welfare of nation and this time also very gracefully they accepted to host all the expenditure to bring very eminent scientist at one plate form and we could organize a wonderful event for the first time in the nation history "Scientist Meet" at Bangalore with a topic "Scientific Development and Our Responsibility" This event was a very successful and called as a event of the Year 2010, under auspicious presence of Param Pujya shri 108 Gyan Sagar Maharaj Ji .











# Role of Earth Scientists in the Development of Karnataka's Natural Resources

R. H. Sawkar and P. Krishnamurthy

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Earth Scientists play a pivotal role in the identification, utilization and guiding sustainable development that are based on natural resources, especially mineral, metal and ground water. It is time that they gave a wake-up call to all policy-makers of numerous socio-economic sections for optimal utilization of resources, their conservation and management of people, especially the stake-holders around resource bases. The ever increasing population with a continuous strain on land and water resources poses new challenges to the ecosystems and the society. The responsibility of the Earth Scientists in this context is thus very crucial and relevant. He should actively participate in the process of the State's development and transform it into a strong economic power with improved quality of life for the larger population particularly those living in rural areas and urban slums.Water, mineral and forests represent the three major natural resources. Prosperity of the State and its people depends on the optimum development and utilization of these resources.

#### Water

Karnataka has large water resources and equitable development of these resources has to be planned by the Earth Scientists so as to suggest:

- a. Inexpensive methods of harnessing and managing the monsoon rain water.
- b. Harnessing the west-flowing rivers to the east.
- c. Research in water harvesting and treatment of wastewater
- d. Methods for protection and preservation of wetlands and related issues.

A beginning has to be made to provide at least 40 liters per capita daily (LPCD) water for the municipal and 3LPCD for drinking purposes for a population of 10,000, with plans for waste water management and recycling. Water requirement for livestock, agriculture and industry should also be taken into consideration. These experiments should be scaled up to cover Municipalities having population of upto 1 lakh.

#### **Mineral Resources**

Leadership of Mysore Geological Department lead to the identification of many important mineral deposits which now form the base of mineral industries of Karnataka. These include KGF, VISL, Copper Mines, Cement industries, integrated Steel Plants, Aluminum industries, porcelain factories, paint industries etc. Mineral Industry has played a major role in economics of Karnataka and this role is expected to increase in the future. Karnataka is experiencing a surge in exploration for Gold, Diamond, Uranium, Copper and PGE metals. Earth Scientists have to play a major role in conversion of resources into reserves of most of the identified economic deposits including their stratigraphic and structural positions and up to date views on their genesis. This will help to explore new ore bodies. New information on the States mineral resources has continued to increase over the decade and it is clear for all of us to see. Earth Scientists can look forward to further success in creation of new jobs and life style in rural areas.

#### Forests:

A three-pronged approach to preserve, utilize and sustain this important natural resource is needed. These include:

- 1. Preserve virgin forests in the Western Ghats.
- 2. Reclamation and Re-forestation of areas used by mineral based industries.
- 3. Development of forests in waste lands.
- 4. Increasing the productivity of forest produce.

# Indian Space Programme - A Boon for Common Man



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Human was in innovation and in thrust of continuous improvement over the existing system and culture. This was well known through the history and the progress of human kind. From the Invention of wheel to the landing on moon there was an extraordinary effort put by scientists all over the globe. Johannes Kepler and Isaac Newton played major role in usage of gravitational field of the earth and provided model for orbital motion between 17<sup>th</sup> and 20<sup>th</sup> century The feasibility of utilizing the outer space for the development of society was thought about and the same was realized in the 21<sup>st</sup> Century. India is proud to be one of the pioneer in the civilian space application programme and also involved in the global space programme.

Indian Space Research Organization (ISRO) under Department of Space (DOS) has a long term vision in utilizing the outer space for common man with the available resources, without affecting neighboring countries. ISRO has successfully realized the vision of Dr. Vikram Sarabhai, the father of Indian Space Programme, through eminent and efficient leadership.

The tremendous growth in communication in the area of Telemedicine, Tele Education, Village Resource Center and Disaster Management System, Global Communication and Urban Development is due to the continuous support of Communication Satellites, which are indigenously designed, developed and launched by our own satellite launch vehicles from the spaceport of India (Sriharikota)

The remote sensing techniques were fully utilized by our space experts and designed the world class remote sensing satellites for civilian application, whose products are in high demand all over the globe. Considerable growth was observed in the area of Survey, Forestry, Agriculture, Mining, Fisheries using remote sensing satellites like IRS and OCEANSAT. India joined the elite club of orbiting the moon and is the first country to declare the traces of water on the moon.

Remote Sensing Satellites and Communication Satellites are launched through the indigenously developed PSLV and GSLV Rockets from our own spaceport.

The Technology developed in four decades has given us the confidence in handling human in space programme and self-sufficiency in the field of Navigation.

This paper presents the details on the developments in Indian Space Programme in the area of Communication and Remote Sensing Satellite development along with the development of indigenous launch vehicles for launching the indigenous and foreign spacecrafts from our own spaceport. This paper also gives details on self-sufficiency achieved by ISRO in the area of Communication, Remote Sensing and Navigation





# Deveopment of Plant Based Branded Bioactives for Nutrition and Health Care

#### Dr. Renuka Jain

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The use of bioactives from plant origin to replace the synthetic drugs to treat human diseases is well documented. Bioactives of plant origin offer unparalleled chemical diversity with structural complexity and biological potency. Being a part of the food chain for centuries, these are safe for human consumption.

Avesthagen focuses on developing scientifically and clinically validated, nutritional bioactives from traditional medicinal knowledge, for preventing or treating degenerative conditions such as diabetes, cardiovascular, bone health, cancer (breast and prostrate), skincare etc., Our approach combines nature, tradition, technology and proprietary tools ADePt<sup>™</sup> and MetaGrid<sup>™</sup> to create quality ingredients that meet consumer needs for great taste, better nutrition, disease prevention, cost effectiveness and environmental sustainability. This is also coupled with a channel of marketing strategy of partnering with leaders in each market segment.

The bioactive developmental program involves an etiology based search in the ADePt<sup>™</sup>, database to identify the lead plants. and Plant Information Report (PIR) is prepared. The lead plants are procured and authenticated by Pharmacognosy. The aqueous and hydro-alcoholic extracts are prepared from these lead plants. The extracts undergoes a very stringent quality TM consistency using Avesthagen's proprietary fingerprinting technique MetaGrid. After the establishment of specific fingerprint the extract are screened by enzymatic and cell-based assays followed by GLP compliant preclinical studies to ensure safety and efficacy of the bioactives. The organoleptic optimization enables inclusion of these bioactives in the desired food matrix. Finally, the efficacy of these bioactives is proven by proof of concept in human.

Avesthagen is India's leading integrated systems biology platform company that focuses on convergence of food pharma and population genetics and works towards dissection of molecular mechanisms in human diseases to deliver Innovative solutions for predictive preventive personalized healthcare.

# Unmanned Aerial Vehicles: Development and Manufacture for Peaceful Applications.

#### G Chandraprakash B E., M B A

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Unmanned Aerial Vehicles (UAV) are a new revolutionary technology. The physical presence of 'Human element on board ' is eliminated from the aerial vehicle leading to safe guarding of precious human life. These are developed in different configurations, to carry payloads required to meet the specific applications. They can be used in multitude of inherently hazardous missions in contaminated environments, surveillance, patrolling of highways and pipelines, communications, training, and so on. The varieties range from small bumble bee's size to high altitude long endurance UAVs of large size. They are very cost effective and are going to be the future of aviation industry and shall be extremely useful to the society through enhanced peaceful applications.



The paper will encapsulate the various aspects from manufacture of airframes to the details of peaceful applications.

# Organochalcogen Compounds In Materials Science And Biology



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In this presentation the chemistry of organochalcogen compounds explored by our research group during the last few years with reference to their relevance in materials science and biology will be discussed. Over a period a variety of organochalcogen compounds, in particular internally functionalized ligands, have been designed, developed and employed for the preparation of molecular precursors for metal (Groups 12-15) chalcogenide nano-materials. To fully exploit the potential of nanoparticles, synthesis of uniform size, shape, composition and phase of nanoparticles in large quantities is of paramount importance. Our group has successfully used the single source molecular precursor strategy for the preparation of nanomaterials. Thus compounds of the types:  $[M(S_2CAr)_2]$  (M = Zn, Cd, Hg);  $[M(SeCOAr)_2$  (tmeda)] (M = Zn or Cd);  $[M(OAc) (SeImH)_2]$ ;  $[Hg(TeCH_2CH_2NMe_2)_2]$ ;  $[M(Tepy)_2]$ ;  $[Me_{3-n}M(SS)_n](M = Ga or In; n = 1-3; SS = S_2CAr, S_2COR)$ ;  $[M'(S_2CAr)_3$  (M' = Sb or Bi) and  $[RBi(S_2CAr)_2]$  (R = Me or Ph) have been isolated and characterized by NMR

(<sup>1</sup>H, <sup>13</sup>C, <sup>77</sup>Se, <sup>113</sup>Cd, <sup>125</sup>Te, <sup>199</sup>Hg) and single crystal X-ray crystallography. These complexes in general existed as monomeric species. Theromolysis in suitable solvents (HAD, TOPO, diphenylether, etc.) gave single phase of mono-dispersed metal chalcogenide nanoparticles which were characterized by XRD, SEM, EDAX, TEM and optical measurements.

Low molecular weight water soluble organoselenium compounds have been developed for their use as antioxidant and radio protectors. Compounds with a variety of functional groups (e.g., OH,  $NH_2$ , COOH) have been synthesized and characterized by NMR (<sup>1</sup>H, <sup>13</sup>C, <sup>17</sup>Se) and in some cases by X-ray crystallography (Figure 1). The compound (HOOCCH<sub>2</sub>CH<sub>2</sub>Se)<sub>2</sub> has shown promising activity as radio-protector both in-vitro and in-vivo.



Figure 1. Structure of (SeCH COOH), with a diagram showing intermolecular hydrogen bonding.





# **Importance of Jaina Mathematics**

#### Dr. Anupam Jain

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> बहुभिर्विप्रलापैः किं;–त्रैलोक्ये सचराचरे। यत्किंचिद्वस्तु तत्सर्व गणितेन बिनानाहि।।

What is good of saying much in vain? Whatever there is all the three words which are proposed of moving and non-moving being all that indeed cannot exists as apart from Mathematics.

Inspite of the fact that above statement was given by renowned Indian Mathematician Acarya Mahavira (814-877 A.D.) who belongs to much latter time but able to say the importence of Mathematician in the field of knowledge. Through this statement in G. S. S. (Ganita-Sara-Samgraha) which is a first mathematical texibook written by any Indian Mathematician Acarya Mahavira indirectly established unique and indispencible situation of Mathematics in Jainism. The same view was expressed by Pt. Todarmala (1740-1767A.D.) in the Introduction (purva pithika) of commentory of Trilokasara

बहुरि जे जीव संस्कृतादिक के ज्ञान सहित हैं किन्तु गणिताम्नायादिक के ज्ञान के अभाव ते मूल ग्रंथ या टीका विषे प्रवेश न करहूँ तिन भव्य जीवन काजे इन ग्रंथ की रचना करी है।

For those people, who have the knowledge of Samskrita etc.; but due to lake of knowledge of Mathematics they con't understand the original texts or commentaries of these texts have been prepared. It indicates the utility of Mathematics in understanding Jaina philosophy.

In connection to 72 Arts available in Agmas Hiralal Jain writes. 'लेहाइयाओ गणिप्पहाणाओ'(Script etc. but full of Mathematics) Entire Jania literature can be classified in 4 sections (Anuyogas)

Digambara Tradition	Shwetambara Tradition
Prathmanuyoga	Dharmakathanuyoga
Karanauyoga	Carana - Karananuyoga
Carananuyoga	Gantianuyoga
Drvyanuyoga	Drvyanuyoga

The books comd under the category of Gantianuyoga of Karananuyoga & Drvyanuyoga are connected with Mahtematics. In the descriptions related with Cosmology, Cosmography, Cosmogony, Astronomy & Astrology we find the material related with mathematics. Hence we find many mathematical and philosophical texts full of mathematics in jaina Bhandars. Jainacaryas created astrological books to find proper time and place for religious ceremonies.

The well know mathematical texts written by Sridhara entitled Trisatika published in 1899 by S.D. Dvivedi but at that time it is treated as non-jaina text. In 1912 Ganita - sara - Samgraha of Mahaviracarya published by Madras government with Englih translation and notes by M. Rangacarya.

The first information about this mathematical text was given by D.E. Smith in 1908 by published and article in Bibleotheca Mathematics. In this way Jaina School of Mathematics came into picture. So far a lot of work has been done by B.B. Datta, A.N. Singh, L.C. Jain, R.C. Gupta, T.A. Saraswati, Sabal Singh, Padmavathamma, Takao Hayashi etc.

#### In the preset talk we will discuss about

1. Mathematics in Jaina Literature & Jiana Mathematicians

- 2. Necessity and use of Study of Jania Mathematics
- 3. Work done in the field of jania Mathematics
- 4. Availability of Jania Mathematical Literature
- 5. Some Achivements of Jainacaryas in the field of Mathematics
- 6. Mathematics Found in Jaina Agamas



# Scientific Estimation of Period And Biography of Bhagwan Rishabhdev and Exploring Ashtapad

Dr. Rajmal Jain

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Rishabhdev also known as Bhagwan Adinath was the first of the Jain Tirthankars, and the founder of Jainism. According to literatures following to Bhagwan Mahaveer he lived billions of years ago and attained liberation ("moksh") towards the end of the third era of the present half cycle of time. At the beginning of the twenty first century, we are approximately 2,530 years into the fifth era. However, by any means from currently available literatures it is almost impossible to estimate the period, age and physical structure of Bhgwan Rihabhdev. Thus we consider scientific approach to better understanding of period and biography of Bhagwan Rishabhdev. Our investigation in context to evolution of earth, evolution of man, climate cycle on the earth viz. ice age, and earth, solar, cosmic and greenhouse forcings, reveal that period of Bhagwan Rishabhdev was most likely between 21000 and 15000 years before present. Further, considering conversion of biological units of his biography allows us to eastimate his age to be about 720 years and height 8.3 feet. It appears that he ruled for a period of about 539 years, and then he spent about 9 years as Diksha period. It took only one month to him for nirvan at Ashtapad mountain. It appears from literature/ references that Ashtapad was not very far from Ayodhya. This implies that Ashtapad was a part of Kaushal kingdom. If so, then, in current geographical context, we may propose Tibet tropical region as Kaushal kingdom zone, and perhaps some part of thickly populated area of Tibet region as Ayodhya. We estimate the dimensions of Rishabhdev's Ayodhya to be about 4.5 km X 6 km. The Barkha plain and/or nearby areas such as Tirthpuri are likely candidates to be Ayodhya.



#### Prof. Ashok K. Jain

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Microorganisms have an important role in the life of human beings. Both beneficial and harmful roles are being played by several kinds of such organisms. In 20<sup>th</sup> century several new vistas have been opened up in the field of microbiology i.e. the science of study of microorganisms. It could be possible due to development of new techniques in bio-science. If we look in to jaina code of food and edibles then it becomes clear that since times immemorial jaina saints knew about properties and nature of microorganisms. They clearly directed about the edible and non-edible items on the basis of occurrence and activities of microorganisms. For example the wheat flour must be consumed within three days during rainy, five days during summer and seven days in winter season. Modern microbiology also explains the occurrence of microorganisms in the same manner. The finest microorganisms in Jainism are called 'Nigodiya' which can be compared with bacteria and viruses of modern bioscience. It is really surprising that how jain saints came to know about such tiny living beings. A good number of fruits and other items have been strictly prohibited for consumption in Jainism. There is need to search more such information and find out the scientific logic behind it. Several jaina scriptures mention about the limits within which one should do activities for the prevention of pollution and not killing and disturbing other living entities. All these rules, directions or codes were formulated for the maintenance of equilibrium among various components of environment.





# Botany In Prakrit Aagam Sahitya

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In Jain Aagam there are different materials available of modern science. In Bhagavati sutra and Pragnapana sutra, there are many facts about current biological sciences. Dr. J.C. Sikdar lightened this concept in his research work. The current science also supplemented most of them. This article deals with some major issues which are related with the plant kingdom which covers the canonical as well as current description. In the days of global promotion of Jain system it is necessary to understand botany (vanaspati vigyan) in brief. Plant has life was proved by the conversation between Mahavira and Goshalak mahabali putra, Mahavir explain that plant has life and how they grow, develop and die.

Bhagavati sutra explains that different type of cereals, pulses and other plant can take time from anantmuruth and maximum seven years to develop into seed and from seed to adult. In Jain Aagam it is also mentioned that plant growth varies from season to season and how does hot, dry and cold climate can effect their growth and development.

There is enough information given related to food of plant in Jain Aagam. Intake of food depends on availability and scarcity of water, different season also affect the nature and quality of food. During winter, plants intake more food with compare to summer. Plants store food and water in their storage organs for unfavorable conditions.

In Bhagvati sutra plants are classified in three categories. (1) Plants with numerable being (Coconut and Palm Tree) (2) Plant with innumerable being which is further classified into one seeded like (Neem, Mango, Karanj) and many seeded like (Amrud Dadim, Amla, Bel) (3) trees with infinite being.

In Sutraktanga plant grows by taking assimilatory the sap from bodies of soil, water, air and fire (sun) they have their intake through fine pores and hair, they intake energy by absorption and solution intake by diffusion and process of osmosis.



# Limitations of Scientific knowledge and the concept of knowledge through consciousness in Jain philosophy.

#### Dr. Surendra Singh Pokharna

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This paper summarized limitations of the scientific knowledge in general and that which is applicable for living systems and human systems in particular. It is shown that the concept of Jainism that knowledge is structured in the consciousness needs to be examined in the modern context. This type of analysis will provide new way of looking at the knowledge system of Jains in the modern context. Both the systems will be benifited by such an approach. Three examples are given which shows that the concept of knowledge of consciousness has practical meaning and it can be good guiding example to pursue by scientists. Two examples concern with Shatabhdhanies viz. Shrimad Rajchandji and Shri Ajitchandji Maharasa. The third provides a quantitative table which indirectly indicates that ancient Jain Acharyas have attempted to estimate the size of smallest particles of matter and the sizes which they have arrived at are statistically significant and are quite comparable to the sizes of the modern elementary particles of matter.

As another example, it is mentioned that since science has limitations of knowledge, consciousness talks of new frontiers of knowledge which will have far reaching consequences on day to day life. Thus it is mentioned

that Darwin's principle of "Survival of the fittest" should be compared to a wider principle "Live and Let Live" of Jains based on higher dimensions of knowledge.



Ultimately it appears that the characteristics of a pure soul as described in Jainism is quite close to the concept of Implicate Order of quantum mechanics as described by David Bohm. Hence there is a need to talk of Order parameter in higher dimensions as applied to human systems.

Finally it appears that the process of enlightenment as described in Jainsim to achieve the highest state of consciousness through a set of Gunasthanas is accompanied by decrease in rate of entropy production at every stage.

Finally it is shown that we need to explore the General Systems Theory (GST) for better understanding of the concept of knowledge in Jainism.

For a paper to be presented in a National level seminar on Science and Jainism to be held in Bangalore from Jan 29-31, 2010 at Karnataka Jain Bhawan

## Jain theory of knowledge & Modern computer systems

#### Dr. Shugan C Jain PhD

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Knowledge has different meanings depending on the purpose for which it is used; e.g. means of acquiring knowledge, something which eliminates ignorance or the result of acquiring knowledge etc. Pluto defines knowledge as justified true belief. In Jainism, it is defined as a system to include object of knowledge, the processor of knowledge and the means of acquiring knowledge. Jains divide knowledge in two primary categories namely acquired (indirect) and direct.

Jains claim the soul which is sentient and has its manifestations as intuition and knowledge. So the soul is knowledge itself. It knows itself as well as the others. As the empirical soul removes the karmic impurities associated with it, the knowledge capabilities of the soul increases to infinity (in pure soul state). Further the soul in pure state knows the objects of knowledge directly while in the empirical state, it needs the media of sensual organs to acquire knowledge. In its journey of purifying itself completely (free from karmic impurities), the levels (time, space and type i.e. concrete and non concrete objects) of knowledge changes from minimal to maximum (without any limitations) in the pure state. Validity/Correctness of knowledge is also related to the belief or objective for which knowledge is being acquired. Jain epistemology details origin, process, means, types, objects of knowledge etc including its being valid and expression for the benefit of others.

Jains also talk of duality of existences with soul as sentient and the other category being insentient or ajiva. Matter is the primary active type of insentient existents. Matter ahs fusion and fission as its primary quality, is active, has attributes of taste/touch/smell/ form and is highly unstable in its pure form (unlike soul which is highly stable in its pure state). Computers consist of matter and need it to make them operational. They acquire knowledge from a group of sources such as designers/programmers/hardware manufacturers and the input sources from processes (natural or manmade) and process the same at fast speeds. Experiments to demonstrate differences between computer processing and soul processing will be presented as well as the new developments of computer communication technologies to relate them to clairvoyant knowledge and simple knowledge of mental modes.

The paper presents a comparative study of knowledge development, its processing etc by empirical soul and computer systems. The paper also tries to project the limitations of knowledge processing and wisdom/ original knowledge by computer systems in the next twenty years or so.





# Jain Karmic Theory and Genetic Science

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The law which regulates the doctrine of karma is based on the principle of "Cause and effect". The saying "as you sow so you reap" present the whole doctrine in a nut-shell. Every action, whether mental, vocal or physical, is a sowing of the "seed", or in the technical language of Jaina Philosophy the engendering of karma. In the act of sowing the seed or engendering the karma, the soul has the choice of acting or retaining from action, but once the seed is sown or karma engendered, its freedom is replaced by an inevitable liability to bear its consequences. This is what constitutes the bondage of soul. Karma, therefore, is a kind of force, which compels the soul to bear the consequences of its right or wrong actions, and this force originates in the very action itself, which is performed by the soul and at the very moment of its performance.

We are basically made up to cells. Every cell has a nucleus and cytoplasm. Nucleus has chromosomes. Each chromosome has many genes. Genes are made up of DNA molecules. Our vital activities are governed by the genes. No two persons are similar in their genetic constitution. We work differently because of our difference in genetic constitution. The activities of genes are governed by the environment. It is the environment which modifies the expression of genes of the individual. Therefore if a "bad" individual is put up in "good" environment, his bad activities (ppa karma) will be reduced to some extent and vice-versa, so the role of environment is equally important for the "ppa karma" and "puya karma" activities of the individuals.

The doctrine of karma conceives karma as constituting a very fine kind of matter aggregates. All living beings of world contain the same genetic codes. This research work bring forth the possibilities that the individual pudgalas (karmic particles or karma vargas) i.e. the karma create genes. Genes and karma both determine the life cycle and inheritance of all living beings. Genetic science says, "we are what because of our genes. Tirthankaras have said since very beginning "we are what because of our karmas". Genes not only bear the genetic traits of their parents but these also represent the karma performed by individual. Karma body possibly controls the activities of the genes. With this research work I arrived at the conclusion that karmas are the cause and genes are their effect (fruits). Karmas direct, instruct, motivate genetic codes and genes to function and mutate accordingly.

# Jain Philosophy in Modern Scientific Perspective

#### Dr. N. L. Kachhara

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Jain philosophy is unique in the sense that it does not accept any Creator or Supernatural God like many other philosophies. It explains the phenomena of both the living and the non-living worlds by propounding the existence of real substances that are independent and distinct; every one of them functions by its own set of rules. All real substances are eternal, powerful in their own right and cannot be destroyed by one another. The real are not absolutely permanent but are transitory-permanent that is they undergo transformation, according to the set of rules, maintaining their essential characteristics. This special feature of the substances gives rise to creation of the world as we know without intervention of any other Creator power. The transformations in the substances are based on the principle of causality, an approach which is also the foundation of modern science. From this perspective the Jain philosophy is rightly called a scientific philosophy.



Modern Science has proceeded on experimental verification of its laws and theories, but such verification is often difficult in case of real substances which are metaphysical in their scope. But the Jaina tenets being facts, as pronounced by omniscient Lord, compare well with scientific findings where ever science has reached a conclusive stage. In other matters in which the scientific findings are still in initial stages and no concluding opinion has been reached the Jaina tenets, particularly in the living world, provide truths that

can be torch-bearer to science.

My talk shall elucidate the above proposition by citing examples from both the living and the nonliving worlds and present an overall scenario of comparison between Jain philosophy and science. Such a comparison many a times needs extension and projection of established form of Jaina tenets to suit the format of modern science and also to fill up the explanatory gap found in the Jaina texts and the detailed scientific knowledge now available. There is a need to reinterpret the Jaina texts in scientific perspective so that they are accepted by the scientific community as a source of truths that are convincing, logical and scientific.



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### Science and our Responsibilities

#### Dr. Sanjeev Sogani

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The relevance of Science, technology, engineering as well as scientific literacy is always being used for the wellbeing of society from ages and in present scenario is more profound than ever. Scientific facts being developed from religious knowledge and also converted into religion again and spread to the society well being in India. If we talk of Jain religion in particular there are thousands of examples which explain modern science very well. If we talk of very basic of filtering the water before use as this has uncounted bacteria and shelf life of 48min(without boiled) well accepted by modern science and by all societies. Few other scientific facts already explained in the Jain religion is sited here see Annexure-I.

There are thousand such examples both at macro and micro level. I wonder many times how such science our saints and Thirthankers understood without any experiments, I have only one answer that pure soul is has infinite power and can acquire any knowledge .Based on this it is necessary to have the basic ethics and religious activity is always important for Innovation and fast track success and make the India "Golden Bird" again. If time perimit I would present very basic ethics of Jain religion and relation to success. The theme of the symposium is bridge the science and society.We call all scientist to make their work both beneficial and understandable, and society to discover again the excitement and hope that research and its finding offer."It is a Call to Action that Resonate Around the World".

In the last as my subject of research is chemical science for pharmaceutical and chemical industry. I find the unprecedented need for academia and industrial collaboration to launch a new drug entity (NCE) from India first ever of this Era.





# Jainism and Modern Cosmology

#### Dr. Piyush Jain

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Lord Mahavir, the highest authority of Jainism, like Albert Einstein, the epitome of modern science, never carried out any experiment in any laboratory. For both, their minds were their respective playgrounds. No wonder then, several of their conclusions look alike. In the fields of matter, time, cosmos, etc., the contents of Jain treatises are amazingly near to the findings of modern science. In the paper, titled 'Cosmology – Jainism & Scientism - A Comparative Study', the author has tried to bring forth the similarities and disparities between the Jain school of thought and that of scientific fraternity.

But, the comparison does not stop at the striking similarities. It also encompasses the limitations of both the lines of contemplation. The eternal, yet cyclic concept of Jainism, fills in the gap left by the scientists in the Big Bang theory. Jain postulates of Dravya (mattereals) and time also answer the dilemma of ever expanding universe of modern astronomers. Jains, too need to answer several such apprehensions as raised by the scientific fraternity.

Paper presents the depiction of finite shape of the universe and explains the division in three major parts, as is available in ancient Jain scriptures. Geography of Universe is followed by its six real-constituents and brief description of their individual roles to make the universe full of hectic activities.

Various similarities in Jainism and scientism brings the author to the conclusion that a unification of philosophy is possible with the modern science. In the process of this unification, and in the author's belief, an astounding possibility arises – "to have an eternal soul residing in a body which lives happily ever after, till it is liberated through right karmas."

## Natural Products: Essential Resources for Drug Discovery

#### Prof. (Dr.) Subhash C. Jain

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Recently there has been a renewed interest in the beneficial effects of natural products for the prevention of various diseases like, heart disease, diabetes, arthritis, leukemia, Alzheimers, Parkinsons and dozens of others. It has been estimated that 80% of the world population still rely on natural plant products, of which some are sold as herbal/food supplement or drugs. Half of the top 50 drugs sold in European Pharmacies are based on or derived from natural products. Thus, the best strategy to discover a new drug candidate is to investigate the natural resources which have been used by different ethnic cultures, for medicinal purposes all over the world. Study of biologically active compounds present in natural resources, normally serve as the lead compounds for the discovery of new drugs.

Keeping the above philosophy in mind we have studied the active principles of various plants and marine sponges and have synthesized over fifteen natural products. These compounds are known to possess strong antimicrobial, molluscicidal and cytotoxic activity specially against p-388 murine leukemia cells. Taking lead from these natural products, we have synthesized number of related compounds, in order to find a potential drug candidate for the future.

An over view of our journey, from the natural products to synthesis of new molecules, in research of a suitable drug candidate, will be presented at the Conference.

# Greener Synthetic Aternatives to Pharmaceutically And Industrially Important Compounds Prof. (Dr.) Anshu Dandia



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Heterocycles have a central position in organic chemistry and nitrogen heterocycles in particular exhibit diverse biological and harmacological activities due in part to the similarities with many natural and synthetic molecules with known biological activity. Heterocyclic spiro compounds exhibiting structural rigidity because of conformational restriction are of interest in synthetic organic chemistry. Indeed, the presence of a spiro carbon atom induces a relatively large steric strain and allows basic, acidic, thermal or photopromoted rearrangement of these products, yielding new and often unexpected heterocycles. Therefore, the synthesis of these spiro embraced structures was of considerable interest in the pharmaceutical and agricultural chemistry. Further, the introduction of fluorine into biological molecules often results in significant changes in their chemical, physical, and biological properties.

Creation of molecular complexity and diversity from simple substrates, with simultaneous consideration of the economic and environmental aspects, constitutes a great challenge in modern organic chemistry, both from academic and industrial points of view. In this context, green chemistry can be an important key in order to produce cleaner and efficient synthetic processes. In view of our interest on molecular diversity and search for new leads in drug designing program, aimed at achieving simple and environmentally compatible synthetic methodologies, we have synthesized wide variety of fluorinated novel spiro and annulated heterocycles and biologically important scaffolds incorporating pyrimidine, triazole, pyrazole, benzothiazole, benzimidazole nuclei, etc. by coupling non-conventional strategy with greener solvents or catalysts. In an effort to optimize the processes, a wide range of different solvents and catalysts were investigated and in most of the cases the best solvent was found to be water with catalytic amount of L-proline and PTC. Chemo/regio/diastereoselectivity was also observed in some cases which was confirmed by single crystal X-ray crystal determination.

Phototoxicity and cytotoxity of representative compounds were studied against leukemia and adenocarcinoma-derived cell lines in comparision to the normal human karatinocytes and it was found that phototoxicity of compounds is higher in the tumor cell lines in comparision to the normal ones (NCTC 2544). Anti tubercular activity of some spiro derivatives were studied against Mycobacterium tuberculosis H37Rv in BAVTEC 460 radiometric system. These compounds were effective against M. tuberculosis and showed 90-95 % inhibition. Detailed synthetic procedureand pharmacological activities of these compounds will be presented in conference.

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# **Contribution of Jaina Mathematicians**

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Mathematics is one of the important branches of Science from time immemorial. Being an inseparable part of science, it has retained its privileged place as Queen of all Sciences. The contribution of Indian mathematicians towards the development of mathematics is unique and valuable. Many Jaina mathematicians have saliently contributed. It is perceived among common people that mathematics is difficult to learn. The skill of explaining such difficult material in simple and exact forms is one of the specialties of Jaina mathematicians. Tattvarthadhigama Sutra, Sthananga Sutra, Jambudvipa Prajnñapti, Tiloyapannatti, Ksetrasamasa, Ganitasarasangraha and Vyavaharaganita are important ancient Jaina mathematical works. The object of this paper is to present some of these works.





# **Environmental Science and Jainism**

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Ecological and environmental preservation is intrinsic, innate and inherent in Jainism. It is inbuilt and integrated in every principle, concept, tenet and mandatory doctrine of Jainism. Enlightened Jain icons, Arhats and Tirthankaras pondered over and considered every aspect, the various causes of degradation and necessary measures, prophylactic to pre-empt as well as remedial to redress and redeem and also for sustained maintenance. All canonical and subsequent Jain scriptures address extensively and comprehensively concerns and measures for environmental protection. The list is long. The notable scriptures are Ayar Suttam, Dashvaikalik Sutra, Uttaradhyan Sutra, Thanang Sutra, Bhagwati Sutra, Sutrakritanga, Atmanushasan, Tilloyapannati, Jambudweep prajnatpi, Ratnakarand Shravakachar, Tatvarth Sutra, Panchastikaya, Mulachar, Purusharth Sndhupaya, Jain Sidhanta Deepika, Jnarnava, Ahimsa Tatva Darshan, Syadvadmanjari, Rajvartic, Kartikayanupreksha, Bodhi Pahud, Karamgranth, Savayapannati etc. Obviously the Jain Ethics and Environmental Ethics are Synonyms.

The environmental scenario manifesting and evolving as of now is grim and dismal. The pollution level in soil, water resources and air has already reached maximum permissible and tolerance limits and continues to increase unabated. The dangerous consequences have started manifesting in climate change, melting of ice, shortages in crop yields, accentuating water scarcity erratic rains, droughts, floods, diseases and miseries of all sorts. The environmental doctrines of Jainism notably the doctrine of equality of all life-forms which include earth (soils and minerals), waterresources, energy (fire) and air, doctrine of non-violence and doctrine of non-consumerism can set the clock back and restore the health of environment to its pristine state.

## **Medicinal Plants and Jainism**

#### Dr. Shuchita Jain

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Nonviolence is fundamental principle of Jainism. Both are so intrinsically integrated that there is no exaggeration to connote both Jainism and Non-violence as synonyms. Jainism ordains that all plant forms along with even soils including minerals, water, air, energy (fire) are life forms and should be treated as one's own self and any form of cruelty or pain should not be inflicated.

In Ayar Suttam, the most important canonical Jain scripture, there is a very sensitive description of injury to plant and its parts equating it with same as injury to human body and any of its parts or organs. The plants experience and feel pain in the same way as the humans do. There is very elaborate and comprehensive description of various plant species and their products in Jain scriptures notably Tilloyapannati and Jambudweep Prajnapti.

Devoted Jains do not take modern allopathic medicines as violence is involved in their research and manufacture. By and large and as an established tradition, Jains depend on medicines based on plants. While working on UGC project on survey of medicinal plants, it has been observed that availability of many such plant species is dwindling fast even in claimed to be best protected forest areas in National Parks and Wildlife Sanctuaries. It has also been observed that collection of medicinal plants by tribals is done in cruel way. It is therefore necessary particularly for Jains to take up propagation, collection and processing of medicinal plants in situ as well as in agricultural farms in accordance with Jain principles.

The paper stresses the need of such studies establishing correlation between Jainism and Plant science to conserve the phyto-diversity vis-à-vis biodiversity, which is the need of the hour to save the planet earth.

Abstract

Key words: Jainism, Medicinal plant, Diversity, National Parks and Tribals.

## **Relevance of Jain Tenets in Curbing Crimes**

#### Dr. Vinod Jain



Mankind is striving for survival under the panic shadow of terrorism and hi-tech crimes. Domestic, national and international criminals are using modern gadgets to accomplish their heinous, vicious, inhuman goals, by antisocial activities, domestic violence, thefts, bank robberies, signature forgeries in land mafia cases, fake currency manipulations, murders, rape, mass killing by serial bomb blasts, chemical poisoning in dowry crimes including cyber and mobile phone crimes for their own pleasure and happiness.

The root cause behind all criminal activities and criminal mindset is ingrained greed and allurement to acquire surplus unwanted wealth and money to create inequalities, terror and panic in society. The other vital reasons are religious fundamentalism, perturbed state of mind, global trend of consumerism, nature of non contentment, uncontrolled urge and race for sensual pleasures, irrational thoughts, which leads to irrational criminal actions.

If five vows of Jainism namely Ahimnsa, Achauraya, Satya, Bramacharya, Aprigraha and tenets can be well taught and explained to criminals, dreaded terrorists, and antisocial elements, with practical sessions of rational thoughts, rational knowledge, rational behavior and actions, a vision of low crime rate society can become a realty. Jain code of conduct, tenets and vows are the only nonviolent spiritual weapons and antidotes to change the mindset of arrested, custodial and imprisoned criminals and terrorists to convert their disillusionment into rational thoughts and actions in order to change the mindset of their fellow colleagues in the criminal and terrorist activities.

If humanity is to survive on this globe as a crime free society ethics and conduct of Jainism is to be followed in theory and practice with international perspective. Present paper discusses various kinds of criminal activities at domestic, state, national and international levels. Jain community can impinge an indelible dent on the consciousness level of criminals and terrorists by propagating Jain thoughts and life styles at various national and international forums incorporating print and visual media. It is prime time at national and international fora to forge the differences amongst the thinkers, spiritual leaders and followers of various sects in JAINS to come on a common platform for cleansing the minds of criminals in international arena. World wide integration of JAINS and their organizations with scientific attitude of mindset involving their skilled youthful manpower for creating a sustainable new minimized crime era is the need of the hour for future peaceful coexistence and survival of globalized human race.









The environmental crisis is an outward manifestation of a crisis of mind and spirit. Lynton K. Caldwell

# **Spiritual Ecology : Jainism**

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Jainism aims at producing a better mind, less intensity of the passions, greater happiness and an increase in compassion, which aids in protecting the environment. The Jain spiritual ecology gives an insight into the nature and psychology of human beings through non-violence, reverence for life, restraint and co-operation of all so that people do not to indulge in sinful or disturbing acts that harm the natural world. Focusing on purification of the Bhava Chetna - the emotional consciousness and its infestation in thoughts and action by constantly developing the sensitivity is most significant, which can be understood well by the following invocation:

#### JAYAM CHARE JAYAM CHITTHE JAYAM BHASE JAYAM SAYE, JAYAM BHUNJEJJ BHASEJJ EVAM PAVAM NA VAJJHAIE,

which means that a person should consciously walk, stand, sit, sleep, eat, speak. If he/she does like this, he/ she is not bound with the Papa karma.

#### LESHYAS : The emotional consciousness

Emotional consciousness is reflected in the concept of LESHYAS (aura of colours signifying the mental status), where, the example of a tree is cited. This states that the person having the Shukla Leshya ( the best one ) collects only those fruits, which have fallen on the ground, the person having the Padma Leshya ( next to the best one ) picks one or two fruits from the tree, and the person having Krishna Leshya ( the worst one ) cuts the entire tree. The purity in emotional consciousness changes the focus from I, me at myself to We, which indeed is the central point of the Jain Spiritual Ecology.

#### Foundations of the Jain Spiritual Ecology

Emphasis on inner as well as outer purity signifying a non-violent life.

- All moral and ethical rules are equally applicable to all beings of the biological realm.
- Observing welfare of all living beings of the universe.
- True friendship to all is an outcome of approach towards non-violence (Ahimsa), which is
- as follows:

"All the venerable ones (arhats) of the past, present and future discourse, counsel, proclaim.propound and prescribe in unison - do not injure, abuse, oppress, enslave, insult, torment, torture or kill any creature or living being."

This lecture would deal with the Jain Model of Environmental Protection with Basic Principles of Jainism; INTERDEPENDENCE; NON-VIOLENCE {AHIMSA}; NON – ATTACHMENT (Aparigraha); Aparigraha and Austerities; ACHAURYA (non-stealing); Brahmacharya (Celibacy); PROTECTION OF RESOURC



## Locating probable unexplored Archaeological site of Ashtapad MahaTirth near Kailash in Tibet using Remote Sensing and GIS Technique

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Adinath/Rishabhdev, the first Tirthankar of Jainism was said to have attained nirvana at Ashtapad near mount Kailash in Tibet. Bharat chakravarti king, son of Rishbhdev, constructed a temple on Ashtapad in memory of Adinath/Rishabhdev. From literature it has been found that his decedents created a trench around Ashtapad for protecting the same. The exact location of Ashtapad is not known at present.

New York Jain centre, USA, is constructing a model of Ashtapad at Jain temple at New York. This centre is interested in locating Ashtapad Maha Tirth & Ashtapad Mountain. A research programme was arranged by New York Jain Centre to find out the existence of Ashtapad near Kailash, during 28<sup>th</sup> May to 21<sup>st</sup> June 2006. For this purpose a team was constituted consisting of Doctors, Engineers, Jain scholars, Sanskrit scholars, person who visited Kailash thrice earlier and space scientist, along with translators, climbers and professional photographer. From the description found in the literature compiled by Jain centre of USA, New York, it is believed that there are ten places where possibility of Ashtapad Mountain and Ashtapad Maha Tirth is there.

Probable locations of Ashtapad Mountain and Ashtapad Maha Tirth were discussed in earlier reports and zeroed down the discussion about near the location of Dharma King Norsang as probable site of Ashtapad after detailed discussions about all ten sites. In this paper we would deal with the location traced by Remote sensing Satellites and some real photographs with probable locations of Ashtapad maha teerth Remote sensing refers to acquisition of information about objects/phenomena through the use of sensors which are not in physical contact with the target. Today there is multitude of sensors having better spatial, spectral and temporal resolutions. This includes Indian Remote Sensing Satellites (IRS) which provides data of 5.8 m resolution. Today very high resolution of 1m from IKONOS is also available. Satellite data have successfully been used for Archaeological studies.







# Limitations of Scientific knowledge and the concept of knowledge through consciousness in Jain philosophy



Dr. Surendra Singh Pokharna

#### Abstract

This paper summarized limitations of the scientific knowledge and formalism which is currently used to study living systems and human systems in particular. It is suggested that we need to explore the General Systems Theory (GST) for better understanding of these issues. It is shown that the concept of Jainism that knowledge is structured in the consciousness needs to be examined in the modern context. Three examples are given which shows that the concept of knowledge of consciousness has a great meaning and it can be good example to be pursued by the scientists. Two examples concerns with Shatabhdhanies, who demonstrate highly evolved mental faculties through which one can perform one hundred activities together in a sequence without using any pen and paper. The third provides a quantitative table which indirectly indicates that ancient Jain Acharyas have attempted to estimate the size of smallest particles of matter and the sizes which they have arrived at are statistically significant and are quite comparable to the sizes of the modern elementary particles of matter. They lead one to infer that there exist higher dimensions of knowledge including Extra Sensory Perception (ESP) which are not yet properly explored in a systematic way. Hence it is also mentioned that since knowledge of science has limitations, so ideas about knowledge of consciousness may lead to new frontiers of knowledge not yet recognized in modern science

As a consequence of this, it is also mentioned that Darwin's principle of "Survival of the fittest" should be compared to a wider principle "Live and Let Live" of Jains based on higher dimensions of knowledge which emphasize more on underlying identify (common soul) among all living beings than differences among them.

Ultimately it appears that the characteristics of a pure soul as described in Jainism may be quite closed to the concept of Implicate Order of quantum mechanics as described by David Bohm. Finally it is proposed that the process of enlightenment as described in Jainism to achieve the highest state of soul is accompanied by decrease in rate of entropy production at every stage. Hence there is a need to talk of some Order parameter.

So this type of analysis will provide new way of looking at the knowledge system of Jains and that of the modern science and new avenues of thought to handle the current problems.

**Keywords:** Scientific knowledge, Knowledge of consciousness, Soul, Shatavdhanie, General Systems Theory, Order, Implicate Order of Quantum Mechanics, Size of atoms and nuclei, Extra Sensory Perception, Survival of fittest, Live and Let Live.

#### Introduction

Science and technology and their use in economical developments and commercialization have revolutionized the whole world in such a way that everything appears to have changed in last 100-200 years. Developments in the field of space technology, atomic energy, electronics, biotechnology, modern agriculture, telecommunication, and manufacturing systems are some of the examples of these changes. However, they have also resulted into an increase in population, depletion of natural resources, damage to the environment, increase in terrorism, threats of nuclear wars and so on. Also these changes have played a key role in making this world truly global.

However, because of these changes and domination of science and technology in all walks of life, an impression has been created that scientific knowledge is the supreme and anything other, which does not fall into this domain is not very relevant. But Science and technology are just two hundred years old only and there was a concept of knowledge and technology even before the modern science came into existence.

Actually one finds that scientific methods developed to study physical systems are not adequate when human systems are also included in this type of formalism (John Gigch, 1978, Bertalanffy, 1976), because all living systems are essentially irreversible in nature, that is

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This paper is dedicated to Late Aacharya Shri Mahapragnyaji, whose literature and personal meetings of author with him has inspired him beyond imagination.

#### Dr. Surendra Singh Pokharna, Volume 1 Issue 1 April 2013

they grow and decay and they are also open systems compared to the physical systems which are closed systems. So the biological and social systems can not be strictly subjected to the process of measurement and hence they are not exactly describable in the strict terminology of the physical sciences. Also any type of experimentation is not possible in case of human systems (Goldsmith 1990, Jones 1990 and Penrose 1990), as they have memory, free will, creativity, tendency to interact strongly with other fellow beings and the environment. Furthermore there are micro controls in the form of thought processes which cannot be easily adjusted in any planned "scientific experiment". They also have a property of infinite amplification because of the thought processes, which makes it difficult to make them study in a strictly scientific way. Expressed in a different way, it is now felt that the standard concepts used in any scientific study like compartmentalization, reductionism, causality, mechanism, induction, empiricism and passivism etc. (Goldsmith, 1990, Jones 1990) cannot be used to strictly study the biological systems and social systems. Not only this the basic parameters used in science like energy, mass, linear momentum and angular momentum are basically defined for closed systems, so they may not be the best choice for describing the biological and social systems (Penrose, 1990). The final blow to limitations of scientific methodology is being done by Godel's incompleteness theorems (Penrose, 1990) which have virtually shaken the foundation of modern science. Therefore a totally new perspectives and new concepts are required to define a more useful and a more meaningful concept of sustainable development in a broader sense.

Hence General Systems Theory (GST) is used for better understanding of the whole problem because by its intrinsic nature, GST can give a better picture of the interconnectedness (Haken 1973, and Jantsch 1980) of various components of the Human-Earth-atmospheric system. It is finally a problem of order versus disorder (Pokharna, 1985, Pokharna 1991, Pokharna 1996 and Pokharna 2006) at all levels and so when we talk of development and evolution, we should talk of development of order and evolution of order for complete understanding of the term development. They will have significant impact on all the problems of the modern life. It also appears that it will be necessary to explore the concept of consciousness for better handling of the current problems and its connection with knowledge.

The importance of consciousness is explained using an example through extraordinary memory of Swamy Vivekananda and two examples of satavdhanies who have amazing mental capabilities. An evidence is also given to mention that ancient Indians through this knowledge of consciousness might have even tried to estimate size of smallest particles of matter, This may inspire the scientific community to take up the concept of consciousness in a serious way, because its evolution might be directly lead to new concepts of sustainable development. Thus this paper emphasizes that scientific knowledge has limitations and there can be knowledge beyond science and still meaningful. Thus it is mentioned that the concept of knowledge needs to be enlarged further by taking consciousness into account. It is also illustrated that spiritual processes mentioned in Jain philosophy could provide new direction for development and evolution which may be accompanied by reduction in entropy production in the atmosphere.

Not only this, role of consciousness and thought processes as elaborated by David Bohm (1951). His concept of implicate order and explicate order provide a new way of looking at the world. Also we should emphasize that the process based thinking and interconnectedness of various components of nature are most essential to understand the modern problems in a systematic way. Hence Jain philosophy needs to be reexamined in the modern perspective.

Section 2 elaborates limitations of science as applied to living systems and need to use General Systems Theory. Section 3 illustrates the limitations of scientific methodology due to conservations laws. Section 4 highlights further limitations of scientific methodologies in handling any system and mention the Godel's incompleteness theorems which describe such approaches and hence a need to develop an abstract concept of consciousness. Section 6 explains that concept of knowledge is much more wider than what is describable by modern science. This section deals with the possibility of knowledge through consciousness as mentioned in Indian philosophies and many some great scientists. The section 7 emphasis on a need to include consciousness as in important input for any system of study in this direction. Section 8 discusses the concept of knowledge through consciousness in Jain philosophy. Section 9 gives an example of spiritual order with a quantitative evidence about sharp memory of Swamy Vivekanand with a suggestion that scientific community should take the concept of consciousness very seriously. Two examples of satavdhanies are also given which clearly illustrates higher stages of consciousness which may involve extra ordinary capability of the human mind and consciousness. An example is also given which shows that ancient Jain acharyas might have directly perceived the smallest particle of matter and even tried to estimate their sizes. In section 10, a hypothesis is put forward that spiritual processes may be defined as that set of processes

in which rate of entropy production and total entropy decreases and is accompanied by emergence of a new type of order. Section 11 deals with Darwin's principle of evolution expressed through the famous expression of "Survival of fittest" and is compared it with the spiritual evolution described through the principle of "Live and Let Live". These two principles will have totally different impact on the definition of the concept of development. After this role of consciousness in quantum mechanics is discussed in section 12 with concept of implicate order in the present context, probably the ultimate order one can think of and its connection with keval jnana mentioned in Jainism. Results and Discussion is given in section 13 and Conclusion are given in section 14.

#### Materials and Methods

Our material is existing methodologies of science and their critical evaluation by experts in various fields. We particularly consider the problems and limitations of scientific methodology and scientific knowledge and need to explore General Systems Theory to handle biological and human systems. Darwin's principle of evolution is another material which we consider over here. We also take basic ideas of Jainism like their concepts of soul and its knowledge into account. Their idea of the evolution of soul and concept of gunasthanas is another set of material for our discussion. We also use the concept or entropy and order also which are mentioned in physics and explore them to study spiritual development. To understand the idea of order, examples of memory of Swamy Vivekanand and satavdhanies are also given. Another material which we have considered is idea of quantum mechanics which talks of absolute knowledge and materialistic knowledge. The recent observation in psychology that human decision making might follow rules similar to quantum mechanics is used to explore reasoning behind tough discipline followed by Jain monks.

Our methodology consist of studying the problems faced in current methodology of physical sciences as being used for biological and human systems and review them in light of General Systems Theory. In particular the concept of scientific knowledge is examined critically in light of GST. To fill in the gap created in knowledge system due to these limitations, concept of knowledge as mentioned in Jainism is explore to find out if their system of knowledge and its evolution can provide new ideas about concept of knowledge. Similarly the Darwin's principle of evolution and the problems caused due to it are examined and Jain's concept of evolution is studied to find if some new frontiers can be explored to handle current problems of the society.

# Limitations of physical sciences as they are applied to living systems

Now all living systems are essentially irreversible in nature, that is they grow and decay and they are also open systems compared to the physical system's which are closed systems. They constantly interact with the environment like a human beings takes oxygen from atmosphere and releases carbon di-oxide. Hence biological and social systems can not be subjected to the process of measurement and hence they are not exactly describable in the strict terminology of the physical, sciences, in addition, human systems have memory which makes it impossible to do any scientific experimentation on them. Hence such systems are studied in a different way by using statistical procedures. In such methods only some rough trends or patterns can be found.

Now this type of experimentation is not possible in case of present phenomena because as shown above human system has memory, free will, creativity, tendency to interact strongly with other fellow beings and the environment. Furthermore there are micro controls in the form of thought processes which cannot be easily adjusted in any planned "scientific experiment". Hence it is impossible to perform experiments on human systems and predicting events about them from a purely scientific point of view.

# Limitations of scientific methodology due to conservations laws

Any phenomenon is called scientific if it can be verified in a laboratory under given set of controlled conditions and is reproducible at any point of time and at any place. This condition is called space-time invariance condition in science. In addition, we define conservation laws in physics which are foundation of all scientific measurements. Thus we have conservation laws for energy, linear momentum, angular momentum etc. Now all these conservation laws are defined for isolated closed systems, thus approximating the nature. Thus energy is defined as that variable of a closed isolated system which does not change over time. But in principle we can never have a totally closed isolated system. Similarly linear momentum is defined as that property of a closed isolated system which remain invariant with any spatial displacement and so on. Hence the mere definitions of conservation laws are not perfect because they first divide the world and then try to define it.. The interaction among these system are then studied by considering the nature and magnitude of the interaction among them.

For biological systems which are so strongly interacting with each other, this type of formalism cannot be applied in a satisfactory way in a real sense.

#### Godel's incompleteness theorems

The most attractive aspect of scientific knowledge is its mathematical basis. We generally feel that this mathematical representation of various scientific facts make our knowledge more precise and accurate. However, from the following theorems which have been put forward by the great mathematician Kurtz Gödel, we find that any mathematical representation of any physical reality limits our knowledge of that reality. Not only this but the theorem also imply that none of the languages or representation can express the reality of nature with perfection. Complete knowledge must necessarily have its foundation in an unexpressed, unmanifest field of intelligence. Let us begin with the theorems.

#### Gödel's first in-completeness theorem

This theorem says that the truth of a formalism (which describes any phenomenon) cannot be proved. Thus no finite expression of mathematical knowledge can ever provide a basis for comprehensive knowledge even of the elementary properties of the counting numbers. Thus if one starts with a collection C of symbolic mathematical (or any other) axioms which is

specifiable by a finite number of mechanical rules, and if C is consistent, then there will be a true statement about the counting numbers which can-not be proved from the axioms C, using the standard rules of mathematical logic. The proof of this theorem shows that from C one can construct a sentence S in the simple mathematical language of elementary number

theory whose meaning is : This sentence is not provable from C. Once S is constructed it follows easily that S must be true but not provable from C. Thus on the basis of any finitely specifiable collection of axioms C, one cannot prove all true propositions about the counting numbers.

#### Gödel's second incompleteness theorem

A formal language (mathematical or any other) if consistent cannot define its own truth i.e. the definition of truth for a theory must be of a higher order than the theory itself. We can also say that the consistency of any specifiable collection of axioms can never be established on the basis of mathematical arguments which can be justified by these axioms. Thus to establish the validity of any single mathematical system one must necessarily utilize a more comprehensive system, to validate the latter system one has to investigate an even more comprehensive system.

# General Systems Theory can bridge science with religion

Hence to handle all the above problems mentioned above, we look for a new discipline which has recently emerged (John Gigch, 1978) and is called General Systems Theory (GST). It has been developed to handle such complex systems and issues. Different sets of rules are there to describe and understand such systems.

This concept takes into account both physical systems and biological and social systems. Actually systems properties depend on their domain. The domain of systems is the field over which they extend. It can be classified as to whether: (a) Systems are living or nonliving, (b) Systems are abstract or concrete, (c) Systems are open or closed, (d) Systems exhibit a high or low degree of entropy or disorder, (e) Systems display organized simplicity, unorganized complexity or organized complexity, (f) Systems can be ascribed a purpose or not, (g) Feedback exist or not, (h) Systems are ordered in hierarchies and/or Systems are organized. (See Pokharna 2010 for details)

In this analysis pure physical sciences are now categorized as hard systems and subjects like sociology, religion, psychology, biology etc are classified as soft systems. (Bertalanffy 1976). It has been developed to handle such diverse systems and is a serious attempt to reconcile physical sciences with social sciences. As per this theory, all systems are characterized by transfer of information, knowledge and entropy/order which are much more important than any other attribute. Even energy comes next to them.

## Need to realize that scientific knowledge is only a subset of the total knowledge system and actual knowledge is structured in the consciousness

With the advent of science and the resulting technology, a misunderstanding and misconception has developed among the masses that the scientific knowledge is the only ultimate knowledge in the world. Not only this, it also presumed that the knowledge which is experimentally verifiable and repeatable at any place and at any time alone is the actual knowledge. This is far from the truth. The fact is that the so called science is just around 200 years old and the concept of knowledge existed much before that for several centuries. Vedas, Upnishads, Puranas, Agamas, Mahabharat and Ramayana, Koran, Bible have lot of knowledge about life and controls to be followed. Similarly technology of gold manufacturing in the ancient India, design of old temples etc involve knowledge, which need not be scientific.

Actually the recent developments in computer science and neurobiology clearly show that knowledge is nothing but information organized in some way (Goldsmith 1990). And in turn, information is just organization of data in some fashion. It is also realized that human consciousness (and even animal consciousness) is capable of organizing these data and can generate information and hence knowledge in some way. Therefore what we call as scientific knowledge is just a subset of this grand concept of knowledge, which can exist in the human consciousness. Because all interpretations of all scientific experiments are ultimately done by human consciousness.

## Consciousness and its evolution should be a fundamental element of any new paradigm of total systems approach to deal with the modern problems

As order seems to be the most critical factor in the process of development and also order in the brain is most critical which will influence all other type of orders, it is necessary to understand this order and its relation with knowledge and consciousness. Also since knowledge is another crucial concept associated with brain or consciousness, it is equally important to understand the concept of knowledge associated with brain and consciousness. Actually the concept of consciousness is described in biology, psychology, neurobiology and quantum mechanics also. Asimov, (1990) has argued that consciousness will be one of the three subjects on which research will be done in 21st centaury, other two being environment and astronomy. Philosophically, several Indian schools of thought also talk of consciousness and its evolution. They basically assume that knowledge is structured in the consciousness. Several experimental studies have been carried out to recognize various states of consciousness like sleeping. Waking and dreaming stages. A fourth state of consciousness is well established now (Transcendental Meditation ). Many more such studies are required in this direction as Indian yogis and rishies talk of several higher stages of consciousness. Also one finds that in Indian context this evolution of consciousness is closely related with practices which are carried out while living with nature and hence persons deeply involved in such pursuits are very close to nature, so they are strongly helping in preserving the environment (Maharishi Arbindo 2011). This must be recognized in view of the serious threat to the environment caused by uncontrolled materialistic developments. Such ideas of spiritual evolution should be also examined while talking about development.

# Concept of consciousness and knowledge in Jainism

Let us now look at the concept of knowledge in Jainism. In Jainism, world is assumed to be consisting of six elements. They are: Dharmastikay (Medium of motion), Adharmastikaya (Medium of rest), Akashastikaya (Space), Pudgalastikaya (Matter), Jeevastikaya (Living beings having a soul) and Kala (Time). Jainism has defined soul as basic constituents of all living beings. According to the conception of Jainism, a perfect soul has infinite knowledge, infinite intuition, infinite bliss and infinite power. Although perfect soul has other characteristics but the knowledge has been regarded as the chief characteristic of soul. Kundakunda (Mehta 1980) has stated that although from the empirical point of view there is a difference between soul and knowledge yet from the transcendental point of view it is sufficient to say that soul is knower and nothing else. He further said that there is no difference between the knower and his knowledge. From empirical point of view an omniscient (Kevali i.e. a perfect soul) perceives and knows the whole of reality and from the transcendental point of view he perceives and knows nothing. Therefore what we call as scientific knowledge appears to be just a subset of this grand concept of knowledge, which can exist in the human consciousness.

All species may be physically different but are existing in the world from past which does not have any beginning. It is due to their attachment with material particles known as karma that they continuously take birth in the world again and again. The direction of evolution should be towards a goal of liberalizing the soul from all material attachment that is all karmas. A process of selection by oneself is involved in spiritual evolution as certain rules and principles have to be followed described separately for ordinary humans and for enlightened souls like acharyas and sadhu sadhvies etc. It appears that practices like chanting of navkar mantras, loggus, doing samayk, pratikramana ekasna and upwas, aaymbil, varshi tap, mas khaman, updhan, siddhi tap, nanayanu yatras, and other several practices lead to very stable life, increased self confidence, recognization of inner strength of soul, and ultimately evolution of one's soul. This is a selection type of process such that it depends more on oneself and is not much affected by other species or human beings present in the environment. It is preached that one should reduce one's requirements in such a way that even if there is scarcity of resources, lower consumption will guarantee survival of all in a cooperative way. A state of highest orderliness is defined as a pure soul, towards which, everyone has to evolve. This is

compatible with GST where definite goals are defined. Jain concept of Soul has some kind of "Order" built into it.

The spiritual path suggested in Jainism and the properties of a worldly soul as it evolved towards a state of perfection has many interesting features which appeals a scientist. Many attributes of such an ordered soul are enunciated and are found in many monks. Thus for example shatabdhanies are found who demonstrate several powers of brain not commonly found elsewhere. It appears that practices like nanayanu yatras, varshi tap, mas khaman, updhan, siddhi tap and other several practices lead to very stable life, increased self confidence, recognization of inner strength of soul and a highly ordered mental state.

## Three examples which shows that concept of knowledge through consciousness should be seriously studied in a modern perspective

We now give two strong evidence that there is a need to take the concept of knowledge consciousness in a very serious way. These examples are given below:

#### Remarkable memory of Swamy Vivekanand

If we look at some meaning of the term consciousness in the scientific perspective than we find that it is a property of all biological systems. When our acharyas, rishies and munies talk of realization of a higher state of consciousness which has certain characteristics, than it is worth examining the following examples. The first concerns with extraordinary sharp memory of Swami Vivekanand (The Life of Swami Vivekanand, Vol II, pp. 634, Advaitva Ashrama, 1989). As per this, Swamiji had such a sharp memory that he almost remembered 11 volumes of Encyclopedia Britannica, which he had just read once. A question is to be raised by the scientific community, "what is the mechanism and how this state of orderliness is achieved and is related to his/her behavior as Yogi ?"

Shatavdhani: Demonstration of extraordinary capability of memory and sixth sense

It is mention in section 7 that a perfect consciousness with the four infinities perceives every thing of the universe simultaneously and completely by a single cognition. However, a worldly soul (an enlightened soul but not yet perfect) can also have rich knowledge contents due to spiritual growth and religious practices. One example of this hypothesis is given below which is called shatavadhan. Shatavadhan (Shat- 100 + Avdhan) is a power to cover 100 different activities in a single act of attention. One who reaches the stage of shatavadhan is called Shatavadhani. A shatavadhani. can remember 100 different things in a 100 different orders, spoken by 100 different people. This unbelievable power has been attained by a handful of people over the human history and because it needs very high stage of spiritual development. This is possible only when one is able to have self control in order to experience the power of soul. According to the modern scientific belief, a normal human being utilizes hardly 2% to 3% of his total mental potential. A common man can hear and remember serially 3 or 4 at a time. This is based on conscious mind. Anyone with exceptional intellect can extend this number from 3-4 to 10-11. However. taking this number to 100 is beyond the powers of most of the people. Shatavadhan is the ability to receive, retain and retain 100 activities accrued through eyes or ear during one period of attention and carried from the conscious to the subconscious. A Shatavdhani can utilize maximum of mental potential which demands immense concentration. That is the reason that history can name only countable shatavdhanis.

In Jain tradition one can name Shrimad Rajchandra Guru of Mahatma Gandhi (Kalarthy Mukul, 2004) from whom he learned the concept of ahimsa (nonviolence). Shrimad exhibited his memonic powers in late 19th Century in Mumbai. Gandhiji had great impact of shrimad on his religious beliefs. This is also narrated in his autobiography.

The procedure adopted by Shrimadji in giving these demonstrations of his rare powers was indeed most exacting. In one demonstration, he could carried out fifty two activities in a sequence (Appendix 1). He would begin all the fifty-two activities at once, simultaneously. He would attend to a portion of each task at a time. He will then attend another second task, next move on to yet another third task, fourth task, and so on. After some time, he would return to the first task. He would cover these rounds, one after the other, until he had covered all the fifty- two task. He made it a rule not to put down any points on paper while attending to these various activities, nor to take any notes and to ask any one to repeat anything.

In Samvant 1943 (1887 AD), Shrimadji reached the peak of his achievements in this direction. He was Mumbai at the time. He gave there a demonstration of his powers for simultaneous mental attention, this time covering a hundred different activities. He gave these demonstrations at centers including Faramjee Cowslip Institution at Dhobi Talao in Mumbai. The demonstration of powers to attend to a hundred different activities simultaneously earned him a tremendous amount of admiration all around. People were profoundly impressed by his extra ordinary mental powers. (Author could not get the list of these hundred activities).

After one hundred and twenty five years of performance of shrimad rajchandra at the age of 19, another shatavdhani is creating history, again at the age of the 19 years. This great young shatavdhani is param pujya yuva shatavdhani munishri ajitchandrasagarji maharaj sahebji. He can reproduce not only 100 facts but 108 facts in ascending, descending and random order. The details of questions are given in the appendix 1. This demonstration was done twice in Ahmadabad (Nov 16, 2008 and January 9, 2009). The former was held in Town Hall and author was present there.

Did ancient Jain Acharyas tried to estimate size of smallest particles of matter

Another example is taken from ancient Jain scriptures (Triloy Pannati, Jain RC. 1975) Actually Appendix 3 gives a Table for measurement of length. It starts from smallest particle of matter and goes upto one Yojana. This is an octal system till step 12. It indicates that our ancient Jain acharyas have made an attempt to develop a table for measurement of length in 20 steps. As explained in the Appendix, if we statistically interpret it then we find that as per their assessment, the size of smallest particle of matter is 2.9X I 0-13 cm. Now the mere fact that this concept might have evolved through a realization of this higher level of consciousness is worth examining. It appears to involve advanced telepathy (known as avadhi inana in Jainism) through which one can see even one pradesha. An acharya who is having this capability must have brain in a very state of order.

## Do spiritual processes help to reduce Entropy Production in biosphere

Form this analysis, we find that Jain acharyas have spiritually ordered mind and if we look at their behavior and daily practices then we find that they consume minimum resources and hence generate least entropy in the environment. As they go to higher and higher stages of evolution, their resources consumptions go on reducing.

We seriously feel that the various religious and spiritual practices developed by the ancient Indian seers like Yoga, Meditation, Sadhna and others are all aimed at an overall decrease in the rate of entropy production of this biosphere. Although the processes initiated at an individual level but it expands in the society through the various interlinkages present in the social system. It appears that as the number of persons carrying out these practices increase the average overall rate of entropy production of this biosphere decreases. In addition this may be accompanied by the appearance of a new kind of order which is being described above and could be linked with an orderly state of consciousness. Therefore there is a need to investigate the different states of human consciousness which can be in highly ordered states as mentioned in above sections.

# Darwin's principle of "Survival of Fittest" vs Jain's principle of "Live and Let Live"

The above examples have shown that one should take this concept of evolution of consciousness of Jainism seriously. Hence at this juncture, it is high time that we discuss the process of evolution of soul as described in Jainism and compare it with the Darwin's principle of evolution. Darwin talks of evolution of human beings and mammals and observes that all humans have striking similarities with apes and hence humans evolve from apes through natural selection in very slow processes over long time. However, Darwin's ideas are based on analysis of past data and develop correlations among them to establish his hypothesis. He finds that there are no goals for species. They only look at nearby future and attempts to survive. (Wikipedia). Goldsmith (1990) feels that it is due to too much emphasis of the education of this Darwin's principle of evolution that so much damage has been done to the environment. On the other hand, it appears that the Jain's principle of evolution is characterized by an increase of some kind of order in oneself which increases as one goes up with increasing purity of the soul. Actually a ladder of 14 Gunasthanas is defined in Jainism (Jain, 1997). These gunasthanas are similar to phases in physics, chemistry and biology. The difference between spiritual evolution of Jainism and Darwin's evolution can be described in what follows:

Darwin's principle of "Survival of fittest"	Jain's principle of "Live and Let Live"
Based on physical reality	Based on spiritual reality
Emphasis on differences in species	Emphasis on underlying identity
Results into unwanted competition	Results into healthy cooperation
Society has been damaged due to this	Society gets new perception
Need to highlight its disadvantages	Need to spread it in the world

# Table 1. Darwin's principle of "Survival of Fittest" vs Jain's principle of "Live and Let Live"

It is also clear from the daily routines of Jain monks that as their soul progresses in the spiritual direction, their mind and hence soul gets more and more ordered and has less and less karmas attached to it. Also it shows that they produce least disorder or entropy in their surroundings due to their spiritual discipline. Finally they consume least resources in their whole life. This is opposite to what is being done by ordinary human beings.

# Implicate order of Quantum mechanics and consciousness

David Bohm proposed a cosmological order radically different from generally accepted conventions, which he expressed as a distinction between the implicate and explicate order, described in the book (Bohm 1990).

In proposing this new notion of order, Bohm explicitly challenged a number of tenets that are fundamental to much scientific work. The tenets challenged by Bohm include

- 1. That phenomena are reducible to fundamental particles and laws describing the behavior of particles, or more generally to any static (i.e. unchanging) entities, whether separate events in space-time, quantum states, or static entities of some other nature.
- 2. Related to (1), that human knowledge is most fundamentally concerned with mathematical prediction of statistical aggregates of particles.
- 3. That an analysis or description of any aspect of reality (e.g. quantum theory, the speed of light) can be unlimited in its domain of relevance.
- 4. That the Cartesian coordinate system, or its extension to a curvilinear system, is the deepest conception of underlying order as a basis for analysis and description of the world.
- 5. That there is ultimately a sustainable distinction between reality and thought, and that there is a corresponding distinction between the observer and observed in an experiment or any other situation (other than a distinction between relatively separate entities valid in the sense of explicate order).
- 6. That it is, in principle, possible to formulate a final notion concerning the nature of reality; e.g. a Theory of Everything.

According David Bohm, in the enfolded [or implicate] order, space and time are no longer the dominant factors determining the relationships of dependence or independence of different elements. Rather, an entirely different sort of basic connection of elements is possible, from which our ordinary notions of space and time, along

with those of separately existent material particles, are abstracted as forms derived from the deeper order. These ordinary notions in fact appear in what is called the "explicate" or "unfolded" order, which is a special and distinguished form contained within the general totality of all the implicate orders (Bohm, 1980, p. xv). In Bohm's conception of order, then, primacy is given to the undivided whole, and the implicate order inherent within the whole, rather than to parts of the whole, such as particles, quantum states, and continua. For Bohm, the whole encompasses all things, structures, abstractions and processes, including processes that result in (relatively) stable structures as well as those that involve metamorphosis of structures or things. In this view, parts may be entities normally regarded as physical, such as atoms or subatomic particles, but they may also be abstract entities, such as quantum states. Whatever their nature and character, according to Bohm, these parts are considered in terms of the whole, and in such terms, they constitute relatively autonomous and independent "sub-totalities". The implication of the view is, therefore, that nothing is entirely separate or autonomous.

This implicate order of quantum mechanics as interpreted by David Bohm is very close to the Indian concept of consciousness and its relation to the whole world in general and the concept of reality in particular. This is also very close to the concept of Keval Jnana as described in Jainism that is all knowledge disappear in this state and only absolute knowledge is left, which is in agreement with what Bohm is mentioning.

### **Results and Discussion**

This paper attempts to explore limitations of scientific methodologies found so successful to study physical systems and infer that are not adequate to understand biological and human systems. Hence a concept of General Systems Theory (GST) is required to develop a unified formalism which includes both physical and biological systems like social systems and human systems. It is mentioned that concept of information and knowledge has to be also enlarged by taking the concept of knowledge through consciousness into account. We have to realized that all scientific knowledge is just a small set of knowledge structured in the consciousness. In particular it is shown that Jain's concept of knowledge through consciousness (soul) can be very useful to have an enlarged concept of knowledge, which can include extra sensory perception (ESP) also. It is shown that Jain concept of evolution in which a soul become more and more pure and its knowledge contents increases. So it becomes more and more orderly. Example of Swamy Vivekanand is given to illustrate the meaning of this order.
Two more examples from Jainism are given which show extra ordinary states of mind in highly ordered states of satavdhanies. In another example, it is shown that ancient Jain aacharyas might have even tried to estimate the sizes of the smallest particles of matter like atoms and nuclei through highly advanced telepathy. The sizes given by them are statistically quite close to the current sizes of atoms and nuclei. It shows existence of telepathy of very high order.

It is also mentioned that the Jain principle of "Live and Let Live" should be compared with the Darwin's principle of evolution described by "Survival of the fittest". The difference between the two will have totally different impact on the concept of development and the society in general and direction of evolution in particular. The Jain concept of evolution is then mentioned to indicate that their concept of fourteen stages of evolution of soul (Gunasthans) is a very exciting concept and needs further exploration

It is then mentioned that a new world view provided by the concept of Implicate Order of quantum mechanics as enunciated by David Bohm is also relevant here and provides an alternative view to look at the reality. This implicate order could be closely related with Jain's concept of Keval Jnana.

This is an exploratory study only and is an example of multi disciplinary work where many loosely defined terms are used. They need to be further perfected.

# Conclusion

The scientific knowledge has limitations and there exist knowledge beyond the knowledge of science. The concept of knowledge as structured in the consciousness (soul) has a significant meaning. Hence knowledge of science is only a subset of the knowledge of the consciousness. General System Theory can better explain the biological and human systems. The process of evolution as mentioned in Jainism is accompanied by an increase in knowledge of the soul and hence a state of higher order is achieved. Through such knowledge, brain and mind can work in a highly efficient state with very high capability to carry out several activities together as is the case of Satavdhanies. Also Darwin's principle of "Survival of Fittest" needs to be compared with Jain's Principle of "Live and Let Live", which can provide new avenues of thought. Finally implicate order of quantum mechanics as proposed by David Bohm may be similar to state of keval jnani where there is only one type of knowledge that is absolute knowledge.

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# Appendix 1. List of Activities that could be carried by Shri Raichandji one after the other without using any pen or paper

1. 2. 2	To play the game of chopat, a kind of checkerboard, with three different players To play cards with three different persons To play chess with one person	1 1 1
з. ⊿	To keen a tally of the chimes of a Zalar a small gong	1
<del>4</del> . 5.	To Keep computing sums mentally invoking addition, Subtraction, multiplication	1
6.	To count the beads on a thread	1
7.	To compose verses on sixteen diverse topics selected afresh, and in metrical forms chosen	
	by various referees	16
8.	To answer about eight new riddles	8
9	To recall four hundred words given at random from languages including Greek, English, Sanskrit, Arabic, Latin, Urdu, Gujarati, Marathi, Bengali, rearranging	
	them in proper order such as subject, object etc. all the while attending to various other matters.	16
10	To explain certain things to a student	1
11	Commentary on certain items of figures of speech	2
Tota	al activities =	52

# Appendix 2. Details of one hundred questions answered in same sequence by Shri Ajay Chandra Sagarji Maharasahab.

1 to 10	One Line sentences may be in questioners form
11-20	Words of Wisdom in a sentence of 5 to 7 words
21	First line of a Sanskrit Shloka
22 to 30	Synonym or Antonym in Gujarati
31	Second line of the same Sanskrit Shloka
32 to 40	Idioms
41	Third line of Sanskrit Shloka
42 to 50	Any first line of the same Sanskrit Shloka
52 to 60	Names of any priest, religious book or religious place
61	A mathematical puzzle
62 to 70	Name of any philosopher, scientist or patriotic person
71	First part of 16 Blocks- mathematical miracle
72 to 80	See and Remember (Darshan Avadhan)
81	Second part 16 blocks- mathematical miracle
82 to 90	See and Remember (Darshan Avadhan)
91	9 Blocks- Mathematical miracle
92 to 99	Mathematical calculation with 8 persons
100	Day of the Birthday
101-104	A line from Religious, cultural or patriotic song
105 to 108	Shloka from Jain Aagams

# Appendix 3. Table of Measurement of Length as Found in the Jaina Literatrue

(1)	Infinitely many parmāņus	=	1 Avasannasanna skhandha
(2)	8 Avasannasanna units	=	1 Sannasanna skandha
(3)	8 Sannasanna units	=	1 Trutreņu
(4)	8 Trutreņu units	=	1 Trasareņu
(5)	8 Trasareņu units	=	1 Rathareņu
(6)	8 Rathareņu units	=	1 Uttama bhogbhūmi bālāgra
(7)	8 U. b. b. units	=	1 Madhyama bhogbhūmi bālāgra
(8)	8 M. b. b. units	=	1 Jaghanya bhogbhūmi bālāgra
(9)	8 J. b.b. units	=	1 Karma bhūmi bālāgara
(10)	8 K. b. b. units	=	1 Liksā
(11)	8 Liksā units	=	1 Yūkā
(12)	8 Yūkā	=	1 Yava (Barley corn)
(13)	8 Yava units	=	1 Angula (Finger breadth)
(14)	6 Angula units	=	1 Pāda
(15)	2 Pāda units	=	1 Vitasti
(16)	2 Vitasti units	=	1 Hasta (Forearm)
(17)	2 Hasta units	=	1 Rikku or Kisku
(18)	2 Kisku units	=	1 Daņda or Dhanus (Bow)
(19)	2000 Daņdas units	=	1 Krosa
(20)	4 Krosa units	=	1 Yojana

Here a parmāņu has been defined as the smallest particle of matter having no length, no breadth and no height. This is defined as a particle which can be only thought of but is not practically perceivable. The particle which is perceivable is a group of parmānus. The smallest of such skandha is an avasannasanna skandha. Let us therefore estimate its size by roughly taking the average size of a finger to be equal to 2 cm. We can therefore write the following simple formula by using the above table :

2 cm = 812 X size of avsannasanna skandha Therefore Size of avsannasanna skandha = 2X8 -12 cm. = 2.9 X 10-11 cm. Hence the size of smallest particle of matter that is avsannasanna skandha is around 2.9 X 10-11 cm. This value lies in between the size of a modern atom (10-8 cm) and size of a nuclei (10-13 cm). Now we may no be knowing the meanings of many of the objects used in this Table. But statistically, this is a very significant observation and should be taken quite seriously by the scientists. At least it cannot be ignored. The mere fact that it was arrived at from the telepathy of advance level through which one can see even the smallest particle of space known as a pradesha in Jainsim. This again shows that Jain concept of knowledge should be taken very seriously by the scientific community and should be further explored in a careful way.

# **Medicinal Plants and Jainism**



# Abstract

Nonviolence is fundamental principle of Jainism. Both are so intrinsically integrated that there is no exaggeration to connote both Jainism and nonviolence as synonyms. Jainism ordains that all plant forms along with even soils (including minerals, water, air, energy (fire) are life forms and should be treated as one's own self and any form of cruelty or pain should not be inflicted. In Ayar Suttam, the most important canonical Jain scripture, there is very sensitive description of injury to plant and its parts equating it with same as injury to human body and any of its parts or organs. The plants experience and feel pain in the same way as the humans do. There is very elaborate and comprehensive description of various plant species and their products in Jain scriptures notably Tilloyapannati and Jambudweep Prajnapti. Devoted Jain people do not take modern allopathic medicines as violence is involved in their research and manufacture. By and large and as an established tradition, Jains depend on medicines based on plants. While working on U.G.C. project on survey of medicinal plants, it has been observed that availability of many such plant species are dwindling fast even if claimed to be the best protected forest areas in National parks and wildlife sanctuaries. It has also been observed that collection of medicinal plants by tribals is done in very cruel way. It is therefore necessary particularly for Jain people and organizations to take up propagation, collection and processing of medicinal plants in situ as well as in agricultural farms in accordance with Jain principles. The paper stresses the need of such studies establishing correlation between Jainism and plant science to conserve Phytodiversity vis a vis biodiversity which is the need of the hour to save planet earth.

#### Namokar Mahamantra

Namokar Mantra is unique prayer devoted to Panch Parmeshti. Panch Parmeshti are ideals for us to follow. By reciting Namokar mantra, we gain purity and peace.



# Nonviolence

Nonviolence is fundamental principle of Jainism. Both are so intrinsically integrated that there is no exaggeration to connote both Jainism and nonviolence as synonyms.

Jainism ordains that all plant forms are life forms and should be treated a one's own self.

#### Namo Arihantanam

I bow in reverence to Arihants Namo Siddhanam I bow in reverence to Siddhas Namo Ayariyanam I bow in reverence to Acharyas Namo Uvajjhayanam I bow in reverence to Upadhyayas Namo Loye Savva Sahunam I bow in reverence to all Sadhus **Eso Panch Namoyaro** This five-fold salutation Savva Pavappanasano Destroys all sins Mangalanam Cha Savvesim And amongst all auspicious things Padhamam Havai Mangalam Is the most auspicious one

Any form of cruelty or pain should not be inflicted on plants.

# Plants in Jain Scriptures

In Ayar Suttam, the most canonical Jain scripture, there is very sensitive description of injury to plant and its parts equating it with same as injury to human body and any of its parts or organs. Plants experience and feel pain in the same way as the humans do.

There is very elaborate and comprehensive description of various plant species and their products in Jain scriptures notably Tiloyapannati and Jambudweep Prajnapti.

# Jain Tradition

Devoted Jains do not take modern allopathic medicines as violence is involved in their research and manufacture.

Jains depend on medicines of plant origin.

Jains do not take even Ayurvedic medicines in which honey is used as an ingredient.

# Revelations of My Surveys of Medicinal Plants

My surveys of medicinal plants in sanctuaries and National Parks under U.G.C. Project have revealed discrepancies which are not compatible with Jainism.

# Availability of Medicinal Plants

It has been observed that availability of many medicinal plants is dwindling fast even in areas, claimed to be best protected in National Parks.

Growing pressure of exploding population and industry on shrinking forests is accentuating the shortage of medicinal plants.

Many medicinal plants have become extinct.

Many more are on the verge of extinction because of their over exploitation.

# Collection of Medicinal Plants

By and large medicinal plants are collected by tribals.

Because of abject poverty tribals start collecting prematurely.

There are elaborate instructions in Ayurvedic scriptures about the season, month and even fortnight as well as stages of flowering, fruiting etc. when any medicinal plant should be collected. These instructions are certainly not at all followed.

# Storage of Medicinal Plants

Medicinal plants collected from forests are eventually sold to big traders in cities like Delhi, Mumbai, Ahmedabad etc.

Traders store them in dingy, dark and moist godowns susceptible to be infected by bacteria and fungi. Using such medicines is against Jainism.

# Preparation of Medicines

Most pharmaceutical manufacturers of Ayurvedic medicines purchase their requirements from traders in cities.

Traders continue mixing fresh and old time- barred medicinal plant parts.

No pharmaceutical manufacturer has its own expertise and organized system of collecting medicinal plants according to prescribed method.

This adversely affects quality of Ayurvedic medicines.

# **Cultivation of Medicinal Plants**

Many important medicinal plants are being cultivated in agricultural fields.

These are not as effective as those collected from natural sites. The proportion of active constituent is lower.

In natural forests medicinal plants grow under a specific edapho-climatic ecosystem in association of other trees and plants.

Medicinal plants, if to be cultivated, should be done by first creating the specific ecosystems in which they grow naturally.

# Jain Tirthankaras and Trees

It is interesting to note that all the 24 tirthankaras meditated under the trees and not any other place like caves or river banks etc. to get enlightenment.

There is so much importance of plants and their medicinal values in Jainism that all Trthankaras of present (Avasarpani Era) got their enlightenment meditating under various trees of medicinal value.

The Tirthankaras and their respective Kewali Vrikshas (Trees) are given in the following Table.

Tirthankara	Emblem	Tree
1.Rishabhanath or Adinath	Bullock	Bargad
2. Ajitanath	Elephant	Semal
3. Sambhavanath	Horse	Sal
4. Abhinandana	Monkey	Chir Pine
5. Sumatinath	Curlew	Priyangu
6. Padmaprabha	Red Lotus	Priyangu
7. Suparshvanath	Swastik	Siris
8. Chandraprabha	Crescent	Naga Kesar
9. Pushpadanta	Crocodile	Baheda
10. Sitalanath	Wish Yielding Tree	Kalpvriksha
11.Shreyanshanath	Rhinoceros	Tendu
12. Vasupuja	Buffalo	Patala
13. Vimalanath	Pig	Jamun
14. Anantanath	Porcupine	Peepal
15. Dharmanath.	Thunderbolt	Vishnukant
16. Santinath	Deer	Nandi
17. Kunthunath	Goat	Tendu
18. Aranath	Fish	Mango
19. Mallinath	Water Pot	Ashoka
20. Munisuvrata	Tortoise	Nag Champa
21. Naminath	Blue Lotus	Bakula
22. Neminath	Conch Shell	Kokam
23. Parshvanath	Serpent	Dhau
24. Mahavira (Vardhamana)	Lion	Shal

Details of the name of the Tirthankara, the Kewali Vriksha (Tree) and its medicinal value are as under

#### Tirthankar Rishabhanath or Adinath

Bargad

Botanical Name Family Ficus benghalensis Linn. Moraceae

A large evergreen tree, leaves obovate, receptacles globose, red when ripe. Medicinally useful and used in different diseases. Milky juice is applied externally for pains in rheumatism and lumbago. Infusion of bark used as tonic, astringent, used in dysentery, diarrohoea and diabetes. Seeds are cooling tonic. Leaves applied as poultice to abscesses. Root fibres useful in gonorrhea.

Tirthankar Ajitnath

**Botanical Name** 

Semal

Family

#### Bombax ceiba L. Bombacaceae

Large deciduous trees. Leaves crowded at the end of branches, petiolate, digitately 5-7 foliolate, leaflets 5-23 x 1.5-9cm., ovate- lanceolate, glabrous. Flowers crowded

at the end of Leaflet branches, crimson or yellowish, capsules woody, minutely apiculate, reddish brown. The bark of the tree is used to cure some skin disorders.

#### Tirthankar Sambhavnath Sal Botanical Name Shorea robusta Gaertn. Family Dipterocarpaceae

A large semi-deciduous tree, young shoots buff tomentose. Leaves alternate, glabrous, flowers cream coloured. Resin-Astringent, detergent used in dysentery and for fumigations and plasters. Also given for weak digestion, gonorrhea and as aphrodisiac. Resin contains 62% essential oil.

#### Tirthankar Abhinandannath Chir Pine Botanical Name Pinus roxburghii Family Pinaceae

Evergreen trees. Branches whorled generally horizontal. Resin-stimulant, used internally as stomachic and as a remedy for gonorrhea, externally as a plaster applied to buboes and abscesses for suppuration. Wood and oleoresin used in snakebite and scorpion sting.

#### Tirthankar Sumatinath

Priyangu Botanical Name Callicarpa macrophylla Family Verbenaceae

Evergreen small sized trees with opposite leaves. Flowers pink, reddish or rosy and used in intestinal disorders, acidity, fever and blood disorders.

#### Tirthankar Padmaprabhu

Priyangu	
Botanical Name	Callicarpa macrophylla
Family	Verbenaceae
Evergroop small size	d trace with appacita laguar (

Evergreen small sized trees with opposite leaves. Flowers pink, reddish or rosy and used in intestinal disorders, acidity, fever and blood disorders.

# Tirthankar Suparshwanath

SILIS	
Botanical Name	Albizia lebbeck (L.)
Family	Fabaceae

It is a deciduous tree of 5-15m height. Bark is grayish or pale brown. Young parts are pubescent. Leaves have large gland on the petiole. Flowers are fragrant and greenish pale yellow in colour. Bark is useful in leprosy and ulcers.

Tirthankar Chandaprabhu Naga Kesar Botanical Name Mesua ferrea

#### Dr. Shuchita Jain, Volume 1 Issue 1 April 2013

#### Family

#### Guttifereae

An evergreen tree with cinnamon red bark. Flowers white with rusty stalks and used as astringent, used in cough with expectoration, made into paste with butter and sugar used in bleeding piles and burning of the feet. Flower buds used in dysentery. Unripe fruits aromatic, sudorific. Bark-astringent, aromatic combined with ginger used as sudorific. Leaves and flowers-in snake bite and scorpion sting. Flowers contain essential oil and two bitter substances.

**Tirthankar Pushpadanta Bahera Botanical Name** Family

#### Terminalia bellirica Combretaceae

Deciduous trees, 10-30m high. Bark dark grey and longitudinally fissured. Leaves broadly obovate. Flowers in axillary spikes greenish yellow or creamy white in colour. Fruits ovoid or ellipsoid. It is of medicinal use in Ayurveda.

<b>Tirthankar Sheetalnath</b>	
Kalpvriksha	
Botanical Name	Adansonia digitata L.
Family	Bombacaceae

It is a small deciduous tree with smooth grey bark. Leaflets are sessile or subsessile, obovate-oblong or elliptic-oblong, densely silky brown, hairy. Flowers are pendulous. Fruits are 20-25 cms. long, ellipsoidal densely hairy, pale brown. Flowering occurs in April-May and fruiting in June–December.

#### **Tirthankar Shreyansnath**

#### Tendu

#### **Botanical Name Diospyros melanoxylon** Family Ebenaceae

A large sized tree. Bark is used as an astringent, decoction of bark in diarrhea and dyspepsia as tonic. A dilute extract used as astringent lotion for the eyes. Leaves used as diuretic, carminative, laxative and styptic. Dried flowers are useful in urinary, skin and blood diseases. Bark, fruit and half ripe fruit contain 19%,15% and 23% tannin.

Tirthankar Vasupujya	
Patala	
Botanical Name	Bignonia atrovirens
Family	Bignoniaceae
Medium sized trees, w	ith rough brown bark

ark. Leaves are acuminate. Flowers in corymbs seeds with membranous wings; flowering and fruiting season is from March to June. It is useful as an aphrodisiac.

Botanical Name	Syzygium jambolina (L.)
Jamun	
Tirthankar Vimalnath	

#### Family

#### Myrtaceae

Moderate sized tree. Leaves 15-20 x 3-4 cms in size, ovate, lanceolate. Flowers fairly large, jointed with the pedicel and greenish white in colour. Berries globose pinkish white or dark purple in colour. Seed powder is effective against diabetes. Flowering and fruiting season is January to June.

#### **Tirthankar Anantnath** Deemal

Ficus religiosa
Moraceae

A large glabrous tree with grey bark. Leaves orbicular ovate, globose. Flowering and fruiting season is April to June. Decoction of young leaves is used for the treatment of general fever. Tree is religious and worshipped by people.

#### **Tirthankar Dharmanath**

#### Vishnukant **Botanical Name** Clitoria biflora L. Family Cleomaceae

Twining herbs up to 60 cms. High with angular stems. Flowers are geminate and solitary, deflexed, blue in color. Bracteoles are ovate pods 3-5 cms. Long. Flowering and fruiting seson is August to October. Seeds are antihelmintic.

# **Tirthankar Shantinath**

Nandi **Botanical Name** Cederella toona Roxb. Family

Meliaceae

Tall, deciduous trees, 15-20m high. Leaves unipinnate and leaflets 4-15 in pairs. Flowers in drooping panicles, white and scented. Capsules are oblong. Leaf juice given in stomach disorders.

#### **Tirthankar Kunthunath**

Family

Family

**Botanical Name Diospyros melanoxylon** Ebenaceae

A large sized tree. Bark is used as an astringent, decoction of bark in diarrhea and dyspepsia as tonic. A dilute extract used as astringent lotion for the eyes. Leaves used as diuretic, carminative, laxative and styptic. Dried flowers are useful in urinary, skin and blood diseases. Bark, fruit and half ripe fruit contain 19%,15% and 23% tannin.

#### **Tirthankar Arahanath** Mango **Botanical Name**

#### Mangifera indica L. Anacardiaceae

Trees are tall and evergreen having 15-20m height. Leaves are oblong or lanceolate in shape. Flowers are in small terminal spikes. They are yellowish green in colour. Fruit type is drupe which is fleshy and of various size. Flowering season is December and fruiting from February to July.

#### **Tirthankar Mallinath** Ashok **Botanical Name** Saraca indica (Linn.) Family Leguminoseae

Evergreen shrub or tree. Leaves unipinnate, leaflets opposite and elliptic oblong, flowers are scarlet red in color. Bark astringent used in uterine affections and in menorrhea in scorpion sting. Bark contains tannin and catechol.

# **Tirthankar Munisuvratnath**

Nag Champa

#### **Botanical Name** Michelia champaca Linn. Magnoliaceae Family

Habit tree. Bark febrifuge, stimulant, expectorant, astringent, dried root and root bark is purgative and in the form of infusion useful emmolient and-mixed with curdled milk, can be applied to abcesses. Flowers and fruits considered to be stimulant, antiseptic tonic, stomach carminative, bitter and cooling used in dyspepsia, nausea and fever, also useful as diuretic in renal diseases, gonorrhea. It is used in the mixture form with sesamum oil for external application in vertigo. Oil Extracted from flowers is used in ophthalmia, cephalagia and gout. Juice of leaves is given with honey in colic. Seeds and fruits are used for healing the cracks in feet. Flowers contain essential oil too.

#### **Tirthankar Naminath**

#### Bakula

#### **Botanical Name** Mimusops elengi Linn. Family Sapotaceae

Medium sized tree. Bark of the plant is astringent tonic useful in fevers. Leaves are used in snake bite. Pulp of ripe fruit is used to cure chronic dysentery. Seeds bruised and locally applied within the anus of children suffering from constipation. Seeds contain saponin, kernels yield oil.

#### **Tirthankar Neminath** Kokam Garcinia indica **Botanical Name** Family

# Guttifereae

Small to medium sized tree, leaves simple, dark green and elliptic ovate. Fruit is antiscorpionic. Bark useful as an astringent. Oil is soothing and used in several skin diseases. A drink of infusion and its local application all over the body is prescribed in urticaria.

#### **Tirthankar Parshwanath** Dhau **Botanical Name**

Family

#### Anogeissus latifolia Combretaceae

Deciduous trees, 15-20 meters tall, bark smooth, whitegrey. Leaves obtuse and silky. Flowering and fruiting season is March to July. The gum obtained from tree is used as medicine. Fresh bark is crushed with water to prepare a paste which is applied on sores to heal.

#### **Tirthankar Mahaveer**

#### Sal **Botanical Name** Shorea robusta Family Dipterocarpaceae

A large semi-deciduous tree. Leaves are alternate, flowers cream coloured. Resin-astringent and used in dysentery and for fumigations and plasters. Also given for weak digestion, gonorrhea and as aphrodisiac. Resin contains 62% essential oil.

In the Govt. J.D.B. P.G. Girls College, Kota, where I am teaching, we have raised "TIRTHANKARA VATIKA" (grove) and planted saplings of these trees.

#### Conclusion

I conclude with fervent appeal to all those present here and all Jains through this forum that to keep up Jain tradition of relying on Ayurvedic medicines, it is necessary to make an ardent, systematic and organized effort to preserve, propagate, collect, store and manufacture according to prescribed methods only. This alone will be compatible with Jainism.

# Organoselenium compounds: A new generation of radio-protectors and mimics of glutathione peroxidase



Vimal K. Jain

### Abstract

This presentation aims to discuss our approach on design of low molecular-weight water-soluble organoselenium compounds as antioxidant and radio protectors. A variety of organoselenium compounds containing functional groups (*e.g.*, OH, NH<sup>2</sup>, COOH) in the alkyl chain, 3, 5-dimethylpyrazole and 2-phenyl(3, 5-dimethylpyrazo-1-yl) groups have been synthesized and characterized by NMR (<sup>1</sup>H, <sup>13</sup>C{<sup>1</sup>H}, <sup>77</sup>Se{<sup>1</sup>H}) and in some cases by X-ray crystallography. Several of these compounds have been examined for GPx like activity, in -vitro antioxidant and radioprotecting activity. The results indicated that among aliphatic selenium compounds, those having functionalized propyl side chain showed maximum activity, diselenides were more active than monoselenides and among the functional groups, carboxylic acid group was the most effective. Based on these observations, diselenodipropionic acid ((HOOCCH<sub>2</sub>CH<sub>2</sub>Se)<sub>2</sub>, DSePA) was examined for in-vivo radioprotection in mice exposed to lethal and sub-lethal doses of gamma-radiation. At non-toxic dose of 2mg/kg body weight, DSePA when administered prior to irradiation significantly increased the survival of the animals exposed to radiation. It was also effective in protecting radiosensitive organs like hematopoietic system and gastro-intestinal tract from radiation-induced damage.

# Introduction

Ageing has been one of the major problems before the mankind. To defy aging we have been devising newer and innovative methods including extracts from plants of medicinal significance. Scientifically ageing is a complex process defined as progressive deterioration of physiological functions. There are several different mechanisms for ageing. Among them a mechanism involving reactive oxygen species (ROS) is widely accepted. Various free radicals (e.g., H•, HO•, O<sub>2</sub>•-, R•, etc) and oxidants (e.g., H<sub>2</sub>O<sub>2</sub>, singlet oxygen, HOCl, etc) generated in biological systems are collectively called as ROS. Excessive generation of ROS results in a state known as 'oxidative stress'. Excessive or misplaced ROS causes damage to cellular components like cell walls, lipid, membranes, DNA, etc which is manifested in the form of inflammatory, neurodegenerative and cardiovascular diseases.

The ROS are formed by two different routes, viz., (i) cellular metabolism of oxygen, and (ii) radiolysis of water (cells contain ~70% water) by high energy electromagnetic radiation (e.g. UV) or ionizing radiations (like  $\gamma$  -rays) origin of which can be natural or manmade. In the first process a small amount (< 2%) of oxygen is inevitably converted to superoxide ion (O<sub>2</sub>•-) during its metabolism in mitochondria. The superoxide ion is subsequently converted to hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), hydroxyl radicals (HO•) and eventually to other reactive species. In the second process, radiolysis of water takes place by ionizing radiation. Radiolysis of water results in to the formation of hydroxyl (HO $\bullet$ ) and hydrogen (H $\bullet$ ) radicals which subsequently react with various other molecules affording peroxyl radicals.

Mother Nature has provided an elaborate defense mechanism to detoxify ROS. To protect against oxidations, cells possess different types of antioxidants ranging from vitamins C and E to enzymes like superoxide dismutase (SOD), catalase and glutathione peroxidase (GPX). These enzymes are capable of degrading ROS in to harmless compounds through a series of chemical reactions.

Oxygen (O), sulfur (S), selenium (Se) and tellurium (Te) constitue Group-VI of the Periodic Table. Besides oxygen, both sulfur and selenium are important elements in living organisms, although the importance of selenium as an essential micro-nutrient has been realized only recently<sup>1,2</sup>. It is a constituent of several redox active enzymes. Until now at least 25 selenium containing proteins have been identified in mammals. Among them, the most important and well studied seleno-protein is glutathione peroxidase. It is an antioxident enzyme playing a central role in combating oxidative stress. It detoxifies peroxides by reducing them to water or less reactive species. These enzymes contain selenocysteine (Scheme 1) at their active site, which is considered as the



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#### 21st essential amino acid.

Having recognized the role of selenium in biochemical reactions, scientific community has been infatuated with the idea of mimicking biologically active organo-selenium compounds<sup>3,4</sup>. Over a period, several groups have designed and synthesized numerous organoselenium compounds with the aim to emulate the activity of naturally occurring selenoenzyme, GPx. Accordingly, different groups have studied several families of GPx active organoselenium compounds. These compounds can readily be recognized by one of the following features, (i) compounds containing a covalent Se - N bond (e.g. I - IV), (ii) compounds exhibiting weak intramolecular Se---N or Se---O interactions (e.g. V - VIII), (iii) heterocyclic diselenides, e.g. 2-pyridyl diselenide (IX) and (iv) compounds, both mono and diselenides, derived from alky groups bearing -OH, -NH,, -COOH substituent at terminal positions (X - XIII) (Scheme 2).



(Scheme	2)	•
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Results and discussion: In the above perspective, our group has focused to develop low-molecular weight water-soluble organoselenium compounds which can show antioxidant and radio-protection properties. Accordingly we have synthesized different families of organoselenium compounds both new as well as reported earlier.5-7 To enhance water solubility of these compounds, molecules containing -OH, -COOH and NH, functionalities have also been prepared. The following four different classes of compounds have been synthesized by using M<sub>2</sub>Se<sub>2</sub> (M = Li or Na) or Na<sub>2</sub>Se with an appropriate halogenated organic compound. The compounds with OH/ COOH/ NH, functional groups have been isolated by the reaction between RSeNa and  $X(CH_2)nY$  (n = 1-3; X = Cl or Br; Y = OH, NH<sub>2</sub> or COOH).

(i) Seleno ethers: (HOOC-CH<sub>2</sub>)<sub>2</sub>Se; (HOOC-CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>)<sub>2</sub>Se; (HOOC-CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>)<sub>2</sub>Se; (HO-CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>)<sub>2</sub>Se; (HO-CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>)<sub>2</sub>Se; (H<sub>2</sub>N-CH<sub>2</sub>CH<sub>2</sub>)<sub>2</sub>Se; (H<sub>2</sub>N-CH<sub>2</sub>)<sub>2</sub>Se; (H<sub>2</sub>N-CH<sub>2</sub>)<sub>2</sub>Se; (H<sub>2</sub>N-CH<sub>2</sub>CH<sub>2</sub>)<sub>2</sub>Se; (H<sub>2</sub>N-CH<sub>2</sub>)<sub>2</sub>Se; (H<sub>2</sub>N-CH<sub>2</sub>)<sub>2</sub>Se

- (ii) **Diorgano diselenides:**  $(HOOC-CH_2Se)_2$ ;  $(HOOC-CH_2CH_2Se)_2$ ;  $(HOOC-CH_2CH_2CH_2Se)_2$ ;  $(HO-CH_2CH_2Se)_2$ ;  $(HO-CH_2CH_2CH_2Se)_2$ ;  $(H_2N-CH_2CH_2Se)_2$ ;  $(H_2N-CH_2CH_2Se)_2$
- (iii) Pyrazole based derivatives
- (iv) Nicotinamide based derivatives

All the compounds have been purified by recrystallization or column chromatography and thoroughly characterized by elemental analysis, IR, NMR (<sup>1</sup>H, <sup>13</sup>C{<sup>1</sup>H} and <sup>77</sup>Se{<sup>1</sup>H}) and mass spectral data. The <sup>77</sup>Se NMR chemical shifts are distinctly different for monoselenides and diselenides, the latter being more deshielded relative to the corresponding monoselenide. Molecular structures of several compounds have been established by single crystal X-ray diffraction analyses (Figs 1-3). In some compounds weak intra- or inter-molecular secondary Se...X interactions exists while others are devoid of such interactions. For instance, compound [2-NC<sub>2</sub>H<sub>2</sub>(3-CONHPh)Se]<sub>2</sub> (Fig. 3) represents the first example where two intra-molecular Se---X (X = N or O) secondary interactions exist in a diselenide [Se1'---N1 (2.887 Å) and Se1---O1 (2.608 Å)]. Each selenium atom in the molecule is weakly coordinated to the oxygen atom of the carbonyl group of the same pyridyl ring with which it is bonded and also to the nitrogen atom of the other pyridyl ring.<sup>7</sup>



Fig. 1- Molecular structure of [SeCH<sub>2</sub>COOH]<sub>2</sub>



**Fig. 2-** Molecular structure of dmpzC<sub>6</sub>H<sub>4</sub>SeCH<sub>2</sub>CH<sub>2</sub>OH (Hydrogen atoms are omitted for clarity)



Fig. 3- Molecular structure of [2-NC<sub>5</sub>H<sub>3</sub>(3-CONHPh)Se]<sub>2</sub>

The compounds containing COOH groups are associated in the solid state through hydrogen bonding.<sup>8</sup>

Having isolated and characterized several organoselenium compounds, we have evaluated their free radical scavenging ability and GPx mimicking and antioxidant activities both in-vitro and in-vivo.<sup>9-13</sup> A few case studies are presented here. Reactions of organoselenium compounds with HO<sup>•</sup> radicals and one electron oxidants ( $Cl_2^{-*}$ ,  $Br_2^{-*}$ ), generated by pulse radiolysis techniques, have been studied by absorption spectroscopy. The diselenides after the reaction with HO<sup>•</sup> radicals generate diselenide radical cation with concomitant formation of H<sub>2</sub>O or HO<sup>•</sup> from HO<sup>•</sup> radicals. The diselenides react with HO<sup>•</sup> radicals<sup>11</sup> with rate constants of ~1010M<sup>-1</sup> s<sup>-1</sup>.

Since these compounds showed free radical scavenging properties, their potential as an antioxidant and mimics of GPx has been evaluated by several in-vitro and in-vivo experiments and a few are briefly mentioned here. Red blood cell (RBC) membranes are rich in polyunsaturated fatty acids (lipids) which are susceptible to free radicals mediated peroxidation (lipid peroxidation). As a consequence the RBC membrane undergoes quick damage and loses its integrity which results in to release of hemoglobin (hemolysis) and intracellular potassium ions. When organoselenium compounds, showing peroxyl radical scavenging activity, are present in RBC, both hemolysis and potassium ions release are inhibited.12 We observed that diselenides are more efficient than corresponding monoselenides in reducing the existence of radicals.

Several in-vivo experiments have been carried out on Swiss Albino mice. Their survival against sub- and supralethal doses of-radiation in the presence and absence of organoselenium compounds has been evaluated. It has been observed that there was 35% higher survival of mice administered with organoselenium compounds when whole body was exposed to  $\gamma$ -rays (dose rate 0.52) Gy/min). Several tissues, such as hepatic, spleen and gastrointestinal tract, are also highly sensitive to radiation. Thus radio-protective efficacy of organoselenium compounds was also evaluated by assessing protection of some of these tissues.13 The effect of diselenopropionic acid on gastrointestinal tissue was evaluated. The histopathology results revealed that there is a significant protection of the tissue when administered with the diselenopropionic acid before exposure to-radiation.

Conclusion: We have designed and synthesized several organoselenium compounds and characterized them by various techniques. Most of these compounds show

free radical scavenging activity, among them 3,3'diselnodipropionic acid and nicotinamide based selenium compounds are highly potent. Selenoxide can be reaction intermediate in scavenging ROS. These compounds have potential as radio-protectors.

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# A Novel Theory of Water-Bodied Living-Beings



Dr. Ing. Jeoraj Jain

(**Key-words:** water-bodied living-cells, net-like tubular structures, characterization, homeopathy, free radicals, attributes of life, influence on aura, pranik-energy, shelf-life)

# **Concept of Living Water-Cells**

Whenever we talk about cell-based life form, we mean only the bio-chemical cells and nothing else. Living organisms must necessarily have DNA/RNA. When the famous scientist Sir J. C. Bose talked about "Life" in stones etc., we did not know, as to what form of life he referred to. One of the other life- forms is probably based on Inorganic-cells. Foto A shows a world of Living-Beings.

#### Evolution of life, based on senses (as per Jaina-science)

Living-beings can be categorized, as per Jaina-Sciences, into 5 types, based on its no. of senses. These are, Touch (Body), Taste (Tounge), Smell (Nose), Vision (Eye) and Hearing (Ears) sense organs. This also represents the evolutionary stages of living-beings. Whereas the one-sensed living-beings are at the bottom of the development ladder, the 5-sensed animals/humanoids are at the highest stage of development.

#### One sensed life- form: (Fig A)

One sensed living-beings are of 5 types. These are

- i) Solid --state living-being (Earth-bodied living-beings)
- ii) Liquid-state living-being (water-bodied living-being)
- iii) Gaseous-state living-being (Air-bodied livingorganisms)
- iv) Plasma-state living- beings (Fire-bodied livingbeings)
- v) Vegetation (botanical) life evolved by the combination of above noted 4 states.

#### Mobile and Immobile living-beings

Immobile living-beings do not have apparent capability to move on their own to a position of safety, when attacked. In this group, only the vegetation form of life is based on the concept of bio-cells. Others are considered by the present-day scientists as mere different physical states of chemicals.

2-sensed and higher forms of living-beings have capability of loco-motion and hence called "mobile" (Traskaayaa) living-beings.

#### Water-bodied organisms

Living-being, whose body is water itself, can be termed as JALKAY or Water-bodied living-organism. One drop of water may be a lump of countless living-beings. They go on reproducing and dying ceaselessly in that body every second. On "boiling" the water, this cycle of births and deaths stops for a few hours, making it a lifeless structure. Introduction of foreign molecules in it also makes it lifeless.

One wonders as to what type of that living-being could be, whose body is composed of mere water. This has to be different from the known water assisted or waterborne living world. This looks to be a form of life beyond our imagination.

Let us investigate the possibility of such inorganic-cells

# Physical Structure of Water-Cells (as per modern science)

Water is considered to be a very special and strange material. As per its chemical formula H<sub>2</sub>O, a molecule of water consists of 2 atoms of hydrogen and one atom of oxygen (fig 1 to 4b). The polar molecules of pure water form self-assembled nano-structure in hexa. or penta. shape, represented like  $H_{12}O_{6}$  etc, called quantum crystals, where the position of the constituent atoms/ molecules in the crystal is not defined (fig. 4c, 4d, 5 & ref 1 to 4). These "unit" structures further make netlike stable nano-tube or hollow sphere by joining with neighboring identical units to achieve minimum surface energy. (fig. 6, 7). This molecular net is of a hollow cylindrical configuration, storing energy and oxygen in its hollow space. These tubes can have 'ion-implant' facility and are surrounded by its own bio-magnetic field. The bonding strength between water molecules in the nano-structure is much higher. These structures are stiff because they vibrate at high frequencies

# Criteria of LIFE

We understand DNA and RNA to be the basic building block of the traditional life form. However, to explore the feasibility of other form of life, let us consider the basic traits of life. In modern biology, a living-being is defined

#### to have minimum two attributes, viz, the ability

- (i) to exchange energy i.e., it can fix energy and transfer it in a directed way and
- (ii) to remember and pass-on information.

### Dissolved Oxygen in Water and its Role

When water is left free in the atmosphere, it starts absorbing air from it, till it reaches its saturation point, corresponding to the ambient temperature and pressure. When oxygen from the air is absorbed in water, what does it do there?

- The dissolved air releases physically free molecules of oxygen. Some molecules get converted into oxygen radicals (anions).
- ii) It is absorbed (digested) by the tube in its hollow space and in its quantum-vacancy" to form a so called Zygote (Yoni).
- iii) It makes the hydrogen-bond of water stronger. The bee-hive structure of nano-tube allows the ions to move effortlessly through it. Cell-energy keeps the movement of oxygen molecules or radicals in dynamic balance.
- iv) Flow of oxygen ions through water channels or structures generates electro-magnetic pulses by its movement (fig. 5, 6, ref 1,2). Its Potential Energy is 'fixed' in the nano-tubes. (As if it carries somatids with it, ref 3, 4) Thus it acts as a transducer.
- v) It seems that it can store electrical energy and supply it back on demand.

#### Water as living-being.

#### **Living Water**

If water were to be living-being, it should carry information on its memory. It should also be able to learn and get trained by external means. In that case, more the training is efficient, more the water would become effective. For the training system, let us review the steps involved in the preparation of Homeopathic Remedies.

A small experimental quantity; say 0.001% of foreignmass of a chemical is introduced into it. It is shaken well mechanically to train that pure water mass. The product is termed as first potency of the Remedy. This potency can then be enhanced sequentially to higher potencies by further dilutions, called dynamisation.

#### **Digestive System**

The cell structure of water can accommodate foreign particles in its body structure. It can remain alive and acquire the physical properties of relatively well dispersed chemical molecules (if mixed thoroughly) in form of surface contour changes and frequency modifications. However, if relatively 'substantial' quantity of a chemical is dissolved in pure living-water mass, the zygote may get choked and killed. Foreign materials would break the water-cell structure. This phenomenon occurs diring the process of Dhovana making and it would be analyzed and studied later on.

#### Further Characterization of water-cells

The ions of the minuscule quantity of the chemical, added in the above noted water mass for training, get attached or implanted in the quantum vacancy of the living water-cells as "impuritons", thus forming a `hybrid structure (fig.5 & 7). This structure is imparted the electro-magnetic properties i.e, em-vibrations and mechanical vibrations of the ion by means of induction, conduction and resonance. Apart from the frequency transcription on the cell-body or specific hydration envelope, certain other properties of the chemical are also transferred to the surface of the water-cell. Such water cells can carry unique-signature of the chemical (just like the worm holes in space) as well as surface energy in form of surface curvature. This may be called Initial Mode of Vibration (IMV).

#### **Training for Trainers**

When a water solution is subjected to sequential dilution in a particular ratio, free molecules or ions of the solute chemical would, ultimately be not available for diffusion in the quantum vacancy of fresh water-cells. As such, the subsequent dilutions would help wash away the foreign molecules from the cells, just like the washing away of dirt with soap in sequential rinsing. The fresh water goes on learning and acquiring the IMV with lesser and lesser number of impuritons. This is like conducting "training for trainers" (T4T) program. The "impression" is stored either in the form of shape, size and profile modification or in the contour of energy distribution or in both. The frequency-transcription gets stronger and stronger, like multi-layer jacketing in mechanical vessels or tubular structures. It creates a stronger network of communication. In other words, the coaxed tube gets reinforcement in the form of "shell-sleeving" by pure agua tubes, which can store energy like carbon onions. A stronger jacket cannot be broken easily, even if it takes journey through other fluids. In this dilution process, the molecules or the properties are better metabolized / digested by the living water- cells (Fig. 8, 9).

#### Touch Sense of Water-Cells

Living water can have 8 types of touch senses, like cold and hot, positive and negative charge (snigdha & ruksha) etc. The first two types of attributes are related to the vibratory properties of water cell, whereas the later two are associated with its electrical properties of the surface. The mixing of "impuritons" affects its vibratory as well as electrical properties. As discussed above, in sequential dilution process, the pure water is taught to vibrate at IMV through non-invasive technique. The required energy is supplied to the living water-cells through breathing of oxygen (fig. 6).

The quantum structure of polar molecules of water retains its special configuration during sequential dilution and exhibits its special static and dynamic properties.

The "impuritons", after they have taught the host water molecules its vibratory attributes, are considered as residual unwanted impurities. Then they are washed away through sequential dilutions. The host molecules of water continue to become purer and better teacher and hence are termed as "Sanskarit- Solution" or characterized water-cells. The effectiveness of this living water is inversely proportional to the presence of molecules of foreign chemical. Greater the degree of dilution is, the clearer the structural information of the original dissolved particles gets imprinted on the host cell.

# Communication by Living Water

# Communication by characterized water-cells at subtle level

- i) When the characterized water-cell, carrying the frequency mode and the energy-configuration specific to a chemical, is introduced into a fluid, say blood stream of a human body, it would enhance the Zeta potential (negative charge) in the blood colloidal (Ref. 3,4). Subsequently, when it goes into the body cells through absorption and diffusion from the circulating blood stream, it would influence the inner structure of the bio-cell (fig. 9).
- ii) The "Imprint" of water-cell consists of a multidimensional property, having complex physical means of communication with particular type of "genes" in order to influence its code. Here it is presumed that the water molecules do not influence its counterpart in genes by chemical means (i.e., by having different potential energy of its valence electrons), but do it by physical means (i.e., by the kinetic energy of its electrons/ wavicles). This phenomenon can be better understood by M-brane physics and not by classical physics.
- iii) When it passes through the micro-pores of the cell-membrane, it would generate electric pulses, which are used by neurons and other cells for communication.
- iv) Once inside the cell, it would act as a catalyst for 'genes' of DNA. It would create resonance with a

specific portion of DNA or genes. The individual threads of DNA and RNA thus get modified as per the instructions. v) It would create or refresh gene-memory and enhance the capability of that particular immune system to modify long-term coded instructions and code-density

vi) The effectiveness of the above instructions would depend on the density and depth of impressions or memory–field of the characterized living water-cells.

Thus the characterized water-cell can work at "genetic level" even without the physical presence of any molecule of that chemical

This is exactly what happens in Homeopathic remedies (Ref. 1). They contain well trained Living water-cells. They are introduced into the body to pass-on specific "instructions" at genetic level. The secret of homeopathic-system, thus lies with the living water-cells, who carry faithfully the instructions to the genes of the affected body.

#### **Communication via Sound and Thought Waves**

- Dr. Masaru Emoto of Japan has conducted a number i) of experiments on water to ascertain the effect of sound, thoughts and emotions on it. After treating water with these factors, like prayers, abuses and harsh noise, etc. the water was deep frozen at -250c to form ice crystals. These crystals were photographed. It was found that thought and emotional waves have marked effect on the capability of water for forming its crystalline structure, shape and size. A few photos of water, treated with human emotions are shown in Fig. 10 (Ref. 5). It was proved by these photographs that water can exist in different states of moods. Like human beings, it can also feel happy and delighted by hearing prayers and sweet music, because of rhythmic sound and em waves.
- ii) However, living-water has tendency to form hexagonal structures due to its special e.m. field, surrounding its unit physical body. In solid state, like snow, this structure can be seen by special techniques. If we can catch normal snow, falling from the clouds on a dark piece of paper or on sleeves of our garment and look at them through a magnifying glass, we will notice that almost all the flakes have six sides. Although every snowflake has six sides, yet all snowflakes differ from each other. Fig. 10 shows photographs of such snow (solidified living water) (Ref. 5).

# Details of De-characterization of the living water-cells

When the living water, containing imprints of traceelements, travels in the blood-stream, its impressions are difficult to be washed away by the "impurities" en route. That means the imprints on these water cells can not be altered so easily. However, the memory stability depends on temperature and environmental conditions, besides the purity i.e., rarefaction of the characterized water-cell.

On heating the solution, its capability of transferring information is lessened and its memory is partially erased. Distilling the water brings about an almost total erasure of this information.

#### Process to make water Non-living

Water cell, whose tubular body structure is either destroyed or choked and cannot breathe air, is termed as non-living water.

Water obtained from natural water-source is normally living water. This living-water can be converted to nonliving water by treating it with similar bodied or with dissimilar materials. Following are the 3 methods for doing it.

#### **Mixing Process**

There are various types of water. Each type would contain different minerals in different quantities and ratios. When they are mixed together e.g., water from a well is mixed with water from a pond, the live-water is disabled to remain alive. The internal eco-system is disturbed and the YONIS are choked, whenever one type of water mixes with another type at microscopic level. The end product lasts for some time, depending upon the difference in contents and their mutual tolerability.

The second method is to mix foreign materials with mechanical rubbing of water- body or by heating to boiling temperature, i. e., by treating it with Tejaskaay.

When foreign particles, above a critical quantity, are mixed thoroughly with living-water mass (dhovana), it blocks the hollow, net-like spaces of nano-tubes. Its radicals are also converted into molecules. Thus due to mechanical rubbing and friction, the "yonis" are broken part.

#### **Effect of Boiling**

By heating the water to boiling temperature, the water becomes non-living. In this process, the "yonis" are completely disintegrated at the boiling temperature. The dissolved air is driven out, because of its zero solubility at boiling point. Thus the water becomes non-living. It becomes devoid of free oxygen radicals also. When such water is used for drinking, It can, in turn, reduce the level of radicals in the user's blood-stream, just as the other de-oxidants do.

In small quantities, the free radicals fight bacteria and virus. But in larger quantities, they attack living body-cells anywhere in the body. These oxidants are considered as the major cause of ageing. They can even cause cancers. Hence, it is desirable to remove or reduce these radicals. They can also be removed by taking doses of antioxidants.

#### Mobile living-beings (Traskaaya)

In addition to it, both the above treatments (Rubwashing & Boiling) render the other water based [water borne] microscopic mobile living-beings, lifeless. In the first type of treatment, it is the basic nature (alkalinity) of the additives and their rubbing friction that destroys the mobile- type of foreign life. In the second type of treatment the foreign life, present in the water, is eliminated by the scorching heat of boiling and by driving out the dissolved life-sustaining oxygen from it.

Thus these treatments of water for making it a non-living mass, influence the structure of yoni and the quantum of dissolved air. It also eliminates the microscopic mobile foreign bacteria etc from it.

#### Shelf-Life of non-living water

Pure non-living water takes some time to become again living-water. Due to electro- static forces between its molecules, water starts forming net-like nano-tubular structures, called Yonis. When left exposed to atmosphere, it starts absorbing atmospheric air in it. This absorbed air becomes a source for the yonis to breathe and become "live". However, the rate of absorption depends on the temperature and humidity of the environment, as well as on the area of the water surface. It goes on absorbing air, till a saturation point is reached. Because these conditions of temperature and humidity are different in different seasons, the minimum time-span of non-living water(called Kal-Maryada), to get converted back into live-water, would vary with the seasons.

# Energy levels of water-bodied livingbeings

#### Aura of Water

It is well-known that every living-being has its own specific AURA(halo, Ref. 6). This aura, as captured in Kirlian photographs, shows different grades of radiations give two types of energies. One type is radiation of pranik-energy of a soul (non-physical entity) and the other is the radiation of em-energy of the physical-body (Ref. 7, 8, 9). The aura of an inanimate body (or body of a dead creature, whose soul has departed) is only an em-radiation and is steady and atatic (fixed) type. It does

not change with time, whereas, the aura of animatebeing (fig. 11a), is variable. It goes on changing, due to the dynamic nature of the interactions of karmic matter and the soul at the deeper level and the mental, physical activities in the upper level. Its colour changes with time. It changes as per its moods, because "intentions" affect the radiations of internal energy (fig. 10). That means, the thoughts are manifested in the aura body.

The Pranik energy of an entity flows through its aurafield. This provides energy to the gross physical body through the medium of nervous-system. In the light of above discussions, water should also have its Aura. This is captured in Fig. 10 & 11.

#### **Determination of Energy-level of Water**

Experiments were planned and conducted on different samples of water to ascertain the Aura energy levels of living and non-living water. Living water should exhibit variable energy levels, depending on the discipline of the living-beings. However, the non-living water can have only a fixed level of energy.

The results of the experiments conducted on aura of water with the active participation of Dr. J. M. Shah's Laboratory at Mumbai and M/s Willmar Schwabe India of Noida to map out the Aura of four different types of water samples, are tabulated below. M/s Willmar Schwabe supplied specifically prepared water-based homeo preparations for these experiments.

Table:	Area	of	"aura"	measured	by	aura-photography	
(fig. 11b) by Dr. J. M. Shah							

S.N.	Water type	Area A(t) (Measured)	Symmetry %	Estimated* Area x 1000	
1	Tap Water	21194	96	22	
2	Boiled Water	17712	84	15-17	
3	Kal.6X	18382	88	17-18	
4	Kal. 10M	14666	97	15	

The variation in Aura of different samples of water indicates that water does exists in animated and unanimated states. As a corollary, the animated state would have Etheric body aura, which can carry memory! Subsequent experiments, conducted elsewhere, proved the repeatability of their results.

Tap water, rubbed with small quantity of certain foreign materials to change its touch sense or /and color, can still remain as potable. But it is turned into non-living water, called Dhovana (Ref. 10). Its aura is found to be exactly similar to that of the Boiled water (Fig. 12, Ref. 11). Thus both belong to the category of non-living water, in contrast to the tap water, having an entirely different type of aura.

#### Influence of characterization on aura

It is also observed that characterization of water also influences its aura. Experiments on it have enabled the formulation of a theory for the working mechanism of potency-making. This can explain very well many hitherto, inexplicable phenomenon and mysteries of potency-raising, in a scientific manner.

### Summary of results and discussions

#### Theoretical

- Pure water is not a simple H<sub>2</sub>O molecule, but exists in form of bee-hive structure, having its own electrical and vibratory properties. By absorbing air in its quantum vacancy, it exhibits the properties of a "living-being", as defined by modern biologists. It has an inherent nature (internal character) and an external form with certain em-field and vibrations. When boiled, the dissolved air and its radicals are removed from it, thus making the live- water as dead water
- ii) Like free floating radicals & de-oxidants, "characterized" cells (called Homeopathic Remedy)
   i.e. live-water structures carrying a particular imprint, work as a specific type of catalyst for the concerned body tissue/cell. The relevant body cells are stimulated by this catalyst through vibration and resonance.
- iii) The specific influence of characterized water on the bio-cells is practically proven in Homeopathy. This renders a strong evidence for the hypothesis that water exists in cell form and can carry instructions in its memory.

#### Experimental

- A theoretical model of a living-water cell has been developed with the help of existing scientific principles
- ii) It has been proved that this "Inorganic" cell can satisfy the basic two traits of living-beings.
- iii) Living-water should theoretically exhibit emotions/ moods. This has also been proved to be right, in the recently conducted experiments, by Dr. Masaru Emoto of Japan.
- iv) Experiments were conducted to find out changes in "Aura" of living water by conducting different operations like Boiling etc on it. Their results established the existence of living and non-living water.

Thus Aura becomes an important tool to distinguish different types of water in terms of living and non-livingness.

- v) It was revealed that characterization, as practiced in Homeopathy, influences the Aura of base water. A characterized cell in its pure form will have a well defined and specifically attuned pattern of energy field around the profile of its body in form of Aura.
- vi) As a corollary, the animated state will have Etheric aura component, which is responsible for carrying memory.
- vii) These experiments have led to the formulation of yet another theory for working mechanism of characterization or potency-making in Homeopathy. It explains the actual mechanism of hitherto unknown and inexplicable phenomenon and mysteries of potency-raising. This theory may act as a Foundation Stone for the principles of Homoeopathy.

The whole exercise has been done with very limited facilities. However, in view of the encouraging results, there seems to be a tremendous scope for scientists to undertake multi-disciplinary organized research with advanced, sophisticated equipments, like atomic-force microscope and magnetic-resonance techniques to peep deep into the molecular structure of water. Latest Aura techniques can also help reveal many other secretes of such wonderful Live Water-Cell.

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Figures:

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FPUIU.A.	Type of inving-beings in the universe				
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Fig.A Type of living-beings in the universe



Fig.1 to 4b Chemical-structure of a water-mole cule.

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Fig.4c Process of self-assembly



Fig.6 Live water-cell. Net-like nano-Tubular structure. Movement of Oxygen through it
Fig.7 Ion implant in quantum vacancy of hybrid structure
Fig.8 Dilution of side effects
Fig.9 Interaction of Water-cell with Bio-cell



Fig.11 b Typical Aura of water



Fig. 4d Process of self-assembly



Fig.10 Photographs of crystals of snow and solidified living-water

Fig.5 Self-assembled water molecules as Hex Units



Fig.11a Typical Aura of water



Fig 12 Auras of different types of water

# "Benefits to common man" (By the Theory of Water as Living-being)

The investigations done and the deductions made so far reveal that

- 1. Water does exist as living-being, it can be made nonliving mass by conducting certain operations on it.
- 2. Living-water can carry and transfer its acquired properties and memory to other similar well defined clusters of water cells, even though they do not have the traditional DNA, RNA or TNA chemicals in it. The properties are transcripted on the special energy field surrounding the nano net-like cell structure of water.
- 3. Modern Imaging Techniques may reveal various aspects of this interesting phenomenon. "Aura" Photography is the simplest of various methods, which has been utilized to unearth some basic traits of it.

# Benefits to common man

- A) It is a common question as to what benefits would accrue by establishing scientifically water to be a living-being. Before answering this particular question, let us understand as to what benefits the mankind has derived in almost last 100 years after discovering that plants have Life:-
- 1. A full fledged, cell-based botany science has developed.
- 2. It has helped improve the productivity and application of agricultural and horticultural sciences.
- 3. A bright revolutionary future is in-sight of the mankind through genetically modified plants and vegetables.
- B) Similarly, if the scientists understand fully the properties and cell structures of living-water, i.e.
  I How the cell structure is formed or broken,
  II What forces are responsible for its changes at micro level,

They will be able to understand and investigate:-

- 1. The effects of consuming non-living water on our metabolism and body structure,
- 2. The effects of free oxygen radicals, dissolved in water on our cells and tissues,
- 3. The effects of using non-living water on our mind and body?
- B) It would be easier for the scientists then to manipulate those effects for the benefit of society by suitable modifications in the cell structures or additives scientifically.
- 1. We shall be propounding an entirely new scientific theory of Life, that it can exist without the traditional organic DNA and RNA etc

- 2. This will change the whole concept of life and our attitude towards this important natural resource. We may usher into a new era.
- 3. By bringing important changes in the scientific concepts, we may discover special tools for the protection of our environment
- 4. Once the mankind comes to realize that water is a living-being, our attitude towards its consumption and treatment may change, at least of those, having the human quality of compassion (Parasparopgraho Jivanaam) and love towards all living-beings. This will help prevent pollution and conserve water for our future generation.
- 5. They will be more serious about application of 3R i.e. Reduce, Recycle and Re-use.
- By knowing livingness Homoeopathy may be understood better with a strong scientific base/ theory

# "Scientific Interpretation of Jain Lokakash Map"



Dr. Ing. Jeoraj Jain

# Jain lokakash

The map of Jain Lokakash does not match with the traditional Geographical maps, even with those prevalent in 4th century B.C.

As per Jain Agamas, the Universe is depicted very well by the Kevalins (Omniscient) through the map of Jain Lokakash. Its Upper part, called Urdhva Loka has a height of 7 Rajjus (R). It consists of 8 types of Deva Loka(land of devas) and Siddh Sheela. The Lower Loka consists of 7 types of Narka land (land of infernal). The Middle Loka is arranged around the mountain Meru. Its innermost circular land mass, termed as Jambu-dweepa, is surrounded by a circular ring of water-mass, called Lavana Samudra. Innumerable such pairs of land-water mass go on forming the Middle Loka.

The first 2.5 dweepas provide habitation for humanbeings. Beyond these dweepas, mankind cannot go and survive.

Our earth is supposed to be a part of Jambu-dweepa. It is located in the south and is termed as Bharat Kshetra, adjoining Lavana Samudra. Mahavideh Kshetra is located from east to west, in the central part of Jambu-dweepa.

# Present cosmology and geography

- i) Our planets like earth, mars etc are the 9 planets of the Sun. Our Sun is located at the outer fringes of half arm of our galaxy named as Akash Ganga. There are more than 1000 billion such stars as Sun in the galaxy. In this Universe (Lokakash) there are more than 100 billion galaxies. So how do we comprehend and represent this colossal universe. On top of it, scientists claim that the visible mass of universe is merely 4% of the Universe. We have almost 72% invisible dark energy and 23% invisible mass.
- ii) Geography Our spherical earth is a planet, rotating around the Sun. It has horizontal islands of Eurasia, vertical islands of Africa and Americas from north to south.

Their coastal areas are unsymmetrical and zigzag in shape. At places earth-mass protrudes into water-mass or water-mass protrudes into earth-mass.

# Anomalies between Lokakash and our Geographical maps

- Our science has not been able to locate any pairs of Dweepas & Oceans, having such symmetrical circular shapes. Every continent has zig-zag and odd shaped coastal contours. Then why the Omniscient have not tried to iron-out this major difference between the prevalent geographical maps and dweepas of middle Loka.
- ii) Our earth is considered to be round as orange shaped, where as Lokakash shows it as a flat disc type at the center of middle loka.
- iii) Scientists have flown around and across the earth, but have not located any Maha Videh kshetra or Naraka Loka, supposed to be below the earth. This is contrary to the Jambu- dweepa description.
- iv) We had many Karma bhumies (like Bharat Kshetra) and many Bhog-bhumies on this earth. It is now noted that all the civilizations are raising their aspirations and becoming Karma-bhumies.
- v) The Aras (period of Time) are becoming similar to the 5th Ara all over the world. The differences in conditions at various continents are narrowing down. We are not able to locate conditions of 4th Ara or 2nd Ara on our earth, as are mentioned for Jambudweepa.
- vi) Jain Acharyas are spending huge sums of money and resources to prove that science is wrong. It seems to be a futile exercise of Jain Samaj.

# How do we account for it?

#### A big question

- If our present day geographical maps existed during Lord Mahavira's time or Bhaskaracharya's time, then why Lord Mahavira did not sort out the above contradictions of it with his Lokakash map.
- ii) Why these contradictions were left for the present Acharyas to iron-out with their limited range of knowledge?
  We have seen the geographical maps of Alexander the Great (326 BC), and found that they are very much similar to present Geographical maps. They do not have any similarity with their Lokakash.

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<sup>\*</sup> Following article was submitted, but could not be read in the seminar due to shortage of time.

iii) If both these types of maps were allowed to exist at that time without raising any fuss or contradiction, then it is obvious that these maps are not to be compared 1 to 1. Both these must represent two different things. This is the crux of this logical conclusion!

### Just Rethink

Before we re-look and rethink about these two types of maps, let us do one exercise. Suppose we are asked to show distribution of earth population density, in steps like 0-, 1-100, 100-1000, 1001-10000 etc. All these types of similar density areas are clubbed together and then represented by a chart called pie-chart. The representation of the statistical data at a glance by a pictogram, like pie, bar or ring chart is a standard mathematical method. Such charts have some special features, which must be kept in mind, while using them.

# Possible reasons

A logical conclusion would be that there existed no such problem of mismatch at that time. Probably we have forgotten the method to read such maps.

# Analysis

Let us view lokakash map again from an entirely different angle.

#### Mathematically, it shows that

- i) The total Living and Non-living matter (Dravya) and its distribution in the Universe.
- ii) The matter has been arranged symmetrically and systematically, as a show-piece, in some form of Pictograph of bars (Upper and Lower Loka) and ring (Middle Loka) charts.

# Pudgal Dravya

As per science, Matter exists in 7 phases.

- i) Solid, Liquid, Gas, Plasma, Einstein-Bose and Derek-Fermion condensates & Sphatik.
- ii) First 3 phases can again change their properties drastically with temperature and pressure in 3 regions, i.e., Sub-critical, Critical and Super-critical stage, as is found in the Internal structure of Earth. It has different properties at different depths, viz. from 150 to 6000 km. The contents can be categorized in 7 stages.
- iii) If all the non-living matter of each phase available in the universe (Loka including 2½ Dweepas) is arranged in the following manner:-
- a) First 3 phases:- Land and Water (with gas) in form of

rings of land and water – it would form Middle Loka.

- b) The 7 stages, as found inside the earth, in form of bars/strips- it would form Lower Loka.
- c) The last 3 phases (as created in labs):- in form of bars and strips- it would form Upper-Loka (Vaimanik Deva). See Annex-1.

# Living-beings

The form of Lokakash as per Bodies(sharira) of livingbeings.

- i) There are two types of living-beings. Mobile and Sthawar.
- All mobile living-beings are clubbed together and are found to be accommodated in a tubular area, called Tras-Nadi
- iii) Each state of matter supports, in a befitting manner, a particular type of Body/Kaya of living-being. The matter of Upper and Lower Loka supports mobile creatures of specific type of Vaikriya Pudgalas. Living-Bodies of Shubh Vaikriya Pudgalas are arranged in Upper Loka and those of Ashubh Vaikriya Pudgalas are arranged in Lower Loka. The total areas of specific phase of matter, occupied by such different creatures, are observed and measured by Omniscient and are displayed in the above mentioned Bar-Charts. Similarly the first 3 phases of matter support Audarik Bodies of mobile as well as non-mobile living-beings. But the mobile creatures of Audarik Pudgalas are found only in the Middle Loka. Strangely enough, all types of mobile creatures could be accommodated in their respective tubular areas, called Tras-Nadi of 1R diameter.

# Display of 6 Dravyas of Universe in Lokakash

- i) Four gatis: Men and Trryancha in Middle-Loka, Devas in Upper loka and Narkiya in Lower loka.
- ii) Five Jatis: 1 to 5 sensed in Middle Loka, 1st and 5th sensed in Upper and Lower Loka.
- iii) Total area occupied by Mobile Living-beings.
- iv) Comparative ratios of the total Living-beings and Non-living Matter of the Universe for each specific individual type or phase.
- v) The distances between Lumps of different phases of materials and living-beings cannot be shown in geographical language in the pictorial script. This fact has always to be kept in mind, while reading or decoding them.
- vi) The Vat-valayas or Vat-pinds are not required to support any Earth or Land-mass or Lokakash (as presumed by some Acharyas). In fact, they are special

materials, found on earth like Pindas. See Annex-2.

# Conclusion

As per science, different types and phases of living and non-living matter respectively, are scattered all over this vast Universe, it would be impossible to show and understand their locations through any prevalent geographical maps. The Omniscient have, by use of this decorative looking pictographs, made us, the ignorant, understand the contents of this Universe in a simple, plausible and quantitative language. This symmetrical show-piece gives, at a glance, important information about the distribution of all the living and non-living matter of the Universe.

# Discussion on the Results

Without changing or altering any Agmik content, it is now possible to interpret the distribution of Jeeva and Ajeeva rashi of the Universe, in line with the most of the present day scientific knowledge.

It enables us to take the modern scientists in a realm beyond the present day knowledge and explain its unknown features in a plausible manner. Some of the important revelations are as follows:-

- i) The existence of extra-terrestrial civilizations, extent of their development stage.
- ii) Other forms of materials and their quantum.
- iii) Other types of physical bodies of living-beings.
- iv) Other forms of highly developed living-beings.

#### Annex.1 Chart-1 Distribution of Matter in Upper Loka:-

Every matter-phase can have 3 sub-types: maxima, medium & minima

Sn St	ate of matter	Type of Vaimanik Deva	Sub-type	
1.	4th State	Jyotishk	( medium & minima )	
	(Plasma)		Bhavanpati & Vyantar	
2.	5th State	Kalpaj Vaimanik	Saudharm to Achyut Deva	
	(E-B condensate	) (having Hierarchy)	(1st to 8th Devloka)	
3.	6th State	Akalpaj Vaimanik	Graiveyak, Anudisha,	
	(D-F condensate	) (Kalpateet)	& Anuttar Deva	

#### Annex. 2 Support for physical matter:

(Ref. 5th Adhyaya, Gatha 56, Tattvarth Sutra-, by Prabha Chandra) "JEEVADERLOKAKASHE VAGAH"

"Soul (Jeeva), Matter (Pudgala), Medium of Motion (Dharma) and Medium of Rest (Adharma) are supported by Lokakash, i.e. space within the boundaries of universe."

That means, neither Vatvalay / Vatpind requires any land-mass for its support nor any Land (Bhumi) requires support of Vat-pinds!

# The Art and Science of Meditation

Dr. Sudhir

We exist in atleast 3 forms: Physical body, Mental-Emotional body and Spiritual body. We spend most of the time of our day and our life, our whole energy after our physical body: its care taking, its exercises, wellbeing and its pleasures. Somehow, we are not taught to take care of our mental and spiritual bodies, their exercises and their pleasures and wellbeings.

Meditation is one powerful way to correct these mistakes. You can call it as the exercise of mind to keep it healthy and free of perversions. Actually, in the depth of Meditation, one experiences a dialogue with ones own self/soul. However, let us keep the discussion of soul aside for a while, atleast we are aware of our faculty of mind.

Our miseries as human being are primarily due to our thoughts, emotions, desires-aspiration, ego, perceptions, liking-dislikings (raga-dwesha), attitude and our constant shifts between past and present tense. If we carefully analyse, these are all the functions of our mind. If we learn to improve on these, our miseries would be gone. And meditation teaches us to improve on all these aspects.

Peace and happiness are sought for by each and every person. But our search for them is in outside world. At some stage, we realize that peace and happiness actually reside in our own selves. The day we begin internal journey, we start getting peace and happiness. This internal journey is gifted and guaranteed by meditation.

All great prophets, religious path makers and saints have done meditation in some or other form to achieve the greatness and enlightenment. From oriental and western spiritual texts, it is clear that Right from Lords like Shiva, Mahavir, Buddha to Rama, Krishna, Patanjali and from Christ to Prophet Mohmmed to Asho Jarthushtra to recent most saints.....all have meditated for a prolonged time during their self realization or enlightenment process.

So, if we really want peace and happiness and eliminate our miseries or if we want to experience god, we must meditate.

**Definition:** Meditation is thinking deeply or spiritually about a subject; as per dictionary definition. It's a complex cognitive task. It is more than relaxation, concentration, contemplation or posturing. Through

it one achieves enlightenment Illumination. It's a state of altered consciousness, 4<sup>th</sup> stage, according to some neuroscientists. It's a spiritual ecstasy with neurological manifestations. It's not hallucination.

There are different views about defining meditation: some call it as "stability of mind", some call it "concentration on one target", one can say as "unified thought process", while others calls it a "thoughtlessness state". One considers it as "introspection", others as "lack of activity" or" leaving –giving away". While others define it as either "intentional self regulation" or "dedication process "or even "staying connected constantly to supreme force"... Whatever one calls it, basically it is a hard work. It demands highest form of discipline which comes through constant awareness, not only of the things about you outwardly, but also inwardly. According to shri J.Krishnamurthy, Its an effortless, choice less, constant neutral awareness.

# Benefits of Meditation

There are several advantages of meditation. Real meditation can restore physical, mental and emotional health. It can be helpful in controlling several lifestyle disorders, Psychosomatic disorders including high BP, coronary artery disease, diabetes, asthma, rheumatism etc. In this stressful life, it's a powerful weapon or antidote to acute as well as chronic stress. It improves concentration and sharpness. It reduces reactivity to a situation or a person, so one remains serene.

Actually a person who does meditation has a totally different attitude towards everything. Thus meditation improves interpersonal relationship, job performance, cultivate positive emotions and removes negativity of person. It helps in controlling anger and conquering fear. In all, it brings inner peace, patience and happiness and thus changes quality of life for better. Higher sate of meditation brings intuitive knowledge, healing power, magnetic personality and occult powers.

The neurochemistry of meditation is entirely the reverse of stress. Meditation up regulates parasympathetic system, while stress up regulates sympathetic system – responsible for increase in heart rate, respiration, blood pressure etc.

As per our oriental spiritual texts and our spiritual masters, we should meditate for much higher gain than above mentioned physical and mental benefits. The real purpose of meditation is taming the mind, elimination of ego and then elimination of mind itself, thus attaining Samadhitotal bliss. Here soul remains uninhibited, manifesting its complete knowledge, complete revelations etc. The state of self realization, God realization comes here. This is the part of Enlightenment and Liberation as per our masters and texts.

"However meditation is not a push button system. One has to have patience courage, hardwork and perseverance. This coupled with right guide, right technique, right understanding and real belief and dedication can bring success. There is a high failure rate amongst meditators, usually this is due to nonfulfilling of above criteria. It is said, that meditation has become a business of billions and many opportunists have misused and abused this sacred spiritual science. Therefore one should be careful.

There are several techniques of meditation. Basically all methods and practices of meditation come from basic eight (8) techniques.

one can focus on breathing, one can focus on an object (eg. light), focus on a sound, focus on a thought, focus on sensory perceptions, or on a sensual object. It could be a guided imagery or the meditation on the soul by the soul itself. Let us take one technique for example. i.e. focus on breathing.

Anapan Sati: This technique is about moment to moment awareness of one's own breathing. It is concentration or focus on breathing, but not a pranayam. Pranayam is controlling breathing, but here one has to see and know every natural breath that goes in and comes out. Just No other thoughts, no other objects. Be aware of your own natural breathing, moment to moment in an effortless, choiceless way. Please do not lose a single breath. When the mind gets distressed, as it usually happens with every beginners, one has to bring it back to breathing very quietly, without criticising or cursing the mind. With months and perhaps years of practice, one learns to be with every breath for several minutes to hour. This facililates the awakening process or enlightenment.

Here, there is no deity, no sect, no religion, hence it's perfectly a secular technique. Also breathing is a vital process, without it nobody can survive, therefore it's a vital technique. Breathing is always with you wherever you are and whenever you go, hence this is a hassle free, easy and handy technique.

You are alive, because you are breathing. This is a truth. One can't deny this eternal truth about existence. So when one concentrates on breathing, in a way one is perusing the truth. By perusing this truth, one is supposed to be near the ultimate truth. The enlightenment, as revealed by experienced sages.

Breathing is the carrier of our emotions .Our breathing changes with different emotions and perversions. With anger, hatred the breathing becomes fast. With jealousy, it becomes irregular. With love towards living beings it becomes slow, with compassion it becomes more slow and even effective.

So, for a regular practitioner of breathing meditation, it becomes a feedback of one's own emotions and perversions. It's an auto check mechanism and whenever there is a negative emotion, one becomes alert, as one's own breathing tells : look here, Something is wrong, control it! This is a wonderful reason, why breath practitioner becomes quiet, calm and compassionate and is always full of positive emotions/energy.

Most important: finally, our breathing is our own present tense, present moment. When we stay on breath, we actually remain in present moment i.e. "Now" ! our mind always fluctuates, between past and future, that is one of the major tragedy, root of our miseries. This meditation technique is a straight training of remaining in present tense. Though it is not easy to dwell on breathing, without losing a single breath; with hard work, dedication and commitment, this can be achieved.

Similarly, with all other techniques there is some science and some logic in each one of them. In meditation over thought, one has to either persue one and unified thought process e.g. a good or noble thought.or just simply watch the stream of thoughts, as they come one after the other, and the next..in a non judgemental way..a bare neutral awareness .Similarly for sound meditation, one can chant a mantra several times (loudly or internally without vocalizing) or listen calmly in a quiet place at night or in a jungle the subtle sound that enters the ears and concentrate on that. In object based meditation, one stares at the object continuously even without blinking eyes.

Based on these techniques, several masters have designed different methods. We know them as Patanjala Rajyoga, Anapan Sati, Smriti Upasthan, Vipashyana, Prekshadhyan, Jaindhyan, Transcendental meditation to name few important methods. Amongst others are Mantra dhyan, Zen meditation, Yoganindra, Nyas, Dynamic(Hoo Dhyan) meditation, Sahajdhyan, Tratak, Kayotsarga, Atitdhyana, Bhavidhyana, Swapnadhyana, Tahata, Spand dhyana etc. All our mistakes or Dosha or bad karma happen duringour unaware state. In Jain technical language it is called pramad. If one is aware moment to moment, one will be very cautious . Hence mistake or pramad (unawareness) does not occur. So Karmic dosha of thoughts, speech or deed are minimized. Lord Mahavir used to frequently say to his chief disciple Gautam"Please do not remain unaware even for a fraction of second. "Always be aware and watch your thoughts, words and actions so closely that nothing goes wrong anywhere.

If one understands the basics of meditation, one can really design one's own tailor made system, suitable to one. Initially one should learn one standard method, follow it for few years, then after mastering it, at some stage one can modify.

Most of these oriental techniques have come from teachings of Lord Shiva, Patanjali, Buddha, Adinath, Mahavir, amongst several others.

No one method is better than others really. All methods are great and equally beneficial. Comparison is dangerous and has no meaning. One has to choose the method that suits to one. One should remember that all methods teach to remain in present tense, this particular moment. Choice less, effortless, non judgmental awareness. This brings happiness and joy. As nicely described in Vipashyana Method, actually speaking, meditation is an operation of mind, by the mind. The tools of mind are calm and quiet mind, Awake and attentive mind, an equanimous mind. When this state is practiced several times over weeks and months and years, one achieves what is called mindfulness practice. Here meditator remains in a state of constant awareness in whatever he/ she does. Eating meditation, sitting meditation, working meditation, walking meditation. To achieve this, 3 rules are famous in esoteric circles.

- 1. Whenever the body is, mind should also be there without any exception. All activities of body are with full mind at every moment.
- 2. Develop wakeful plain observorship: Non judgemental. One learns to detach body from mind.
- 3. Ultimately know the soul with one's own soul. For the beginners, it may be worth observing total silence (No speech and no movement of body), as pilot exercise. Total isolation from all distraction is useful. Pranayam is helpful as warming up before each meditation session, though its not a prerequisite. A beginner may find it easy to do chanting (sound) meditation. Later focusing on object may be considered, with open eyes initially, followed by closed eyes. Focus on breathing and thought are harder meditation

techniques, but are equally rewarding.

# Health related Effects of meditation

- 1. During meditation oxygen consumption is reduced by 16%, even greater than the reduction of 12% that occurs during in sleep.
- 2. Diurnal fluctuation in secretion of stress hormone is much controlled, in favour of peace and harmony.
- 3. Neural structures that are intimately related to the control of the autonomic nervous system are activated, more of parasympathetic drive.

Because of several good effects on health, including control of several diseases, many doctors, psychotherapists and other health professional are increasingly adding meditation techniques to their practice of mainstream, as prescription. They consider meditation a key element of an integrated health program.

Here are certain diseases, where there is a documented effect of meditation in alleviating them or reducing their severity in varying proportion. You will find several studies of the positive effects of meditation in these diseases in medical literature on internet or journals.

- 1. Arthritis
- 2. Allergies
- 3. Asthma
- 4. Hypertension
- 5. Coronary artery disease
- 6. Irritable bowel disease
- 7. Heart burn
- 8. Constipation
- 9. Tension, Headaches and Migraines
- 10. PMS and menstrual discomfort
- 11. Menopausal problems
- 12. Pain in the back, hips and knees. Fibromyalgia
- 13. Depression and anxiety
- 14. Substance abuse
- 15. Skin disorders, eg. Psoriasis
- 16. Chronic fatigue syndrome
- 17. Stroke
- 18. Over weight with Obesity
- 19. Sleep disorder

20. Terminal cancer related pain and other problems In general, many psychosomatic and lifestyle disorders can be totally or partially eliminated with practice of meditation over a sufficient period. Stress can be very

nicely tackled with learning art of meditation.

It is estimated that people who meditated over a period of five years had over 50% reduction in doctor visits and hospital admissions. Contraindication: However, certain people should not do meditation. Those who are suffering from psychosis, severe depression or confusional states; extreme anxiety states & people who are demented can not and should not do meditation.

# Physiology of meditation

Meditation produces a specific physiological response pattern that involves various biological systems. Effect of meditation are on metabolic, autonomic, endocrine, neurological and psychological systems. These effect are multidimensional and interactive.

Neuroelectrical effects:

(A) EEG changes: there are usually four types of waves in EEG: alpha, beta, theta and delta. The meditation brainwave pattern is a combination of alpha and theta, where theta provides the depth & profundity of the meditation experience, the subconscious inner space from which creativity, insight and healing spring and alpha provides the bridge or the link, to the conscious thinking mind so that you can actually remember the content of your meditation.

Awakened mind brainwave pattern emerges with people doing meditation over years with perfection.

Regardless of their theology, philosophy or meditation technique, in higher states of consciousness, the meditators achieve peak experience, that can be found in all form of creativity and high performance.

In general amplitude of alpha wave improves with slowing of its frequency. Rhythmic theta waves appear & there is increased synchronisation pattern of alpha. There can be transcendental signal and dissociation of perception from the external sense organs. In chronic meditator, we find even gamma waves.

During calm & focused attention type of meditation alpha waves are found. During highly focused concentration high beta activity is seen, while theta pattern is seen during imagery and reverie and it improves creativity.

It is observed that even after first meditation session, in a beginner (common person) there is perceptible changes of waves.

**(B) Evoked potentials** Meditation sometimes produces altered amplitude with practitioner seeming to demonstrate decreased amplitude and lateucy for semory EPs. with mindfulness inducing a decrease in habitation. Neurobiology of meditation Neuroimaging with MRI, rCBF (regional cerebral blood flow), MEG (magnetoencephalography) and improved EEG (electroenphalography) allow detailed studies in understanding the effect of meditation on neural behavior.

Dr. Andrew Newberg et al from Philadelphia published a path breaking paper (Jan 2011), that revolutionized the belief of scientific world. It was a SPECT study on Buddhist lamas. It proved that higher meditative states are no more hallucinations, these are actual neurological events, a neurobiological phenomena.

1. The parietal lobe of the brain is thought to be responsible for giving us a sense of our orientation in time & space. By blocking all sensory and cognitive input into this area, meditation results in the sense of no space and no time.

During SPECT study, it was demonstrated that there was significant reduction of rCBF during depth of meditation by Lamas.

2 The second important finding was observed in prefrontal lobe. As we know, this area is well developed only in human race and therefore human have higher cognition, capacity of judgement, intuitive memory and complex tasks, including tactfulness along with rational evolved behavior with social etiquette. The more the developed area, the person is more intelligent. During deep meditation, it is recorded that rCBF increases in this area. I think, therefore all meditators doing the practice over few months to years, are cognitively more evolved and their behavior is more compassionate. Also it tells us that meditation is a higher state of consciousness.

These findings of SPECT study are reproducible, with different meditation.

FMRI studies also were conducted by different groups and the results were similar. In fact, FMRI studies literally unfolded the whole circuitry involved in meditation process and demonstrated the significant signal increases in the dorsolateral prefrontal and parietal cortices, hippocampal/parahippocampal formation, amygdala, temporal lobe, pregenual anterior cingulated cortex, striatum and pre and post central gyri during meditation.

This indicates that the practice of meditation activates neural structures involved in attention and control of the autonomic nervous system.

# MRI changes during Meditation

 PET, SPECT and FMRI allow examination of changes in regional blood flow, metabolism or receptor (sites of neurochemical and drug actions) activation in the brain in response to various tasks

- Most types of meditation, which involve an initial focusing of attention, are associated with increased regional blood flow or glucose metabolism in the prefrontal and cingulate cortex, areas that are important in selection of a mental task
- The frontal lobes, especially the prefrontal regions help to organize, prioritize, plan and focus attention
- During visualization regional blood flow increases in the "visual cortex" and visual association areas in the occipital lobes
- In contemplation of "self" the parietal lobes on both sides are activated
- Meditation appears to begin by activating prefrontal and cingulate cortex, associated with the will or intent to clear one's mind of thoughts or to focus on an object
- There also occurs deafferentation of PSPL, means a decrease in arrival of distracting stimuli to striate cortex and PSPL, enhancing sense of focus during meditation results in altered perception of selfexperience during spiritual or meditative practices
- Thalamus is a relay station and filtering station for sensory information that reaches the cerebral cortex for further processing
- During meditation the thalamus filters sensory input to part of the parietal lobe (the posterior superior parietal lobule or PSPL), involved in "body awareness"

#### decreased activation of the PSPL

- Increased thalamic blood flow during meditation implies that this is an active process of filtering of information and processing of information about the body
- Some studies during meditation show increased activity in the Hippocampus or inner aspect of the temporal lobe
- Hippocampus has close functional connections with hypothalamus and autonomic nervous system
- During meditation, integration of autonomic nervous system activity with different parts of brain involved in meditation is increased
- fMRI studies of Kundalini yoga support increased activity of hippocampus and amygdala in meditation
- Stimulation of right lateral amygdala results in stimulation of ventromedial hypothalamus and peripheral parasympathetic system associated with a subjective sensation, first of relaxation and later, a more profound sense of quiescence

# Neurochemical effects

Meditation has been shown to increase serotonin

production. Serotonin is an important neurotransmitter and neuropeptide that influences mood and behavior in many ways. Meditation has also been associated with increased melatonin availability. In general during meditation GABA is increased in dorsal raphae nuclei. Cortisol is decreased in paraventricular nucleus and B-endorphin diurnal rhythms are changed for better. i.e. peace and pleasure feelings.

Heart rate and breathing slows down during meditation and stress response is cut down. There is a relatively greater parasympathetic nervous system activity during meditation, so production of catecholamines are reduced. So the patients with hypertension, coronary disease and other stress related diseases are benefited.

Increased serotonin level helps improving mood of person with meditation. It is observed that there is increase skin resisitance with meditation. There is decreased limbic arousal, which in turn explains how, meditation strengthens and enhances the ability to cope with stress and reduces reactivity of a person. So these are the good effects on autonomic nervous system during meditation.

Effects of meditation on CNS is further seen as it accelerates neural conduction or augments the release of neurotransmitters, thereby decreasing synaptic time. This results in a change in muscle firing threshold and pattern. By inhibiting the left cortical hemisphere, the sense of time and logic no longer dominate consciousness during meditation. Therefore manifestation of ego is suppressed. The thoughts, desires, perceptions, perversions and duality all are reduced. As we know, these are all functions attributed to mind and hence the faculty of mind is reduced more and more with depth of meditation, particularly in long term practitioners. Once faculty of mind is reduced or controlled, the meditator enjoys enormous bliss and peace. This is because the root of our miseries is our own mind which is normally not in our control.

Recent Hypothesis in This Context

- When meditation acts as a constant repetitive stimulus, certain permanent qualitative and quantitative changes develop in nervous system.
- Neuro transmitters and neuro modulators may stimulate growth of dormant neurons to develop a centre higher than neocortex- God module.
- This higher centre will exert inhibitory control over present neocortex and thereby over mind as a wholethereby suppressing consciousness and all mental activities.

• Spiritual ascent is from the least evolved state of consciousness to near perfect state with which the mind itself will cease to be and there will remain only non-dual experience.

When meditation acts as a constant repetitive stimulus, certain qualitative and quantitative changes occur permanently...... Only Nondual experience.

As we see effects of meditation on metabolism, we realize there is decreased heart rate, decreased breathing and decreased B P.

By well documented studies it is shown that the blood flow to liver and kidneys is reduced with increase in cardiac output. The oxygen utilization level is decreased in muscles.

It may be worth noting, that the metabolic changes arise from a natural reduction in metabolic action at the cellular level, not from a forced reduction of breathing. All these transpire in to longevity and delayed aging, which we often observe in real saints and meditators.

At psychology level, meditator achieves improved cognition, increased concentration and reduced susceptibility to stress. Meditation enhances perceptual sensitivity. Most importantly it improves the attitude and personality of a person as studies reveal. The creativity and productivity of a person improve. Also the mood and sleep of meditator improves.

If we talk about most recent findings on neuroplasticity, a recent study showed that brain regions associated with attention, interoception and sensory processing like the prefrontal cortex, right anterior insula were thicker in meditation practitioners. Prefrontal cortices thickness was most pronounced in older participants. This can be explained by the fact that meditation probably offsets age related cortical thinning. In general, meditation practices promote neuroplasticity.

Looking to all above positive benefits of meditation, at physical, mental emotional and spiritual levels, we can conclude that meditation is an invaluable treasure, that we have lost in the stride of day to day hassles and plights.

Actually, pain may be inevitable, but suffering is optional. We all have problems, several problems. But, we must realize that there is a cause behind our problem. If we pinpoint the cause (root of our miseries) than we also know that there is a way out. If we follow that path, our problems will be solved. We will get peace, joy and inner happiness.

The root cause of our problems/miseries is our own mind. The thoughts, desires, emotions, ego, perceptions, attitude etc. cause the problems. If we tame our mind, the miseries will be gone. The powerful way to tackle our mind, is meditation.

At the end, let us remember immortal statements of versatile masters and teachers of meditation and salvation.

- Lord Mahavir: Please remain aware at very second, at every fraction of second. Please do not be unaware (pramad) and watch and guard your every thoughts, every words and every actions.
- (2) Lord Buddha: (At his death bed) Monks; whatever is composed will decay. Continue working in the direction of your salvation, sincerely, incessantly
- (3) Swami Vivekanand : (last sentence of his life)Wait and meditate, till I call you back.So let's meditate from today and now! From this moment on!

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- Several papers and publications from Rajyog, Sahaj Yog and Transcendental meditation techniques. (available on internet)

# **Preparation and Arrangement of Manuscript: Instruction to Authors**

- Authors should keep their manuscript as short as they reasonably can.
- Manuscript should be typed in ARIAL font and size 10pt.
- Page number should appear in the upper right hand corner of each page, beginning with the title page.
- The language of manuscript must be simple and explicit.
- Author's /co-author's name or any other identification should not appear anywhere in the body of manuscript to facilitate blind review.
- The total number of words should not exceed 8000.

# Title page

It should be paginated as page 1 of the paper. It should carry the title, author's names and their affiliations, running title, address for correspondence including e-mail address.

Title: must be informative, specific and short and not exceed 150 characters.

# Abstract and keyword

It must start on a new page and it should not exceed 250-300 words. The abstract must be concise, clear and informative.

The abstract must be in a structured form consisting of objective, methods, results and conclusions briefly explaining what was intended, done, observed and concluded.

# Keywords

Provide 3-5 keywords which will help readers or indexing agencies in cross-indexing the study. The words found in the title need not be given as keywords. We suggest the following structure of paper: Introduction, Experimental. Results, Discussion and conclusion, References.

### An example of references is as follows:

#### **For Journal Articles**

 Snowdon J. Severe depression in old age. Medicine Today. 2002 Dec;3(12):40-47.

**Reference type -** Standard journal article – one author

In-text examples- As highlighted by Snowdon,18 ....

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Continued on Page No. 89

# Self Intraction of Karma and Genes in The Light of Jaina Philosophy



#### **Correlation Between Karma and Genes**

In psychology, the difference between the living organism (jīva) and life is very specific. The study of karma theory makes the difference quite clear. Heredity is related to life, in the same way karma is related to jīva, in which all the karmas and reactions of so many prebirths are accumulated in



the form of karma śarīra.<sup>1</sup> So the individual's ability and extraordinary talent based not only on present life, it can be traced out beyond it in the accumulated karmas bonded with jīva i.e. karma śarīra.<sup>2</sup>

Biology believes that the important component of the body is gene. It is the characteristic formula, it is very subtle. Its subtleness is merely a hypothesis. Where does our consciousness reside? Whether it is present in chromosomes or genes? That is why, so much difference is there from man to man. Everyone's self-exertion and consciousness are not the same. As per the doctrine of karma, the cause of this dissimilarity is due to "karma."<sup>3</sup>

Once Gandhara Gautama asked Lord Mahāvira:<sup>4</sup> kammoan bhante jīve no akkammaō vibhakti bhavan pariamaī. There appears dissimilarity in whole world, some possess less knowledge and the other possess more. What is the reason for this? Mahāvīra replied, "Karma is the cause of this



dissimilarity." If a biologist of today is asked this question, he will reply that the root cause of all dissimilarity is "gene." The characteristics of genes and chromosomes determine the human personality. His temperament and behaviour becomes the same as the genes are. This gene is responsible for all dissimilarities.<sup>5</sup> As per biology, every gene contains sixty lakhs orders in it. As per the doctrine of karma, on every karma particle written

#### infinite instructions.6

Now science has reached only upto the genes. It is the component of physical body, but karma is the component of subtle body. Inside this physical body lies astral body—the electric body which is subtle and karma śarīra which is subtler than that; it is the subtlest. It's every part has infinite inscriptions. All records of our selfexertion, of goodness, of bad works, of limitations and of specialties are inscribed in the karma body. Man behave according to vibrations received from karma śarīra. The theory of karma is very subtle. It is the theory beyond the subtle intellect. Science of the genetics has helped us in understanding this theory of karma.

Genes are the transporters of heredity characteristics.<sup>7</sup> The difference, perceptible in every man, is due to the genes. For every special characteristic, a special type of gene exists. These laws of heredity are the messenger laws of karmavāda.8 The travel from the physical body to the subtle body is very important in itself. This body is physical, and it is made of subtle biological cells. There are about 100 trillion cells in human body. If these cells are understood, according to the Jaina Philosophy, that at the point of a needle, infinite nigoda jīvas be accommodated there.<sup>9</sup> Nigoda is one of the species of vegetation. It is a subtle thing. But the present science also postulates many subtle concepts. There exist trillions of cells in our body, and they contain the chromosomes, and every chromosome is made of one-two thousand genes. There are 46 chromosomes in one cell in our body which are made of genes. Genes are very subtle.

If a comparative study is made—the heredity, genes and all the chemical changes all three are the doctrine of karma. Gene is the component of our physical body, and the karma is the component of our subtler body (karma śarīra). Both are related to the body. Ācārya Mahāprajña says that genes not only transport the traits of parents, but they also represent our bonded karmas.<sup>10</sup>

# Parapsychology

The parapsychology comes closer to find the answer as to what is behind genes. They claim that we have an unconscious mind and a subconscious mind. As per Jainism, the unconscious mind is karma śarīra and the sub-conscious mind is taijasa śarīra (leśya and bhāva

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are produced by taij asa śarīra). They talk about things that are controlled by other than the senses. They talk about ESP (Extra Sensory Perception), telepathy (sending thoughts/feelings from one person to another), Clairvoyance (awakening of objects or things without the use of senses), pre-recognition (knowledge of future events) and psychokinesis (the power of mind over matter). Avadhi jñāna (knowledge limited by area, time and feelings), manahparyava jñāna (knowledge of other's thoughts) and kevala jñāna (perfect knowledge), these three knowledges are not dependant on our senses and mind. Karma śarīra and its effect on our soul are behind every thing. Similarly, karma śarīra is behind genes also.<sup>11</sup>

# Gode Gene

The spirituality gene (VMAT2 or God gene) gets activated when a person feels inner need for God and devotes himself\herself whole heartedly spiritual to pursuits. When young Vivekananda requested Ramakrishna to pursued Goddess Kali to give him



wealth, the sage advised him to ask the goddess directly. Facing the goddess, Vivekananda asked for wisdom and enlightenment instead. What could have promoted the young man to desire enlightenment and not wealth? In the light of genomic findings, we may see that he was promoted to do so by the spirituality gene.<sup>12</sup>

# Karma Plays Role Through Genes

Is there a possibility that the psycho – somatic effect of committing a sin or crime can cause an epigenetic change in a person and whatever the consequence of that change will get transmitted to his or her offspring? So far no scientific evidence can be provided for that possibility. Perhaps "karma" will prevail over dogma. Such misperception of genetics sounds-strange as this might seem at first—like the common use of the Sanskrit term "karma" often defined as the "law of cause and effect." Both karma and genetics are frequently used to refer to something predestined fate. "But karma provides the situation, not the response to the situation," according to Śambhālā dictionary of Buddhism and Zen. Further under the title "Karma" in another book by the same publisher says; "Future conditions depend on what we do in the present, substitute "genetics" for "karma".13

# Genes are Because of you and Not Vice-Versa

The extract of Jaina Philosophy, in the form of formulas, has

been given in "Tattvārtha Sūtra." If these formulas are analyzed in the light of cell, nucleus structure, genes and genetic codes provide us a new vision, and it clearly appears that karma, in one or the other way, is certainly attached to these controller units the genes. Every cell has a nucleus, the nucleus



possesses the chromosomes which are made of DNA.

The structure and function of body of every living

being is according to their chromosomes. In conducting life, at every stage, protein of one or other type is necessarily required and its formation is only done by some specialized genes.14 These genes are ever changing and this change "mutation." called is According to mutation, the changes happen in



the characteristics of every living organism. In this way, all the activities of a creature, its destinies, its forms, according to the "Jaina Doctrine of karma," are decided by karmic particles (karma) and according to biology, are decided by genes. According to this research work, karmas are the cause and genes are their effect (fruits). Karmas direct, instruct and motivate genetic codes and genes to function and mutate accordingly.

Every creature gets the different types of body according to its bonded karmas. It is only due to the consequences of karmas, one is born blind, sans intellect, some remains dwarf (short structured) and other is quite tall, some is born with fair and the other with dark complexion, and these are all done by the genes. Only due to the genes, the structure of the body of creature takes place and certain genes also decide the gender of a living being like man, woman or eunuch. The fundamental compounds of genetic code—glucose, phosphate and alkalines finally having inalliance with elements like nitrogen, carbon, hydrogen, oxygen, etc. and make the genetic codes. These elements pervade in our environment. This research work brings the possibilities that the invisible Pudgal as (karmic particles), i.e. the karmas, create the genes.<sup>15</sup>

# Effect of Karma Over Genes

When the living organism performs the various activities, it attracts the karmic particles all around it. According to one theory of physics, all inert matters, due to their present heat, radiate the electromagnetic rays. When any creature (jīva) is attracted towards anything living (animate) or inert (inanimate) the living being (jīva) according to the intensity of his/her passions and yoga, adjusts clock frequency equal to the frequency of that thing, such condition is called the stage of attraction. In this state of intense attraction, the creature (jīva) and the matter (pudgala) different frequencies pass through any matter, its effect is marked in holograph form in that matter. Similarly, due to its attachment and aversion, the holograph is imprinted on the soul of creature (jīva) in positive or negative charge.<sup>16</sup>

Even the modern scientists have begun to believe the presence of invisible fine matter particles around human body. Those particles are karmic particles, i.e. karma vargana, which ultimately become karma when attracted by jīva due to its activities.<sup>17</sup> The way in which radioactive elements keep on radiating the rays for millions or billions of years very slowly. Similarly, the karma particles radiate special types of rays. It should be understood here that the changes in living beings (jīva) occur mainly due to these radiating rays.

#### Karma and Gene

All the characteristics of every living organism are carried by its chromosomes in the form of genes. These chromosomes are packed in the cells and the body is formed by many cells put together. So in every cell similar type of genes exist, but at the same time it is necessary that some genes should



remain inert and some active during a certain time. This process is very complex.<sup>18</sup> It is believed that in developed complex creatures (jī vas), during a certain time only, upto 2-15 percent genes remain active.<sup>19</sup> How the various creatures (jī vas) function under whose control? This research work supposes that the creature's active or inactive state, the karma particles (karma) are the only

cause for it.

Keeping the genes active or inactive is done by harmones,vitamins, minerals, chemicals and immune system.<sup>20</sup> It is believed that the genes are controlled by the environment around it, cell nutrition wrapped around the genes, and the temperature of the light.<sup>21</sup> Thus, genes are the deciding factors for the various characteristics of a living organism (jī va) and genes are controlled by some known or unknown causes and these causes are certainly the karmas of an individual.

# Change of Modes, re-birth and Genetic Codes

The nucleus of cells and the existing chromosomes and the genes thereon (which are formed by meeting of genetic codes) control the various activities of the organism (jī va) and on these genes and genetic codes, the karma waves exercise its definite control and regulate the life. There is an interesting fact here that all big or small subtle creatures or plants contain the same genetic codes.<sup>22</sup> Thus, right from amoeba to man, the life deciding fundamental genetic codes are the same. So the theory of rebirth gets force from this principle of same genetic codes.

Perhaps the karma particles controlling the genetic codes regulate them for the next birth/modes and give them such a serial system that the soul migrate in search of further body, having left its own body. According to the karma reward, genetic codes and fate, soul reaches such a body and place and further develop it. This can be interpreted that karma śarīra of that nature is formed which can easily fit in such created genetic codes and the soul begins a new life in the new body. Again, having the genetic codes of a living being—a cow, a lion, an insect, a bird, or any form of creature can be created.

So on the basis of the study of biology, it appears that every control on the life of every creature is conducted by the genes and the genetic codes. It is this karma-body, which perhaps controls the genes and gives favourable or unfavourable results and decides the forthcoming body. If this hypothesis is tested in a laboratory, it



will be found that man's thoughts and actions attract such atoms around him which further give him happy or tragic results. Telepathy and Reiki therapies have given such

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results. Through these therapies, one man's thoughts are conveyed to the other man and affect the other man to a great extent. Research done in this direction will be able to prove this biological hypothesis. This theory will help us lead a happy, contented and balanced life and a new happy contented society will come into existence.<sup>23</sup>

One germplasm contains many chromosomes. These chromosomes have genes. In fact, only the genes are the messengers of virtues and vices, they are the cause of virtues and vices. According to genetics, every embryo contains 23 chromosomes of father and 23 chromosomes of mother.<sup>24</sup> The biologists guess that due to the meeting of these all chromosomes-16, 77, 216 kinds of various similarities are expected.<sup>25</sup>

Till now the science of genetics has reached only upto genes. It is one of the component units of this gross body, on the other hand, karma is one of the component of our subtle body. Inside this gross body (sthūla śarīra) resides the astral body (taijasa śarīra). The more subtle is the karma body, and it is the most subtle body.<sup>26</sup> At every limb of this most subtle body is written the account of our self-exertion of our virtues and vices, of our limitations and of our reactions. The human starts behaving according to the vibrations coming from karma śarīra. Ācārya Mahāprajña writes, "the genes not only bears the genetic traits of its parents, but these also represent the karmas performed by the individual.<sup>27</sup>

One scholar tells us that the controlling elements of our body have been found out and it seems to be a great achievement. Today, through the genetic mapping, all the genes have been found out which control the various states of our traits. We have also discovered all the sequences of genes set up, and everyday new researches in this field are revealing new knowledge about the genes. A group of researches led by Paul Thomasan of the University of California of Los Angles has given clear evidence that intelligence is largely determined before birth.<sup>28</sup> Still the whole puzzle, regarding all the traits of human beings, has not been fully solved. But the Jaina karma theory-describes elaborately about the karma particles-and these karma particles determine not only the characteristics of the body of jīva but also its happiness, sorrow, perception, age and gotra are also decided.29

Thus, the genes and genetic codes to which the scientists are considering supreme of all are the only particles functioning under the karma vargaās. It requires a great research because while science has stopped only on body characteristics, on the other hand, the doctrine of karma has gone far ahead of it. Genetic science states that they have found out only those atoms which determine our characteristics, but the doctrine of karma goes upto the kārmaa body and describes many more characteristics. The doctrine of karma also describes how āsava karma sticks to soul and how āsava can be detached from soul. It also says that the unwholesome karmas can be removed by austerities and the state of joy can be achieved.<sup>30</sup>

It is sure that mental as well as intellectual merits of genes are necessarily affected by a man's prebirth internal state, i.e.nature, and also by the after-birth, outer environment such as air, temperature, light, moisture, nutrition, etc., i.e. nurture.<sup>31</sup> If two identical twins are kept separately in the outer environmental conditions, their body structure, their personality and mental characteristics will greatly differ from each other. Whereas both have the same genome structure and similar development of the embryo. These two identical twins, in spite of having similar internal and outer environment, their original form will differ. These factors clearly indicate towards karma—the controlling factors and existence of soul. After a thorough research of Jaina Theory of Karma, the described consequences may be achieved.<sup>32</sup>

# The Scientific Communistic Thought of Jainism

According to the modern anatomy, all creatures have the same genetic codes—fundamental building blocks of life.<sup>33</sup> It is only due to the mutation of the genetic codes, different types of species of creatures—right from amiba to man, take birth. Thus, the doctrine of Jaina karma believes that all the jīvas are possessed with similar soul and similar capacities but their different karmas provide them different bodies.<sup>34</sup>

First of all, it should be made clear that every incident does not occur only due to karma. Karmas are not all in all. If we believe that whatever happens is subject to karmas only, it will be such an explanation that the thiest (believer in God) says that every thing happens only due to the command of God or all that happens is subject to fate (fate or pre-destined), we cannot introduce any change.

If karma is believed to be all in all, there will be no room for self-exertion to eliminate them nor there will be any possibility for achieving salvation (moksha), because as the karmas are done, so do they rise and reward the doer, and he or she will act according to them and bear further bondage of karmas. If it is so, then the thought of self-exertion and salvation will prove wrong. Thus, it is proved that karmas are not all in all.

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Karma is not an autocratic dominion. It has also a check on it. Changes can be made in karmas. Lord Mahāvīra says, "performed karma will give its fruits," is a general principle, but there is an exception to it. In karmas, Udīrā (to attract premature karma), Udvartana (lengthening of karma period), Apavartana (shortening of karma period)



and sankramaa (changing nature of karma) all these stages are possible, and changes can be introduced in the karmas. Thus, we can say that due to self-exertion eradication of karmas can be done even before their maturity. Their duration and intensity can be minimized or maximized and one nature of karma can be changed with other subgroup of the same nature. The karma which has come in rising, their reward can be subsided for a time, they can be made incapable for a certain period in their reward. This process is called "upaśama."

According to Ācārya Mahāprajña "The theory of

sankramaa," is the theory of mutation of gene. One important thing worth paying attention is that the rise of karma takes place according to substance, area, time, mode and state of living being. This rise depend upon medium and rewards accordingly. Let the paincausing karma rise at the same time in two different



persons, and one person listens to the religious sermons and devotional songs, the other one is kept in a closed room doing nothing. The pain causing karma will cause more pain to the second person in comparison to the first person who spends his time in listening to the religious sermons and devotional songs. There is a psychological reason of it also.<sup>35</sup>

Thus, we reach the conclusion considering all the above facts that in building personality, karma is not all in all, but heredity, environment, geographical location and ecological conditions all effect nature and behaviour of man. Nāma karmas are not all in all. In facial and body formation of man, effect of the place and time can easily be perceptible on human physique. If two children are born to a mother—the one in some cold country and the other in some hot country, the child born in a cold country can comparatively be more fair than the other child. If some person begins to live in a cold country, his complexion will change. According to Ācārya Mahāprajña, the change of genes and the chemical changes bring change in human personality.

Āyuya karma is also a karma. But the outer mediums like poison etc. can minimize life span of a creature. Similarly, if some change is made in chromosomes and genes, a person's physique can be changed. Thus nāma karma alone does not decide human physique but environmental conditions can bring change in human physique. If we produce carbon copy of donor parent (i.e. clone) by changing nucleus of the cell by a special scientific method, the theory of karma is not violated because Sankramaa is possible in karmas.<sup>36</sup>

# Functions of Genes on All 24 Chromosomes

The principal role of genes in all the 24 chromosomes of human has now been identified.

#### Chromosome 1: Genes in

chromosome one contains the record of past lives. This can be compared with Kārmaa śarīra nāma karma.

**Chromosome 2:** Genes in chromosome two contains the history of journey leading to human life. It has details of birth in various species we lived before. It is comparable with gati nāma karma.



**Chromosome 3:** Contains evidences for the entire past history in the form of genes. This is comparable with Āyuya karma.

**Chromosome 4:** Genes on chromosome 4 contain information about our future. This is also comparable with Āyuya karma.

**Chromosome 5:** Genes on chromosome 5 are very sensitive to environment and contain information about our immune system. This is comparable with body nāma karma.

**Chromosome 6:** This is the intelligent chromosome. Genes over this chromosome are the basis of our intelligence. It has been shown that in some cases intelligence is hereditary. This is comparable with jñanāvara kyopaśama state of soul.

**Chromosome 7:** Genes over chromosome 7 contain those characteristics which determine our behaviour as human being. This is comparable with gotra nāma karma. (Uccagotra and nīcagotra)

**Chromosome 8:** Genes over this chromosome contain information about our liking and choices. Our habits and natures are stored and transmitted to next life. This means that our merit and demerits are also influenced by hereditary factors i.e. genes. This is comparable with sātā and asātā vedanīya karma.

**Chromosome 9:** The genes of chromosome 9 determine the blood group. This can be compared with body nāma karma.

**Chromosome 10:** This chromosome contains the gene CYP17, which produces an enzyme that converts cholesterol into hormones called cartisol and testosterone. These hormones produce stress in the body. This is comparable with asātā vedanīya karma.

**Chromosome 11:** This contains genes, which influence our personality. This is comparable gotra nāma karma.

**Chromosome 12:** Genes of chromosome 12 are self assembled. This is responsible for mental retardation. This can be compared with jñānavara and asātā vedanīya karma.

**Chromosome 13:** Genes of this chromosome store characteristics of past lives. This is comparable with Āyuya karma.

**Chromosome 14:** The genes of chromosome 14 are of indestructable nature and are responsible for brain diseases. This can be compared wit h asātā vedanī ya karma.

**Chromosome 15:** The genes of chromosome 15 determine male and female gender. This can be compared with puruaveda and strīveda nokaāya mohanīya karma.

**Chromosome 16:** The genes of this chromosome contains memory. This is comparable with darśanāvara karma kyopaśama state of soul.

**Chromosome 17:** Genes of this chromosome decide the life span. This is comparable with Āyuya karma.

**Chromosome 18:** The genes of chromosome 18 help in recovery from illness. This can be compared with Sātā vedanīya karma.

**Chromosome 19:** This chromosome decides fertility. This can be compared with purua and Strīveda nokaāya mohanīya karma.

**Chromosome 20:** The genes of chromosome 20 destroys immunity. This can be compared with asātā vedanīya karma and body nāma karma.

**Chromosome 21:** Genes of this chromosomes produce diseases in body. This can be compared with asātā vedanīya and body nāma karma.

**Chromosome 22:** Genes of chromosome 22 characterize freedom of thoughts. This is comparable with jñānāvara karma, as well as kayopaśama of the soul.

**Chromosome 23:** The genes of chromosome 23 produce muscle degeneration. This is compared with body nāma karma.

**Chromosome 24:** This chromosome is governed by the SRY gene of testis—determining factor. This leads to testicle development. This can be compared with puruaveda nokaāya mohanīya karma.<sup>37</sup>

# Conclusion

The law which regulates the doctrine of karma is based on the principle of "Cause and effect". The saying "as you sow so you reap" present the whole doctrine in a nutshell. Every action, whether mental, vocal or physical, is a sowing of the "seed", or in the technical language of Jaina Philosophy the engendering of karma. In the act of sowing the seed or engendering the karma, the soul has the choice of acting or retaining from action, but once the seed is sown or karma engendered, its freedom is replaced by an inevitable liability to bear its consequences. This is what constitutes the bondage of soul. Karma, therefore, is a kind of force, which compels the soul to bear the consequences of its right or wrong actions, and this force originates in the very action itself, which is performed by the soul and at the very moment of its performance.

We are basically made up to cells. Every cell has a nucleus and cytoplasm. Nucleus has chromosomes. Each chromosome has many genes. Genes are made up of DNA molecules. Our vital activities are governed by the genes. No two persons are similar in their genetic constitution. We work differently because of our difference in genetic constitution. The activities of genes are governed by the environment. It is the environment which modifies the expression of genes of the individual. Therefore if a "bad" individual is put up in "good" environment, his bad activities (papa karma) will be reduced to some extent and vice-versa, so the role of environment is equally important for the "papa karma" and "punya karma" activities of the individuals.

The doctrine of karma conceives karma as constituting a very fine kind of matter aggregates. All living beings of world contain the same genetic codes. This research work bring forth the possibilities that the individual pudgalas (karmic particles or karma varganas) i.e. the karma create genes. Genes and karma both determine the life cycle and inheritance of all living beings. Genetic science says, "we are what because of our genes. Tirthankaras have said since very beginning "we are what because of our
karmas". Genes not only bear the genetic traits of their parents but these also represent the karma performed by individual. Karma body possibly controls the activities of the genes. With this research work I arrived at the conclusion that karmas are the cause and genes are their effect (fruits). Karmas direct, instruct, motivate genetic codes and genes to function and mutate accordingly.

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## Knowledge, Order and Evolution



Dr. Surendra Singh Pokharna

## Abstract

This paper continues with the idea presented by the author in the first conference held in Bangalore by Gyan Sagar Science Foundation. In that paper (GSFB) limitations of scientific knowledge were elaborated along with a need to explore General Systems Theory. Also a new concept of knowledge as being structured in the consciousness as mentioned in Jainism was discussed. In this paper, we attempt to explore a new concept of evolution which involves an increase in orderliness at various levels along with increase in meaningful knowledge. It is argued that Darwin's principle of evolution which is very popular these days and largely affect decisions while handling competition among human beings and other living systems, needs to be critically examined and reviewed in light of several objections raised against it.

It is also illustrated that scientific knowledge is just a subset of a much wider concept of knowledge which is structured in the consciousness. Actually all human beings regularly interact with other human beings and the environment develop some concept of knowledge about other human beings and the surroundings including physical systems, which need not be only scientific knowledge in the strict sense. Thus one needs to explore concept of knowledge in a broader perspective. The ideas of knowledge as mentioned in Jain philosophy that actual knowledge is structured in the consciousness needs to be examined in the light of problems faced in the modern science. Actually in Jainism, it is even mentioned that knowledge structured in the consciousness can be fully realized when the obstructions caused by material particles are eliminated. Hence in this state of absolute purity, a pure soul has infinite knowledge. In addition, Jainism, talk of knowledge and order, which is very similar to the concept of information and order in General Systems Theory (GST).

Not only this they also talk of spiritual evolution of a worldly soul which can become pure and pure at every step of evolution. Some fourteen stages of evolution are defined which are known as Gunasthanas. It is stated that with higher states, one's soul becomes more and more pure and it becomes more and more "orderly", in the sense that the knowledge content of the soul increases and quantity of material particles (karmas) decreases. In addition, their concept of knowledge is much wider than that of scientific knowledge as it includes basics of scientific knowledge along with new concepts of knowledge like telepathy and clairvoyance. It appears that when one acquires keval jnana, then all other types of knowledge disappears and only one type of knowledge known as keval jnana remains that is one has absolute knowledge of the world. It has been also suggested that this state of keval jnana could be similar to the implicate order of quantum mechanics. Finally it is concluded that the increase in this spiritual order could be accompanied by a decrease in the rate of entropy production in the biosphere. This type of order has been illustrated through extraordinary memory and grasping power of Swamy Vivekanand and satavadhanies (GSFB). It was mentioned that using advanced telepathy, Jain aacharyas might have even estimated sizes of smallest particles of matter. Hence this concept of evolution may provide a new concept of evolution which could be very different from the Darwin's principle of evolution and the concept of economic development which are essentially responsible for several problems of the modern society. Such a new concept of evolution can provide new avenues of thought. A new finding in psychology that decision making may follow laws similar to quantum mechanics can easily explain why a rigorous set of rules have been laid down in Jainism for monks and shravakas and shravikas to achieve higher states of orderliness by rigrous practices through five mahavratas and their detailed implementation procedures.

**Keywords:** Order, Evolution, General Systems Theory, Knowledge of consciousness, Gunasthans, Darwin's theory of evolution, Keval Jnana, Quantum Mechanics, Implicate order, Entropy, Spiritual processes

## Introduction

Science and technology and their use in economical developments and commercialization have revolutionized the whole world in such a way that everything appears

to have changed in last 100-200 years. Developments in the field of space technology, atomic energy, electronics, biotechnology, modern agriculture, telecommunication, and manufacturing systems are some of the examples of these changes. Also these changes have played a key role

Corresponding Auther: Dr. Surendra Singh Pokharna Consultant, Hitech Outsourcing Services, Ahmadabad, Former Scientist (Indian Space Research Organization) Email: sspokharna15@yahoo.com, User ID: GSF/BA/11-12/00042S in making this world truly global. However, they have also resulted into an increase in population, depletion of natural resources, damage to the environment, increase in terrorism, threats of nuclear wars and so on. However, because of these changes and domination of science and technology in all walks of life, an impression has been created that scientific knowledge is the supreme and anything other, which does not fall into this domain is not very relevant. But Science and technology are just two hundred years old only and there was a concept of knowledge and technology even before the modern science came into existence.

One finds that population increase, increase in consumerism, along with overemphasis on only on economic development are the major causes of many of these problems. However, these three are ultimately related with scientific advancements their technological and economic exploitation by human beings in last 200 years. Actually to define development in terms of economic term only, has done tremendous damage to the environment because it has encouraged consumerism and has confined the economic powers to certain individuals or groups or nations who took a lead in the direction of this type of development (Wolf Gang Sach). Not only this further spreading of this concept of development took place in the whole world by the western world through agencies like World Bank, United Nations and International Monetary Fund and others. In this process, other concepts of development like spiritual development and other ethical systems have been left aside or are getting diluted.

Actually, if one goes into details of these problems then one finds that actually scientific methods developed to study physical systems are not adequate when biological systems, social systems and human systems are considered (Goldsmith 1990, Penrose 1990, John Gigch, 1978, Bertalanffy, 1976, Pokharna 2009), because all biological systems are essentially irreversible in nature, that is they grow and decay and they are also open systems compared to the physical systems which are closed systems. So the biological and social systems can not be strictly subjected to the process of measurement and hence they are not exactly describable in the strict terminology of the physical, sciences (Goldsmith 1990, Jones 1990 and Penrose 1990). Also any type of experimentation is not possible in case of human system as they have memory, free will, creativity, tendency to interact strongly with other fellow beings and the environment. Furthermore there are micro controls in the form of thought processes which cannot be easily adjusted in any planned "scientific experiment". They

also have a property of infinite amplification (Rudy, 1983) because of the thought processes, which makes it difficult to study human beings in a strictly scientific way. Expressed in a different way, it is now felt that the standard concepts used in any scientific study have their basis in compartmentalization, reductionism, causality, mechanism, induction, empiricism and passivism etc. (Goldsmith, 1990, Jones 1990) so they cannot be used to strictly study the biological systems and social systems in general and human systems in particular. Hence even the study of interaction of human systems with physical systems needs closer examination.

Not only this the basic parameters used in science like energy, mass, linear momentum and angular momentum are defined basically for isolated closed systems, so they may not be the best choice for describing the biological and social systems (Penrose, 1990). Hence alternative concepts like order, entropy and information will be better for understanding of the modern problems. Limitations of scientific methodology are also brought into light through the Godel's incompleteness theorems (Penrose, 1990, Pokharna, 2006), which have compelled the scientists to consider the concept of consciousness in a more serious way and also revise the concept of knowledge in a fundamental way (Goldsmith, 1900, Pokharna 2006 and Pokharna 2009). It appears that the concept of knowledge as mentioned in the Indian philosophy needs to be closely examined in view of the these problems mentioned above. As per the Indian philosophy in general and Jain philosophy in particular, knowledge is structured in the consciousness and what we discuss as scientific knowledge could be just a small part of this grand knowledge.

Finally Darwin's principle of evolution which talks only of natural selection and too much emphasis on its education has also done tremendous damage to the environment (Goldsmith 1990 and Dennet 1995) because other ethical systems based on the rules like "Live and Let Live" have been ignored by the scientific community and educationists (Pokharna2006).

Hence General Systems Theory (GST) should be used for better understanding of the whole problem because by its intrinsic nature, GST can give a better picture of the interconnectedness of various components of the Human-Earth-atmospheric system (John Gigch, 1978, Bertalanffy, 1976, Stephen and Handmer 1992). It is finally a problem of order and knowledge (Pokharna, 1985, Pokharna 2006) at all levels and we should talk of development of order and evolution of order for complete understanding of development.

For sake of illustration, some examples of entropy production are given from different walks of life along with those of Order. Attempt is then made to identify processes where entropy production can be reduced and orderliness can be increased. In particular, it is observed that spiritual processes mentioned in Indian philosophy could provide new direction for development and evolution which may be accompanied by reduction in entropy production in the atmosphere. Hence the Jain concept of evolution of a soul is described in detail and is compared with the Darwin's principle of evolution. Fourteen stages of evolution known as Gunasthanas in Jainism (Dharma Chand Jain 2008) are mentioned with their brief description. It is indicated that they involve some kind of "order" built up into them. As knowledge is an intrinsic part of soul, it appears that with spiritual evolution of soul, their claim about types of knowledge and even Extra Sensory Perception (ESP) needs to be explored by the scientific community in a systematic way.

Three examples are given to explain order in human's brain that is to illustrate a highly ordered state of consciousness through extraordinary memory of Swamy Vivekananda,. The second example deals with shatabdhani who has extraordinarily "ordered" mind and a third example shows an attempt being made by ancient Jain acharyas to estimate size of smallest particles of matter through this knowledge structured in the soul. This may inspire the scientific community to take up the concept of consciousness, order and spiritual evolution in a serious way, because they might directly lead to new concepts of development.

Not only this, the concept of implicate order of quantum mechanics of David Bohm's (1951) needs to be explored for its similarity with the concept of Keval Jnana. Also it has been recently observed that that thought processes and decision making in our brain follows rules similar to that of quantum mechanics (Mark Buchanan (2011). Hence there can be lot of uncertainty in human's decision making. This is similar to strict following of rules of Jains so as to evolve in the correct direction of purifying the soul.

Many of the details are already covered in first paper and so will not be repeated here. So section 2 describes the materials and methodology used. Section 3 and elaborates limitations of science as applied to living systems and need to use General Systems Theory along with concept of knowledge. In section 4, concept of science, technology, economic development and generation of entropy is dealt with. In section 5, Darwin's

principle of evolution is mentioned along with damage done to the environment and the society. Section 6 explains that concept of development and whether it should be linked with knowledge, entropy and/or order. In section 7 some examples of order present in nature are given. Section 8 describes the process of evolution of soul as given in Jainism and describes fourteen gunasthans and their twenty nine parameters to describe them. Hence a need to define a new concept of ORDER as a criteria for development and evolution automatically comes out from this. Section 9 gives some examples of orderliness as mentioned among various group of people in Jainism. Section 10 then describes methodology and mechanism to acquire this order and reduce entropy at various stages of evolution. Section 11 gives examples of spiritual order with a quantitative evidence about sharp memory of Swamy Vivekanand and two examples about shatabdhanies, who have a capacity to memorize 100 different events and work up on them together. Another example deals with a possibility that through a high ordered state of mind, it might have been possible to estimate size of smallest particles of matter. In section 12, a hypothesis is put forward that spiritual processes may be defined as that set of processes in which rate of entropy production and total entropy decreases. Section 13 provides a list of procedures to reduce entropy and increase in orderliness in the society. Section 14 then talks of role and importance of consciousness and fuzzy nature of human decision making similar to quantum mechanics in taking a decision at a micro level (Buchanan 2011). Section 15, we compare the Darwin's principle of evolution with the spiritual evolution of Jainism. Results and Discussion are given I section 16 and Conclusion are given in section 17.

## Materials and Methods

Some of the material used is already covered in first paper (GSFB) by the author. Our material is existing methodologies of science and their critical evaluation by experts in various fields. We particularly consider the problems and limitations of scientific methodology and scientific knowledge and need to explore General Systems Theory to handle biological and human systems. Darwin's principle of evolution is another material which we consider over here. We also take basic ideas of Jainism like their concepts of soul and its knowledge into account. Their idea of the evolution of soul and concept of gunasthanas is another set of material for our discussion. We also use the concept of entropy and order also which are mentioned in physics and explore them to study spiritual development. To understand the idea of order, examples of memory of Swamy Vivekanand and satavdhanies are also given. A third material is table

of measurement of length is taken. Another material which we have considered is idea of quantum mechanics which talks of implicate and explicate order. The recent observation in psychology that human decision making might follow rules similar to quantum mechanics is used to explore reasoning behind tough discipline followed by Jain monks.

Our methodology consist of studying the problems faced in current methodology of physical sciences as being used for biological and human systems and review them in light of General Systems Theory. In particular the concept of scientific knowledge and entropy produced due to current concept of development is examined critically in light of GST. To fill in the gap created in knowledge system due to these limitations, concept of knowledge as mentioned in Jainism is explored to find out if their system of knowledge and its evolution through various gunasthanas can provide new ideas about concept of knowledge and order. Similarly the Darwin's principle of evolution and the problems caused due to it are examined and Jain's concept of evolution is studied to find if some new frontiers can be explored to handle current problems of the society.

## Scientific knowledge, General Systems Theory and knowledge of consciousness

Limitations of scientific knowledge has been extensively dealt in the previous paper (GSFB). Hence they will not be repeated here. In summary, we have explained in that paper that there are limitations of scientific methodology when it is applied to living beings because scientific methodology has been developed only for closed isolated physical systems which are passive. It is so because (a) all living beings are active and open systems which constantly interact with the environment, (b) they grow and decay, (c) they have properties which cannot be reduced into parts, (d) they have memory and so it is not possible to carry out any scientific experiments on them which can be repeated at different times at different places, (e) for living systems, it is effect (goal) which determines the cause and not vice versa. Similarly parameter like energy and momentum defined using conservations laws need not be used to study the active open systems. Finally Godel's incompleteness theorems clearly prove limitations of scientific methodology to describe reality in totality. Hence General Systems Theory (GST) was put forward for better understanding of living systems. Here information and entropy (or order) alone are major parameters to describe the living systems. It was then shown that the concept of knowledge is much more general and broader than what is described by the scientific knowledge. It was actually illustrated that the idea of Indian philosophy in general and

Jainism in particular that knowledge is structured in the consciousness needs further exploration in a systematic way. It appears that scientific knowledge could be small subset of the knowledge structured in the consciousness. Hence ideas of knowledge of consciousness were mentioned through examples of tremendous memory of Swami Vivekanand and those of two satabhdhanies viz. Shrimad Rajchandji (Guru of Mahatma Gandhi) and Ajit Chandji Maharasahab).

## Science, Technology, Economic development and Entropy

In this section we shall see how a unidirectional concept of Economic development and its modifications due to science and technology have destroyed the environment. Actually economic development is required for smooth running of a society and everybody wants it. However, with the advancements of science and technology, a huge industrial revolution took place in the whole world. Due to this economic activities started concentrating at few places and in few cities. Their activities started polluting the natural resources in a highly damaging way. The whole process of polluting the environment can be traced to these increased industrial activities and increase in population due to decrease in the death rates. Due to congestion of the cities, there results a cut throat competition among people for survival. The old value system based on simplicity, honesty and sincerity started getting replaced by complexity, consumerism, dishonesty, and unwanted domination of certain groups and countries over others. It has also resulted into a large scale corruption in many places in the world. The emphasis on economic development has become so much so that all other type of developments have been set aside. Thus women in many countries who used to work towards spiritual evolution, religious activities and family welfare, have all started working for economic development only. Also indices based on economic growth are so much dominating the people's mind that impact of economic development on environment is totally ignored.

Effectively one can say that final consequences of these activities have resulted into a very large increase in the entropy (disorder) of the environment and the society. Some examples are given below where one finds ideas of entropy increase in one way or the other.

- (a). Mixing of hydrocarbons like petrol and diesel vapor with air and water etc. which were otherwise distinctly separate.
- (b). Spread of industrial chemicals and other pollutants in rivers and ponds.

- (c). Flow of millions of tones of fertile soil in the sea every year.
- (d). Adulteration of food and medicines and many industrial products.
- (e). Spread of electromagnetic pollutions in atmosphere due to very large increase in use of mobiles, internet and other electric gadgets.
- (f). Decrease in orderliness in music and increase in noise.
- (g). Mixing of roles of men and women.
- (h). Increase in corruption and black money due to which unaccounted money is diverted from main economy to areas and accounts which are not counted in GDP and so on.

Creation of the so called ordered systems (say concrete jungles, industries etc) in the name of economic development has basically led to generation of entropy in the biosphere. Such ordered systems can be called as "Ordered systems" generating larger entropy

## The Darwin's principle of evolution and its impact on society and the environment

At this juncture, it is also necessary to understand the important role of education of The Darwin's principle of evolution on the society and the environment. As we know this principle is based on the rule of natural selection and was brought into lime light by Charles Darwin. An assumption is made that all life emerged from slow evolution from a single ancestor. The basic idea of his hypothesis is that due to limitation on resources, various species of living world struggle for survival. Those which have slightly superior functionality will survive and others which do not have these additional functionalities will be eliminated and the whole process is very slow. Hence those who can adjust with the change in time, survives and others are eliminated. This is therefore being described in short by a well know saying that is "the survival of the fittest. This principle was enunciated by Darwin about 150 years ago. At that time there was no genetics. With this new development, the same principle was termed as Neo Darwinism. Under this name natural selections at genetic level is considered during mutation and those genes are selected which are superior in functionalities. (Wikipedia)

Darwin also talks of evolution of human beings and mammals and observes that all humans have striking similarities with apes and hence humans evolve from apes through natural selection in very slow processes over long time. However, Darwin's ideas are based on analysis of past data and develop correlations among them to establish some hypothesis. He observes that there are no goals or directions for species to evolve, say like for highly developed species like human beings and animals, which might be partly determined by value system prevalent in the society. etc. They only look at nearby future and attempts to survive. (Wikipedia). Goldsmith (1990) feels that it is due to too much emphasis of the education of this Darwin's principle of evolution that so much damage has been done to the environment. Dennet (1995) has written a book whose title is Darwin's Dangerous Idea: Evolution and the Meanings of Life put lot of emphasis on designing of morality, the risk involved with the Darwin's principle of evolution and its education.

## Criteria for development: Knowledge, Entropy or Order: General Systems Theory can provide new insight

Hence to handle all the above problems mentioned above, we look for a new discipline which has recently emerged (John Gigch, 1978) and is called General Systems Theory (GST). It has been developed to handle such complex systems and issues. Different sets of rules are there to describe and understand such systems.

In this analysis pure physical sciences are now categorized as hard systems and subjects like sociology, religion, psychology, biology etc are classified as soft systems. (Bertalanffy 1976). It has been developed to handle such diverse systems and is a serious attempt to reconcile physical sciences with social sciences. As per this theory, all systems are characterized by transfer of information, knowledge and entropy/order which are much more important than any other attribute. Even energy comes next to them.

At this juncture we find that Order or entropy and knowledge are the major property of these open systems, and we have also seen in the section 4 that entropy is main creation of the so called economic development which in turn has been enhanced by the scientific and technological development. Hence there are two different topics which need to be now explored. First is to define "Order" in the present situation and second is how a state of consciousness and its evolution are linked with this order. For this we shall put forwards some simple ideas of order in different systems and how order can be generated from disorder in what follows:

## Some examples of Order in nature

Now let us understand what we mean by order in the present context. The following examples attempts to illustrate our point of view.

- (a). Climatoloical order through precise movement of the Earth around Sun and the Moon around the Earth along with proper mix of various gases in atmosphere with a narrow temperature range etc.
- (b). Three and up to six seasons on various parts of the Earth, which occur in periodic way.
- (c). Agricultural order like crop cycles and their dependence on weather etc.
- (d). Various cyclic processes in many biological systems including human systems.
- (e). Self-organized structures in brain and our body.
- (f). Maintenance of economic order in world economy.
- (g). Order in a laser beam
- (h). "Order" in the life supporting systems, (which could be some combination some of the of the above).

# Gunasthanas: the fourteen stages of evolution of consciousness and order in Jainism

The path of evolution of soul in Jainism is described through fourteen stages, through which one has to pass through before getting liberalized, that is becoming a pure soul from an impure soul that is from material particles known as karmas. These fourteen stages are called fourteen Gunasthanas (Tukol 2009). They are Mithyatatva, 2. Sasvadan, 3. Samyagya, 4. Mithyatatva Dristhi (Mishra), 5. Avirat Samyagya dristhi, 6. Virtavirat (Desh virati), 7. Pramat Sayant, 8. Apramat Sayant, 9. Nivrati-Badar, 10. Sukshma Sampraya, 11. Upshant mohniya, 12. Kshina mohniya, 13. Sayogi kevali, 14. Ayogi kevali. Guna means characteristics and sthan means a position or situation. It is very interesting to know that the Jain acharyas have gone into great depth to describe these fourteen stages. They are being described through twenty nine parameters, whose details are given in Appendix 1. The logic used in taking up so many parameters is highly impressive and there are several sub categories among these twenty nine categories also. An excellent description is given about movement of a worldly soul from one gunasthan to other ones.

## Description of the orderliness among various groups of people in Jainism

After describing the gunasthanas, another formalism exist to describe the state of "Orderliness" among different categories of souls in Jainism. Thus Arihant has twelve characteristics. They are: Anant jnana, Anant darshan, Anant charitra, Anant Tap, Anant balvirya, Anant Kshyaik samyaktva, Vajra Rishabha naraya sahnan, sam chaturstra sansthan, thirty four atishayas, thirty five properties of voice, one thousand and eight symptoms and Guru of sixty four indras.

Siddha Bhagwan has eight (8) characteristics. Aacharya has thirty six (36) characteristics, Upadhyaya has twenty five characteristics, a sadhu or sadhvi (monk) has twenty seven characteristics. Ordinary household known as shravak and shravika has twenty one characteristics etc.

## Methodology and mechanism developed in Jainism to increase order and reduce entropy

Five main principles of Jainism known as Mahavratas viz. Satya (truth speaking), Asteya (Not to do theft), Ahimsa (Non-violence), Brahamacharya (Celibacy) and Aprigraha (Minimizing materialistic possession) have been developed so as to have a discipline life during all stages of evolution. These are the principles to be followed strictly by monks, aacharyas and higher ups in the ladder of evolution. For ordinary human beings smaller vratas have been defined which are called Anuvratas. These are simplification of the above rules meant to start the process of evolution at a very stage. Thus twelve vratas are there to be followed by shravakas and shravikas. Even the process of evolution is described in details by defining association of a mundane soul with materialistic particles from past. These particles are called karmas and are classified into eight categories. As one's soul evolves, the number of karmas decreases. It appears that larger the number of karmas associated with a soul, larger will be the uncertainty and so larger will be entropy. A full fledge system of Nava tatva (Nine elements) has been developed to explain the process of reducing the karmas from past and stopping inflow of new karmas. Several rules and practices have been developed to practically implement these vratas like Navkarsi, Porshi, Ekasana, Aayambil, Upwas, upwas for days together, mas khhaman, varshi tap, nanyanu yatra, samayik, pratikramana, posha and many more. To distinguish true knowledge from false knowledge, a concept of three jewels is defined knows as samyag jnaja, samyak darshan and samayak charitra etc. Another important concept developed is of three yogas (Manha, Vachan and Kaya) and three karan that bad action should not be doneby oneself, should not get it done by others and should not support the other who is doing it. Several sub categories and concepts are given to handle this process in minutest possible details with very extensive description.

# Some interesting examples of Order and evolution of consciousness in Hinduism and Jainism

We have given three interesting evidences to illustrate that there is a need to take the concept of order and knowledge of consciousness in a very serious way. These examples were given in GSFB paper of the author. They talked about extraordinary memory of Swamy Vivekanad, two satavdhanies viz. Shrimad Rajchandji (Guru of Mahatma Gandhi) and Shri Ajeet Chandji Maharasahab who can remember one hundred questions asked by one hundred different persons and can then repeat the questions at the end in the same order and can also give their answers. This might involve even telepathy and clairvoyance. Third example dealt with a table developed by Jain acharyas for measurement of length, available in ancient Jain literature. This table indirectly showed that ancient Jain acharyaas had attempt to estimate size of smallest particles of matter and that has been found to be statistically significant and fairly close to the size of atoms and nuclei found it modern science. This appeared to have been arrived at by advanced telepathy through which one can see even smallest part of space, knows as Pradesh in Jainism. All these examples show highly ordered state of mind of spiritual leaders.

## Do spiritual processes help to reduce Entropy Production in the biosphere

Form this analysis, we find that Jain acharyas have spiritually ordered mind and if we look at their behavior and daily practices then we find that they consume minimum resources and hence generate least entropy in the environment. As they go to higher and higher stages of evolution, their resources consumptions go on reducing.

We seriously feel that the various religious and spiritual practices developed by the ancient Indian seers like Yoga, Meditation, Sadhna and others resulted into an overall decrease in the rate of entropy production of this biosphere. Although the processes initiated at an individual level but it expands in the society through the various interlinkages present in the social system. It appears that as the number of persons carrying out these practices increase the average overall rate of entropy production of this biosphere decreases. In addition this may be accompanied by the appearance of a new kind of order which is being described above and could be linked with an orderly state of consciousness. Therefore there is a need to investigate the different states of human consciousness which can be in highly ordered states. If we look at the problem of environment then we find

that it is totally due to directionless growth without any goal with just one factor involving economic growth only, forgetting its impact on other parts of the environment. Also this is in essence generating entropy in all walks of life. It should be compared to the spiritual path where there is a well defined direction and a well defined goal which can be achieved only by adopting strict process of selection.

In view of above discussion about limitations of scientific knowledge and need to undertake the concept of consciousness into account, we find that Jain concept of knowledge through consciousness is very promising concept even for scientists. Also the fact that it can continuously evolve during one's birth and also in other births needs to be explored very carefully, not necessarily in a scientific way only.

Such a phenomenon can be explained using the Prigogine's theory of dissipative structures (Prigogine and Nicolas, 1977) and (Jantsch, E. 1980), that is the creation of order in physical systems or changes in orderliness of a physical or biological unit requires inputs of matter and energy which is accompanied by increase in entropy in the environment. Applying the theory of Prigogine to the biological systems in general and human beings in particular, we can say that if we want to reduce the entropy production in the biosphere, then all subunits of this biosphere should share this reduction of entropy production. Now just for living, we require some definite quantity of matter and energy. Hence if we want to reduce the entropy production then we must reduce the intake of energy and matter. This would mean that we should make all the biological processes work in our body more efficiently. This would also mean adoption of a different kind of life style. This is at one level. At a higher level for a society, if there is an attractive interaction among different members of the animate kingdom through the different feedback loops then also there will be a decrease in the resources consumption and entropy production.

## Methods required to reduce entropy production at all levels

Now what is needed is to reduce entropy produced and increase order in various systems and then link them with the definition of development. Some examples given below illustrate some activities required to increase order in our life supporting system.

(a). Need to define new concept of development in general and sustainable development in particular where some kind of "Order parameter" is given

more priorities than other parameter.

- (b). The order parameter needs to be defined both at macroscopic level and microscopic levels.
- (c). Since a general order like parameter will come into picture so naturally any concept of development will be different and may be more complex than the single dimensional term expressed by economic development or its new versions which partially takes into account factors like damage done to the environment.
- (d). Reducing consumption at all levels in the interest of our own future generations, thereby reducing entropy production and at least maintaining the current status.
- (e). The roles of men and women needs to be reviewed again. Should women focus more on preserving spiritual order in the family and men for sustainable development of the economy.
- (f). Development should be defined with certain goals into mind and all indices of development should be revised like "Economic growth rates and GDP for various countries and the world.
- (g) Need to reduce entropy in the brains of the people and introduce order instead. Many spiritual practices like meditation, yoga and pranayam etc. could be one good option.
- (h). Attempts should be made to estimate entropy produced by various systems and countries and legal action should be taken against those who are producing more entropy in the atmosphere. Thus agricultural systems should be rewarded and industrial systems should be punished heavily as agricultural systems are generating minimum entropy whereas industrial systems are producing maximum entropy. (Pokharna 2011).
- (i) Concepts like "Dharma, Artha, Kama and Moksha" and the "Aashram System having four aashrams in one's life" should be reexamined in view of GST as they appear to represent some kind of macroscopic global criteria towards multi-objective optimization for a number of parameters for a society so as to have a balanced development at a macro level with a set of rules defined through Dharma and a well defined Goal of Moksha.

## Role of Quantum Mechanics like processes in decision making in psychology: Example of great sacrifice of Aacharyas

The theory of quantum mechanics is also relevant again in a different context here. We all know that the role of observer's consciousness in quantum mechanics is very important in making a choice whether he/she wanted an electron to behave like a wave or a particle. The choice is strictly that of human mind. It is also proposed by Bohm (1951) that thoughts processes also act like quantum mechanical entities following dual roles with uncertainty determined by probability theory explained using concept of Hilbert space. This has been recently confirmed by a set of experiments by Mark Buchanan (2011) who have shown that thought processes do follow quantum mechanics like fuzzy rules and hence decisions can be very vague. Actually tiny thoughts are a result of microscopic movement of molecules in neurons and movement of impulses in neurons and synapses.

## Difference between Darwin's principle of evolution and Jain's concept of evolution

- Darwin's principle is based on an emphasis on differences among species. Jainism on the other hand first look at the underlying identity of all the species and claims that soul is the underlying identity among all the biological species.
- Darwin's principle is based on concept of natural selection that is species which are superior survives whereas those which are inferior with respect to adjustment with the environment and/or availability of resources die out or are eliminated. Jainism says that all living beings wants to evolve and so highly developed species like human beings should support evolution of other species through the principle of non-violence (ahimsa). But here Jains also talk of evolution, but is spiritual, which is accompanied by increase in purity of soul and increase in its knowledge. In spiritual evolution also, one has to be very selective as a very strict discipline is demanded for oneself. A strict set of rules have to be followed to progress along the spiritual path. It is mostly concerned with internal processes and phenomena. However, in this process, they consume minimum resources and hence resources do not have great impact on survival. It is least important which is critical in case of Darwin's principle.
- It appears that the various principles and set of rules and regulations developed by ancient Jains are just like control parameters in this huge biosphere which indirectly provides stability of the biosphere on the long time scale and are hence critical conditions required for continuation of life processes on this planet. They also reflect the interdependence of various activities of human beings on different components of the biosphere through the principle of ahimsa.
- With the discovery of genes, mutation takes place in such a way that new genes are more robust and

are transferred to the next generation. However, in Jainism, it is individual soul which leaves a body in one life and goes to another world after leaving the body in one life. As knowledge is major characteristic of the soul, knowledge is carried over to the other birth (as soul never dies even when the body dies).

- Darwin's does not talk about any goal in the process of evolution, except for natural selection and the whole evolution could be a set of randomly occurring steps of evolution without following any direction to achieve any goal. Jainism on the other hand talks of Moksha or saiddha Samadhi, which is the target or one's goal. Hence many uncertainties are reduced.
- Darwin's principle is around 150 years old whereas Jain's principle of evolution is at least 3000 years old and is still found very relevant in the modern time, hence more rigorous research is required in this direction in view.
- In view of the above principle of Jainism that worshipping of all animal kingdom and plant kingdoms and all natural objects like water, soil, air etc. is encouraged. Hence in Jainism, a concept of "Live and Let live" has evolved, indicating respect for all living beings and aims to define future goal of all living beings. On the other hand the Darwin's principle of evolution, developed in west is based on the concept of natural selection (now genetic based mutations etc.) and is expressed in form of "survival of the fittest". This is totally opposite of the Jain principle of "Live and Let Live". These two opposite thoughts can be reconciled through one argument. It is this, that in the Indian system, the emphasis is on recognizing the underlying identity among all living beings (like unified field theory) whereas in the case of Darwin's principle of "survival of the fittest" can be traced to an emphasis on the differences among the living beings.
- As concept of development is closely related with concept of evolution present in a society and the goals of the society. Hence concept of consumerism developed in western world but in Indian system, there is more emphasis on spiritual development whihch automatically reduces consumption of resources.

## **Results and Discussion**

This along with the first paper in this series (GSFB) have attempted to explore limitations of scientific methodologies found so successful to study physical systems are actually not adequate to understand biological and human systems thoroughly. Hence a concept of General Systems Theory (GST) is required to develop a unified formalism which includes both physical

and biological systems like social systems and human systems. It is mentioned that concept of information and knowledge has to be also enlarged by taking the concept of knowledge through consciousness into account. We strongly feel that there is a need to realize that all scientific knowledge is just a small set of knowledge structured in the consciousness. In particular it is shown that Jain's concept of knowledge through consciousness (soul) can be very useful to have an enlarged concept of knowledge, which can include extra sensory perceptions (ESP) like telepathy and clairvoyance also. It is shown that Jain concept of evolution in which a soul become more and more pure with increase in knowledge and reduction in materialistic attachment (karmas) is accompanied by an increases in the orderliness of the brain and mind. Example of extraordinary memory of Swamy Vivekanand is given to illustrate the meaning of this order. Two more examples from Jainism are given which show extra ordinary states of mind of satavdhanies. In another example, it is shown that ancient Jain aacharyas might have even tried to estimate the sizes of the smallest particles of matter like atoms and nuclei through highly advanced telepathy. The sizes given by them are statistically quite close to the current sizes of atoms and nuclei. It shows existence of telepathy of very high order. Several examples of order and entropy are given from different walks of life along with methodology and procedures from Jainism to increase state of orderliness and reduce entropy in individual and the society.

It is also mentioned that the Jain principle of "Live and Let Live" should be compared with the Darwin's principle of evolution described by "Survival of the fittest". The difference between the two will have totally different impact on the concept of development and the society in general and direction of evolution in particular. The Jain concept of evolution is then mentioned to indicate that their concept of fourteen stages of evolution of soul (Gunasthans) is a very exciting concept and needs further exploration and needs for a comparison with the Darwin's principle of evolution.

This is an exploratory study only and is an example of multi disciplinary work where many loosely defined terms are used. They need to be further perfected.

### Conclusion

This paper attempts to explore possibility of developing a holistic approach towards the modern problems in different walks of life. It is shown that scientific methodologies found so successful to study physical systems are not adequate in this context. Hence a concept of General Systems Theory (GST) is required to

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develop a unified formalism which includes both physical and biological systems like social systems and human systems. It is mentioned that concept of information and knowledge has to be also enlarged by taking the concept of knowledge through consciousness into account. We have to realized that all scientific knowledge is just a small set of knowledge structured in the consciousness. It is shown that many of the problems are a result of generation of entropy in different walks of life and we must act to reduce entropy and instead increase order. This can be done through the processes of evolution of ORDER by defining spiritual processes where entropy is reduced and order increases in the life supporting systems. It is also suggested that the human mind can help in generating this type of order with low rate of entropy production. The Jain concept of evolution of soul through the fourteen stages with twenty nine characteristics is a very exciting concept and needs further exploration

It is also mentioned that the Jain principle of "Live and Let Live" should be compared with the Darwin's principle of evolution described by "Survival of the fittest". The difference between the two will totally different impact on the concept of development.

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SN	Hindi name of Characteristic	English translation	Number of varieties
1	Nam Dwar	Name	14
2	Lakshan Dwar	Characteristics	
3	Stithi Dwar	Time wise situation	3
4	Kriya Dwar	Activities	25
5	Satta Dwar	Status of Karmas	
6	Bandh Dwar	Binding of karmas	
7	Uday Dwar	Activation of karma	
8	Udirna Dwar	Bringing of karmas outside from Udayavalika to Udayavali and having an experience with karmas of	
9	Nirjara Dwar	Detachment of karmas	
10	Bhav Dwar	Type of feelings	5
11	Karan Dwar	Reasons for going into Gunasthana	5
12	Parishah Dwar	Characteristics (Painful)which are tolerable but required so as not to move away from true path	22
13	Aatma	Type of souls (in association with karmas	8
14	Jeev	Life types (human, animal, insect etc)	14
15	Gunasthanas	A Interpretation: Basic characteristics	24
		B: Possible sequences of gunasthanas in which a jeev may pass through	7
16	Yoga Dwar	Movement/Fluctuations in Atma's pradeshas due to man, vachan and kaya	13
17	Upyoga Dwar		6
18	Leshya Dwar	Lesshya types	6
19	Hetu Dwar	Reasons for going into certain gunasthanas	57
20	Margana Dwar	Number of ways in which a jeev can come and go from to Gunasthan	
21	Dhyan Dwar	Concentration of Chita	4
22	Dandak Dwar		24
23	Jivyoni Dwar	Number of species	84 lakhs
24	Nimit Dwar	Indirect(supporting) reason for an event to occur	
25	Charitra	Good moral charactriestics	3
26	Aakarsh Dwar	Number of times a person can come to a gunasthana in one or many births	
27	Samkit Dwar	Samyaktva	4
28	Antar Dwar	Time in which a person comes back to gunas- thana after going out from this	
29	Alpa Bahutva Dwar	Number of species in a gunasthana	

## Appendix1. Twenty Nine characteristics of fourteen gunasthanas

## **Ecological Concerns in Jainism**



## Abstract

### Jainism as a religion of ecology

Jainism is fundamentally a religion of ecology and has turned ecology into a religion. It has enabled Jains to create an environment-friendly value system and code of conduct. Because of the insistence on rationality in the Jain tradition, Jains are always ready and willing to look positively and with enthusiasm upon environmental causes. In India and abroad, they are in the forefront of bringing greater awareness and putting into practice their cardinal principles on ecology. Their programs have been modest and mostly self-funded through volunteers. Every basic reality of the universe is integral. Jainism reconciled the parts of reality with the whole by means of the relativistic approach. Spiritual relationships, from an ecological perspective, can be understood with the help of some of the basic tenets of Jainism

- 1. Injure no creatures (Savve pana na hantavva)
- 2. Do not command any creature;
- 3. Do not own any creature; and
- 4. Do not employ one as the servant (save pana na pariggahetvva)

The paper discusses the similarity between jain principles and ecological principles which are important for life.

## Principles of Jainism

- Non-violence (Ahimsa)
- Multiplicity of Views (Anekäntväd)
- Non-Possessiveness / Non-Attachment (Aparigraha)
- Truthfulness (Satya)
- Non-Stealing (Asteya / Achaurya)

## Jain Beliefs

- All souls are equal
- Non-Violence
- Multiplicity of views
- Non-possessiveness
- Karma

## What is Jainism?

- Jainism is a way of life and one of the oldest reli gions of the world.
- It believes in a cyclical nature of universe. It dis courages superstition and blind faith and encour ages free and rational thinking.
- Jainism lays heavy emphasis on non-violence (ahim sa) and discipline.
- Ahimsä is disciplined behavior towards every living being Dashvaikalika Sutra (6/9)
- Absence of violence of any sort towards all beings

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at all times is Ahimsä. Yogasutra

 In its absolute definition: 'Ahimsä is the absence of destructive thoughts, feelings or attitude'

## Parasparopgraho Jivänäm

Tattvärtha Sutra

- All life is bound together by mutual support and interdependence (If one does not care for nature one does not care for oneself)
- Refreshingly contemporary in its premise and in its promise.
- Forms the basis of the modern day science of ecol ogy.

Aparigraha seve attai karanti prananam behanam" Lord Mahavir

- We kill other lives because of our greed and posses siveness.
- This is the primary cause of all violence as well as imbalance in the environment.

## What is Jain Philosophy?

 According to Jain philosophy, all Tirthankaras were born as human beings but they have attained a state of perfection or enlightenment through medi tation and self realization. They are the "Gods" of Jains.

• Jains have always practiced non-violence, vegetari anism, meditation, yoga, and environmentalism.

## Jainism Teach about Ecology

- Non-Possessiveness / Aparigraha
- Self-restraint is the second most important Jain principle.
- Minimizing consumption provides respect for oth ers' life and environment.
- Reuse / Recycle Products Do not waste the gifts of nature.
- Share resources.
- Nature provides enough for our NEED, but not enough for our GREED.
- Caring for the Earth and Environment is the way of Life of the Jain Community by following the prin ciples of Jainism in their daily life
- Be Compassionate
- Be Vegetarian and avoid the use all types of animal based products
- Reduce our needs and wants as far as possible.
- Greenhouse effect
- World's 1.3 billion cows annually produce 100 mil lion tons of methane
- Methane is a powerful greenhouse gas which traps 25 times as much solar heat as CO<sub>2</sub>
- Water Consumption
- Livestock (Cattle, Calves, Pigs) production accounts for more than half of all the water.
- Space time motion rest jiva ajiva = the dravyas = the universe
- Almost everything in Jainism is alive, and has a consciousness of some sort.
- Water, air, earth and soil, all material that comes from the earth has:
  - a) living things imbedded in them, and

b) interconnectedness to all other living things à so to disturb one thing causes a rippling to effect many other things.

- All Ajiva is considered to interact and be interde pendent with all life.
- Disturbing any inanimate object has a myriad of consequences for Jiva
- This is amazingly true for the environment
- Almost every original Jain lifestyle tradition is pro foundly ecological!!!!!
- Refers to the "Natural Environment"
- That which exists without significant impact from human activities
- Somewhat different than Jain idea of nature, which does not distinguish the surrounding world from

#### humans

The relationship between religion and ecology is essential to the environmental movement, because realizing that religious attitudes and values are indispensable in motivating people to create partnerships and to work together to find long-range solutions to pressing environmental problems is critical, especially with respect to the creation of a more sustainable future. The ecological philosophy of Jainism which flows from its spiritual quest has always been central to its ethics, aesthetics, art, literature, economics and politics. In all its glory by the twenty-four Jinas or Tirthankaras (Pathfinders) of this era whose example and teachings have



been its living legacy through the millennia.

Be an eco-friendly citizen and save environment by following these steps:

#### This will help a lot to make our future clean and green.

- 1. each one should plant a tree by name for clean and fresh air.
- 2. do not accept plastic bags from vendors and shopkeepers and carry your own cloth, jute or paper bag for shopping
- we should segregate biodegradable waste (kitchen waste) and non-biodegradable waste (glass and plastics)
- 4. request mcd and ndmc to keep our colonies, markets and roads clean by providing more dustbins.
- 5. try to conserve water at home by adopting judicious practices.
- 6. conserve electricity at home/office by switching off all lights and fans when we leave a room.
- 7. tell people to adopt air and water pollution control practices in factories and remind not to discharge untreated effluents into drains and rivers.

The basic relationship between the Indian perception of environmental awareness for understanding the man's ability to adapt both physically and mentally to the continuing changes in environment should be stressed. Environmental education is a need for harnessing a prosperous and flourishing society to suggest the application of mass media technology. Mass media should be oriented in such a way that they act as social carriers of technological innovations and ideas together with the proper environmental awareness aspects associated with the religion and environment.

### Ultimate ends (Happiness, Fulfillment, Enlightenment)

- ethics, philosophy & religion
- intermediate ends (health, wealth education, com munication & transportation)
- economics, politics
- intermediate means (capital, labour, processed en ergy + materials)
- science & technology

• ultimate means (energy, matter, genetic diversity)

The attainment of ultimate ends depends on effective processes at every step. Having plenty of material goods, health and education does no good, if one does not know how to turn them into happiness and fulfillment. Having land, labour, capital, energy in abundance does not help, if the political and economic systems use them wastefully or inequitably. Having a bountiful earth is not enough, if there is no effective technology for harvesting the bounty. And, of course, having technology, politics, economics, and ethics, all in place does not help, if the foundation of the pyramid, the earth's material energy, and biological systems are not healthy.

## Jain Karmic Theory and Genetic Science



Prof. (Dr.) Sohan Raj Tater

The Universe is mainly made up of two elements animate and inanimate. The existence of both of them is eternal. However, the modes of both of them keep on changing and this is the cause of transformation taking place in the universe every moment. According to Jain karmic theory, the oneness of these two elements has been established since time immemorial and this oneness will remain there until the soul attains liberation, destroying all the bonds of karma.

According to Jain karmic theory, conscious activity is the characteristic of the living being (Upyoga Lak•ao Jvah) and cognition is known as conscious activity, Deluding karma is the main element that covers this cognition and this delusion is caused by vices like attachment and malice etc. These two evils cause karma, karma causes life and death and these two (life and death), in their turn, cause sorrow. This cycle goes on and on. The scripture 'Tattvrtha Stra' says, "badhyate partantr kriyate tmaneneti bandhanam" (The bond by which soul is rendered dependent is karma.) According to Jain karmic theory, only a soul bonded by karma, accumulates new karmas; a liberated soul can never accumulate karmas as its evils like attachment, malice and jealousy, the seeds causing karmas, are totally destroyed. Soul is the ingredient of karma. It is the doer and enjoyer of karmas. An ingredient comes to be known only when it gets a instrumental or external cause. Yoga (the combination of body, mind and speech), environment and circumstances form the external causes for the enjoyment of the karmas. The karmas that do not have any instrumental cause are enjoyed in the regions of soul. Passions like attachment and malice etc. only enhance the instability of the yogas. When the yogas are unstable, they stimulate passions and thus a bond of karmas that cause substances of karmas takes place. Thus there is a full cycle of passions, instability and karmas.

Body only forms the medium of the expression of consciousness and of enjoying the karmas that have been earned. 'Gene' is the ingredient of the gross body and the ingredient of the subtle body is karma. This gene is responsible for making a man what he is. It is the main cause of all the habits and of all the differences. According to genetic science, there are as many as sixty lac commands inherent in each gene. In karmic language, it can be said that thee are as many as infinite commands inherent in each karmic aggregate. The genetic science has so far been able to come up to 'gene', which is the ingredient of gross body where as karma is the ingredient of subtle body. There is a Tejas body, an electric body within this gross body. This is the subtle body. The karmic body is subtler. Infinite scripts are written on each of its aggregate. All the account of our principal exertions, virtues and evils, drawbacks and strengths and all their reactions are present. There in the subtle body man behaves in accordance with the vibrations he receives from the subtle body.

By 'pa' (vitality) is meant the life force. That, by the combination of which a being gets life and in the absence of which he gets death, is known as (pra), the life force. The capacity of all the five senses of gaining knowledge is known as five-senses vitality'. The capacities of thinking, speaking and performing physical activities are known as morale, the force of speech and the force of body respectively. Vitality and life force are one and the same thing. The capacity of receiving and giving out substances in the form of respiration is known as the respiratory force. In the same way the force of remaining alive in a certain birth up to a certain period is known as longevityforce.

Vitality is related to development (completion). Vitality is the force of the being and development is the force of the substances received by the being. Development is the cause and vitality is the effect. There is no activity of the being related to mind, body and speech that can take place without the assistance of material substances. The cause of the five-senses vitality is the development of senses. The causes of morale, force of speech and force of body respectively are mind completion, language completion and body completion. The cause of respiratory vitality is respiratory completion, and of longevity vitality is food completion as longevity vitality can be possible only when there is food completion. According to Jain karmic theory, the main and the most important of all the ten vitalities is the longevity vitality. All the activities of body and the functioning of its organs are possible so long as longevity vitality is there and active. The moment it ceases, all the activities come to an end completely and this stage is termed as death.

When, after leaving one body, soul adopts another body, it simultaneously creates, according to Jain karmic theory,

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the necessary substantial material with the help of body naming karma to start its new journey. This material, or the force produced by it is known as completion (development). The order of these completions is like this food, body, senses, respiration, speech and mind. In all, there are six completions. All of them start at the same time but they develop gradually and in an order, hence this order has been made. It takes one time for the completion of food completion where as each of the rest of the five take an under antara muhurta (48 minutes time). Through the completions of food, body, senses, respiration, speech and mind, living beings, receive substances fit for food, body, senses, respiration, speech and mind, transform them accordingly and leave away non-substantial material.

In accordance with Jain Karmic theory, 'genes' under genetic science, may be regarded as body completions. Development (completion) means the completion of formation of the force of substances necessary for life. The least developed beings at least have four vitalities in all-vitality of the sense of feeling, vitality of body, vitality of respiration and the vitality of longevity. They also have food completion, body completion, senses completion and respiratory completion. Thus, according to Jain karmic theory, the life cycle of a being goes on with the combination of vitalities and completions. The specialization and differentiation of increase and division etc. that takes place in the cells is a part of all these completions. These completions are controlled by karmas. Cells die and the living being made up of several cells also dies. This death occurs in according with the, longevity-determining karma. The longer one's longevity, the longer one will live.

The behaviour, conduct, thinking and every action of a living being gets constantly marked within him. Several branches of science have come to admit this fact. This marking affects a man in course of time. Indian philosophies have expatiated in detail this marking system in the form of the theory of karma. Modern science makes the different methods and institutions of this marking the basis of their discussion. Our mind too records all out actions. Out antagonistic cells also mark them and ultimately 'genes' that are responsible for the formation of impressions come to be the basis of all this marking. The independent study of the two will help not only in their understanding but also help in solving the problems in the modern perspective.

The doctrine of karma is extremely subtle. It is a doctrine that goes beyond the sphere of intellect. Genetic science has helped a lot in the understanding of this theory. Gene is the carrier of one's hereditary characteristics. There is a particular gene for every particular characteristic. These rules of heredity are the corresponding rules of the doctrine of karma. The gross body is made up of very minute biological cells. There are almost 60-70 trillions cells in human body. These cells contain chromosomes. Each chromosome is made up of ten thousand genes. These genes are responsible for all the behavioural patterns of man. In every cell of the human body there are 46 chromosomes. They have also been termed as the carriers of the family traits.

According to Biology, in every cell or germ plasma, 23 chromosomes of father and 23 chromosomes of mother meet together. Scientists believe that their combination may have 16, 777, 216 possibilities. Atmosphere, circumstances, environment, geographical situations, heredity, gene and the chemical changes caused by the secretion of the glands of the body—all these are the corresponding aphorisms of the karmic theory.

Gene is an organ of our gross body where as karma is an organ of our subtlest body. Both of them are connected with body, the one with the gross body and the other with the subtlest body. Both of them are connected with body, the one with the gross body and the second with subtlest body. Death is related only to the gross body. The subtle body remains even after death. The body that has been termed as astral, karmic body in Jain philosophy, has been termed as sign body in skhya philosophy. In the worldly state, they always live together Scientifically, all these things can be explained like this-according to scientists, there are four states of matter-solid, liquid, gas and plasma. One more state has been found outproto-plasma. Spiritually speaking, protoplasm is our life force and it is a solid proof of our existence. Scientists believe that protoplasm is an immortal element. This chemical, that exists in our cells, gets separated from the body after death and gets scattered in the atmosphere. This protoplasma enters the genes of a child at the time of conception.

According to genetic science, very minute living beings, known as virus, are found on the earth. The moment they come in contact with a living media, their number increases infinitely. The creatures whose bodies are made up of one cell, known as bacterias. This bacteria has a nucleus that contains DNA. This DNA has got the characteristic of multiplying and that is why even this one-celled being too performs metabolism. The element responsible for multiplication is DNA and it is found in one-celled living beings also.

## Cloning

To produce the genetical counterpart i.e. to produce the exact copy of the donor parent (male or female, either of the two), is known as cloning. According to Jain karmic theory, it can be said to be the result of the maturity of the physique-making completion karma of the being. The traits of a being are determined by the chromosomes present in its ingredient cells. Most of the developed beings give birth to their issues by sexual reproduction. Half each of the chromosomes present in the reproductive cells of male and female produce a new being that has the characteristics of both father and mother.

But in the case of cloning, the issue is produced by the general body cells of either the male or the female and this issue is the exact copy of its donor. In undeveloped beings, trees and plants, this process takes place in a natural way in the form of asexual reproduction, but modern scientists have begun to reproduce developed beings like rats, sheep and even human beings also by this method.

## The Technique of cloning adopted in mammals

Innumerable cells are found in every flora and founa. The number of such cells in human body is about 60-70 trillions. Every cell is a complete living unit in itself. There is a nucleus in the centre of the cell. This nucleus contains the chromosomes of that being. The number of chromosomes in human beings is 46. These chromosomes contain all the traits of heredity. They are made up of chemicals like DNA and RNA. These chromosomes contain genes. Round the nucleus is a fluid known as protoplasm.

The sperm cells of the male and the egg cells of the female too are ripe cells. They do not procreate by duplication. In mammals, there is sexual reproduction. In this process, the sperm by way of fusion with the egg cell forms a new cell. This new cell has the trait of copying by which it turns into a foetus. The number of chromosomes in the nucleus of this cell is 46, but half of them are of the male and the rest are of the female. Contrary to this in the case of cloning, all the chromosomes in the new cell are only of one of them.

The process of cloning in mammals may be explained like this—a healthy egg cell of the female is used. By a special technique, the nucleus of this cell is taken out and the protoplasm (the cell without nucleus) is absorbed in a culture medium and placed at a safe place. Now, the cell of the donor parent (the clone of which is to be produced) is taken out of its skin. The nucleus of this cell is separated very carefully. This nucleus is then transplanted into the protoplasm that had been preserved previously. Thus a new cell is formed, the nucleus of which is the nucleus of the donor parent. It is clear, thus, that this new cell contains the chromosomes of the donor parent only. It is then, by way of copying, is transformed into a foetus. This foetus is placed in the ovary of any female where it begins to develop in a normal way. The issue that is born in this way contains the chromosomes of the donor parent only. It totally resembles its donor parent and is the carbon copy of the donor parent. We will have to install the nucleus of the being, the clone of which we want to prepare, in the protoplasm (cell without nucleus) of the egg cell of the female. If we want to prepare the clone of a male, we will have to install the nucleus of its cell in the egg cell (having no nucleus) and if we want to prepare the clone of a female, we will have to install the nucleus of the female in the egg cell (that does not have a nucleus.)

## Jain Karmic Theory and Human Cloning

According to Jain philosophy, all the actions and events of life are controlled by karmas. The body, longevity, status of birth, joys and sorrows that a being gets, are determined by its karmas. But it does not mean that karmas are the sole determiners of all the activities of life. In fact, karmas only create conditions and circumstances; it is up to the being to act or not to act according to those karmas. The soul, no doubt, is bound by karmas but it can change the course of life and events by its self-exertion and devotion. Jain religion is actually to win over karmas by the independent force of consciousness.

Now the question arises—when these are the scientists who have come to determine the different characteristics of human and other beings, what role does the Jain karmic theory play? Is not bringing about any change in body a challenge to the karmic theory? It will be Justifiable here to say that if a culprit breaks some part of a man's body or some one gets the organs of body by surgery, or someone gets one's criminal thinking changed by undergoing some psychological treatment or meets untimely death by an accident or taking poison, all these things cannot be said to be challenges to the karmic theory. The same thing is now being done by scientists in a more systematic way; but there can be no gainsaying the fact that this act of cloning is absolutely unnatural and immoral. Producing the same kind of creatures is not at all proper. Having the same features and body does not mean that the personality and the behaviour of the beings too will be the same. It does not necessarily mean that the clone of a criminal will be a criminal and that of a scientist will be a scientist. People seem to think that scientists can assuredly produce any being by way of cloning. The first clone of sheep came after the failure of 277 experiments. The percentage of success in case of human cloning has been only 1 or 2 percent.

The beings that are produced after a number of failures are not really produced by scientists. Scientists simply create situations favourable to a certain body structure, Putting life/soul into that body is beyond their control. Cloning is related only to the level of body and the issues of soul and rebirth are beyond the limits of scientists and laboratories. The inkling of soul and rebirth occurs only to non-violent and truthful human beings. This is a fact that even scientists cannot deny. The reason is obvious. Innumerable events occur every time in the whole of world that prove their existence.

## Jain Religion and Technology

In bio-technology, a newly developed branch of biology, we study issues like human genom project, genetic engineering, genetic surgery and human cloning etc. It's latest researches show the various characteristics of the genes that are contained in chromosomes. All the different stages in the life of man—old age, crime, diseases etc. are controlled by these genes and the scientists claim of bringing into existence a desired life by bringing about changes in genes. Keeping in view this characteristic of genes and genetic codes, the concept of relations between genetic codes, and karmic atoms has been provided to scientists and some of them are also doing research in this field.

First of all we should be clear that genes and genetic codes are not the ultimate; physical, environmental, internal and external conditions also control them. Activities of life are conducted in accordance with the activities of the being itself and the external circumstances. Genes and the factors affecting them ultimately indicate the possibilities of karmic atoms about which the scientists are presently silent. If the scientists, make researches, understanding the Jain karmic theory thoroughly, on the various activities of man like truth, falsehood, nonviolence, crimes, compassion, and cruelty, they with find this principle absolutely true.

According to Jain karmic theory, the body of a living being is formed because of its physique—making karma. The features a being gets are determined by this very karma. But in the case of cloning, the body is formed by man himself. We can prepare features that we like. The concept of physique—making karma thus seems to have no meaning but it is not true. To understand reality we will have to go to the depth of the Jain karmic theory.

We should, first of all be clear in mind that each and every thing does not take place only on account of karmas. crya Mahpraj, in his book 'Karmavda' (The karmic Theory), Says, "Each and everything does not depend on karma. If we come to think that everything is subject to karmas, we will come closer to fatalists who believe that what is destined, will be, or to the theists who believe that everything will happen as God wills. We cannot do anything. If karmas come to be all and all, there will be no value of principal exertions that is put to destroy them; neither will there be the possibility of liberation because we shall reap what we sow and continue to have the bondage of new karmas. By thinking this ways, the concept of self-exertion and liberation will be proved to be false. "It is clear, thus, that karma is not all and all."

Making his view clearer, crya Mahpraja farther says, "Karma is not an absolute power. There is control on it also. Karmas can also be changed. Lord Mahvra said," You will have to face the consequences of your doings. "This is a general rule but there are certain exceptions. Premature fruition, delayed fruition, hastening and transition in karmas are possible by which karmas can be changed. We can say that karmas can be dissociated prematurely by putting forth principal exertion. The time—period and intensity of karmas can be increased and decreased and karmas of the same nature can be transformed also. The force of the fruition of karmas can be suppressed and even rendered incapable of giving fruit for the time being. This process is known as subsidence.

crya Mahpraja believes that the principle of transition is the principle of mutation of genes. One thing to be remembered is that the fruition of karmas takes place in accordance with the substance, region, time and feeling. Karma is not the only thing responsible for the formation of personality. Heredity, circumstances, atmosphere, geographical conditions and environment-all of these factors have a deep effect on the nature and behaviour of a man. Longevity is a karma but it can be diminished with the help of external causes like poison etc. Similarly one's facial features can be changed by bringing about changes in the genes present in the chromosomes of the cells. This is possible through transition, according to Jain karmic theory. We, therefore, come to the conclusion that according to the Jain karmic theory, it is possible to produce beings of the same shape and size, to change the nucleus of the cell and to produce beings having the same features through human genome project, genetic engineering, genetic surgery and human cloning. Hence

genetic science is not a challenge to the karmic theory. On the contrary, it may be understood very easily if we comprehend the Jain karmic theory systematically.

The aim of the deep study of Jain theory of karma and Genetic Science is to make the people aware of the fact that every creature, by doing principal exertion, can transform its inauspicious deeds into auspicious ones and by renunciation, restraint, stoppage and dissociation the form of the genes of the gross body can also be changed. The aim of the research of the Genetic science is to bring out the fact that the gross body of any being can be developed by transplanting healthy genes in place of wounded genes.

## Social Utility

This research will provide humanity the knowledge of auspicious and inauspicious karmas being attached by the auspicious and inauspicious tendencies of the worldly soul and consequently man will not indulge in immorality and violence. A lay man will come to know how genes contribute in the composition of the gross body. He will come to know the significant role that the genes play with the result that he will be very conscious about the purification of genes. Our soul is free so far as thinking and principal exertions are concerned but it is dependent because of the bondage of karmas. Man can have permanent joy by purifying his soul by observing renunciation, restraint, stoppage, and dissociation with the help of principal exertions. Karmas can be dissociated and genes can be transformed with the help of volitional cycle. When one comes to know the formula of the purification of the gross and subtle body with the help of this research, one will be able to form a good society, a good nation and a good world, by purifying one's feelings. This research article has so much social qualification and utility that it can provide a permanent solution to all the present emotional problems like possession, terrorism, violence, increase in population, pillage, prejudices, poverty and disease. This research work will reveal the fact that with the help of the technique of cloning, which is a branch of genetic science, it will be possible to develop the different parts of human body in laboratory that will help in curing the diseases that are so far regarded as incurable. Besides all these benefits, with the help of this technique, it will be possible to change the genes that have been rendered useless and to control old age. Taking into consideration the medical utility of this research, the British government has allowed to perform human cloning in the year 2001.

According to Jain karmic theory, only a bonded soul accumulates new karmas. Attachment and malice are the

causes of karma. A liberated soul does not accumulate karmas as its feelings of attachment and malice are totally destroyed. For the destruction of karmas, Jain religion firmly believes in principal exertions and efforts. Jain system of meditation aims at attaining liberation by destroying karmas with the help of stoppage and dissociation. The position of the karmas earned previously can be improved by adopting the method of transition, premature fruition, delayed fruition and hastening. To attain this goal, it is necessary to adopt equanimity, and to make dissociation, the supreme form of penance, an indispensable part of life should be a doped.

Gene is a part of our gross body and karma is a part of our subtle body. Genes are the carriers of man's hereditary traits. For every particular trait, a particular gene is responsible. This gene corresponds to the theory of karma. With the knowledge of the science of genetics, different parts of human body can be developed in laboratory by the technique of cloning. This will help a lot in curing many diseases that are uptil now considered as incurable. Besides all these benefits, with this new technique, it will be possible to change the genes that have been rendered useless. This technique will also help in controlling old age. The principle of transition is the principle of mutation of genes. Karmas can be dissociated and genes can be transformed by "emotional purification".

## Conclusion

There is a big challenge before the scientists. The question is—If gene is the controller of every activity of body, who controls the gene itself? The scientists have no answer to this question. But it can be answered by the karmic theory of Jain philosophy. These genes are guided, directed and motivated by karmas. These are the karmas that instruct the genes as to what next they have to do and the genes then act accordingly. In the formation of gross body, genes are the corresponding elements of karma.

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## Preparation and Arrangement of Manuscript....

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**In-text examples -** This is well documented in the literature.27-28 / this is well documented in the literature. (27-28)

Reference type- Published conference paper

#### Newspaper and magazine articles

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## Jiva or Soul

The Jaina conception of Jiva (Soul) occupies the first place among the doctrines of independent soul. The Jaina view of soul appears to be older than the views of other Indian systems of thought and it is comprehensible to the common people. This sentient principle was well established as the object of meditation for liberation of Lord Parshvanath in the eighth century B.C. The Jaina doctrine of soul did not change from the long past to the present time as it happened in the Buddhist and Vedic traditions

The term Jiva connotes that Soul is consciousness itself and consciousness also is invariably soul. The Jiva is non-corporeal, living, eternal and permanent, and fixed (constant) substance of the Cosmic Universe, having the attributes of consciousness (Cetana). Jiva is the generic name of sentient substance. Jiva substance is non-physical and is not sense - perceptible; it does not have the properties of colour, smell, taste and touch. Consciousness and upayoga are the differentia of the jiva. Upayoga and consciousness are the two sides of the same entity jiva. Consciousness may be interpreted both as a structure and a function of the jiva but upayoga refers to the functional side only. Upayoga gives us almost the same meaning as we get by being mentally active. Just as a mental activity is a fact of mental functioning and a mental capacity, a fact of mental structure; in the same way consciousness or chetana may be taken as a fact of the jiva's structure and upayoga, as a fact of the jiva's function.

Consciousness is the generality of the attributes (if not of all the attributes of the jiva), which distinguish the jiva from the inanimate. Upayoga is the generality of the manifestations of such attributes. This shows that the attributes of intelligence and intuition alone, as is generally understood, can be given a status of consciousness in the structure of the jiva; and these will not constitute the differentia of the jiva. However, intelligence and intuition are agreed to be the two main manifestations (upayoga) of consciousness. Both of them are comprehensions of the object by the subject.

Consciousness in mundane souls manifests itself in several ways: intelligence, knowledge, intuition, bliss, perception (cognitive elements), emotions, will, attitude and behaviour, awareness of pleasure and pain. Life and consciousness are coextensive. Wherever there is life, there is consciousness and vice versa. But there are degrees of explicitness or manifestation of consciousness in different organisms. In the lowest class of organisms, it is very much latent, while in human beings, it is very much manifest. Jiva is entirely distinct from inanimate existence, which does not possess consciousness.

Jiva is described from the aspects of substance (dravya), field or locus (ksetra), time (kala), condition or state (bhava) and capacity or quality (guna) respectively in regard to its co-relation with them. It is in number infinite living substances from the point of view of dravya, co-extensive with space of the Cosmic Universe from that of ksetra, eternal and permanent from that of kala, colourless, smell less, tasteless and touch less from that of bhava, and it is endowed with an attribute of consciousness (cetana) from that of guna.

Among many capacities of the soul the main and most comprehensible of all are capacity of knowledge, capacity of energy, capacity of volition or desire and capacity of right attitude of mind or belief. These capacities are nondifferent from it. Jiva is endowed with energy, exertion, action, strength, effort and vigor, and it manifests its sentiency by the state of itself, because soul having the inherent attribute of consciousness attains cognition of infinite modes of all kinds of knowledge and those of wrong knowledge, those of self-awareness, etc.

The soul is jnana (knowledge), i.e. endowed with right knowledge in some respect and also wrong knowledge in other aspect; the jnana itself is invariably soul, for consciousness is its inherent quality. Similarly, selfawareness and outside objects are correlated, because soul is possessed of the capacity of taking note of the natural external objects; it is the knower. It is also invariably self-awareness (darsana) and self-awareness is invariably soul itself.

Life-essentials of worldly soul are represented by five senses, mental, vocal and bodily activities, duration of life and respiration. Whatever things and behaviors it makes, such as forces (samskaras), etc. are reflected in it, one fine material body, called karma body, containing an impression of these forces is being formed by it, and that body exists and accompanies it at the time of taking up another new body.

#### Dr. N. L. Kachhara, Volume 1 Issue 1 April 2013

Jīva and special type of pudgala-skandhas, which are called karma, are mutually associated. Because of various activities and actions of jīva, an association is established between karma-pudgalas and jīva and according to these actions/activities; karma pudgalas affect jīva in a peculiar way. All the souls in this universe undergo effects such as sorrow, happiness, birth, death etc. so long as they are afflicted by karma-pudgalas. Only those souls who get emancipated from these effects of karma-pudgalas are designated as 'Paramatma' or 'Siddha'.

Jiva, even being conscious and non-corporeal, becomes corporeal by its activity of collected (formed) corporeal body up to the moment of existence of such body. In regard to the relation of soul with mind, speech and body, it is plain that speech and mind are non-soul, i.e. matter, for they are corporeal, non-conscious and nonliving, and are associated with the spiritual being soul. As to its relation with body it is defined that soul is identical with body, with the former exists in the latter. Thus the soul is corporeal and non-corporeal, conscious and non-conscious, living and non-living and it is of beings and non-beings also. The body was destroyed in the past, it exists and undergoes transformation at present and it will undergo transformation in future into the gross physical, gross physical-cum-translocation, transformation, transformation-cum-translocation, translocation, translocation-cum-karmic, and karmic bodies in association with the spiritual being, i.e. soul.

Dimension of extent (parimana) of soul decreases and increases according to the size of body. This change does not affect its fundamental substantiality; its basic essence remains unchanged. This is one kind of doctrine of transformation and also the doctrine of permanence-inchange. Its other aspect is the variation in manifestation of the quality or capacity of soul; it becomes the nature of permanence-in-change of the capacity.

Souls are existent in every iota of space beginning with one or more countless fractions of it up to the whole universe, i.e. if space is divided into countless points the size of a soul can be so small as to occupy one or more of these points of space and in special cases, of samudaghata, the size of a single soul can fill the whole universe. Thus the number of pradesas in each individual soul is equal to the number of pradesas in the Universe, which is countless. There is no such place in the universe where there is no existence of souls having fine or gross bodies.

In the multitude of souls the inherent capacity of soul is accepted as one (equal), nevertheless, the manifestation of each one is not equal. It is conditional upon the strength of its efforts (purusartha) and other causes. It means that the capacity of soul is one, viz. consciousness, but it manifests itself in and through these stages. Soul in the absolute sense is imperishable, immortal and impenetrable; none can cause pain or destruction to it nor can cut its inner points by touching it with hand or cutting it with a sharp weapon or burning it with fire; no weapon can enter into it.

The soul is eternal from the point of view of time and non-eternal from that of the state of existence (gati), as it is studied from its substantial and modal aspects respectively, for it was in the past, is at present and will be in future, and it undergoes change or transformation from one birth to another.

In nutshell the nature of Jiva conceived in Jain philosophy is this that it is super sensuous, imperishable, immortal, impenetrable, non-corporeal, eternal and non-eternal, infinite and finite, and dynamic in nature. In short the following facts apply to the soul:

- 1. In embodied existence, soul and body appear to be same but this is not really so. Body is different from soul.
- 3. Soul contracts or expands to occupy the space of the body he assumes. The same soul can pervade the body of an elephant or an ant. Not withstanding the size of the body, the number of pradesa of soul remains the same (countless).
- 4. Soul is non corporeal and is recognized by his power of perceiving and knowing objects.
- 5. Soul is the source of intuition, perception, happiness and vitality in a living organism.
- 6. Being invisible, soul is identified by his ability of cognizance, an embodied soul desires for comical amusement, recreation, pleasure, speech, movement etc.
- 7. The karma varganas attracted by a soul get converted into karma unaided.
- 8 The thoughts and actions of a soul leave a permanent impression. These impressions are stored in the karma body, which moves with the soul in his journey from one body to another.
- 9. The bondage of soul and karma is beginning less. The karma can be shed from the soul by practicing austerity and penance. This in fact, is the way to get rid of karma and attain the state of emancipation.
- 10. Soul is non-corporeal but he is embodied due to his impurity in the presence of karma.
- 11. All living organisms have similar potential powers and abilities but every living organism is in a different state of manifestation. The development of the soul is determined by own purifying efforts and other governing factors.
- 12. There is no place in loka where soul in subtle or gross

form (of organism) is not present. Soul: The Subject and the Object

In the absolute sense the soul can only be conscious of itself, because it alone exists as that state of pure singularity. When we say 'it is conscious of itself', we separate the intellectual level into two aspects: (1) the aspect that it is observer and (2) the aspect that it is observed (although they are one and the same). Intellectual examination, in fact, reveals the existence within consciousness of three values, inherent in any process of conscious experience or any process of observation: (1) the observer, (2) the observed, and (3) the process of linking the observer and the observed.

Even though there is nothing but one consciousness, this principle of three emerges. Consciousness being awake to itself experiences itself, and is at once the knower, the process of knowing, and the known- observer, process of observation, and observed; or subject, object, and the process of linking them. In this state of absolute consciousness, these three values are one and the same, yet they represent these aspects of the same singularity.

It is obvious that every relative experience requires a subject coming together with an object. This coming together takes place both on the level of attention as well as on the sensory level of perception. When the subject comes together with the object through the process of observation, then the experience occursthen knowledge of the object by the subject takes place. Knowledge therefore, is the result of the coming together of the observer, the process of observation, and the observed.

As one consciousness leads to three aspects, the interaction between the three and the resultant aspects, relationships, and their interaction, etc. leads to an infinite number of ever-expanding possibilities. All these possibilities, all these forces of interaction and relation, exist in the soul.

The interaction of forces, even though within the soul, creates a dissymmetry, as if a distortion, in the flat and homogeneous- yet infinitely flexible- absolute singularity of soul. The virtual pull and push, rise and fall, vibration and silence, dynamism and silence, leads to the formation of structure within the soul. Structure is the result of apparent breaking of infinite symmetry. With all interactions always taking place in accordance with the fundamental forces that uphold them, structure is the result of the virtual distortion generated by the interaction of forces.

structure is absent and the subject and the object is the same pure consciousness. In the impure soul the subject is the consciousness and the object is the structure created by the virtual distortion. The structure identifies the perverted state of the soul.

## Relations between Soul and Body

How is the soul related to body? This needs some explanation. But first the doubt of some that soul exists must be clarified. The following arguments support the existence of the soul.

- Self-consciousness possessed by a living being like I am, I am happy, I am sad, etc. The body does not make such experiences. Expressions like, I have done it, I do it, I will do it indicate the existence of soul the doer.
- The intention of doubt, curiosity, inquisitiveness, etc. is expressions of consciousness. The doubt I am or I am not, also generates in the soul and not in the body.
- 3. The soul is the counterpart of matter (ajiva). The existence of a substance without a counterpart cannot be supported logically.

As the soul is non-corporeal, it cannot be perceived or known by the senses, mind and intellect. Its attribute is consciousness, which too is beyond the reach of perception. It (consciousness) can be known only through its function, but it cannot be directly comprehended through sensory perception. The denial of the existence of the soul may chiefly be attributed to its imperceptibility.

We mentioned above that the soul extends in the body. The soul being non-physical in fact has no contact with the body. The relation with the body is made through karma. The soul is bound with karma but it has no contact with the karma either. The soul and karma has an association of essential nature. The soul does not occur without association with karma in nature, that is, the soul is always in impure state unless purified by special efforts. Was the soul without karma at any time in the past? No, like any other chemical element the soul is also found in impure state, impregnated with karma, in nature. The karmas bond because of the very nature of the karma vargana, the subtle cosmic matter, which are attracted by the soul due to its activities. The processes taking place in the soul due to its activities and that in the karma body run parallel, the soul experiences modification of its state and there is corresponding change in the karma body. The soul and karma are always in a state of some kind of equilibrium. The soul becomes free of karma only in the liberated state when all the karma is eliminated by special

In the pure soul or the soul of the Omniscient the

efforts. Once free no more karma is bound and the soul is not embodied again. The soul has innumerable pradesas and the karmas bond uniformly on each pradesa, there is no soul pradesa without association with karma. In this specific sense the principle of non-locality holds in the space of the soul

The body is constituted by cells. The soul pradesa and karma are associated with each cell. The cells and hence the body cannot function without soul and karma. There is life in the body so long as soul is associated with it; the body is dead when the soul departs. The soul extends only in the cells of the body. Our body contains some hollow spaces and spaces where the excreted material like urine and stool etc. are stored. These spaces do not contain cells and the soul does not extend there. The cells (live) are the places through which we experience pain and pleasure, because of presence of the soul; the empty spaces, and dead cells, are devoid of any sensation perception. The sensation of pain and pleasure is made by the soul through karma, in the absence of karma the soul does not have such sensation, and it experiences the bliss which is its natural attribute. It may be mentioned here that if pain is negative excitation, pleasure is positive excitation and the bliss is state of no excitation of the soul.

## **Derivative Powers of Soul**

The natural (svabhavika) powers are intrinsic to soul and are not related to karma. A mundane soul also has derived perverted (vaibhavika) powers due to removal or removal-cum-subsidence of karma. These powers are characteristic of the impure or perverted modes of the soul. The derived powers and the natural powers mutually influence each other and therefore in presence of derived powers the natural powers of the soul are not experienced naturally.

Based on karma the derived powers may be divided in two categories, the psychic powers as a consequence of removal or subsidence or removal-cum-subsidence of psychical karma (ghatin) and biological and physiological powers for physiological karma (aghatin). The psychic powers support the psychic activities like thinking, imagining, willing, creating choices and taking decisions, memory etc and physiological powers support the biological functions of designing, constructing and operating the body, the activities of sensing the objects, producing feelings, interacting with environment etc. The derived powers are produced by auxiliary cause (nimita) and remain in existence as long as the cause, karma, is present. Our existence as a human being is due to the derived powers of the soul and all our activities, psychic and somatic, are heavily dependent on these powers. The natural powers are manifested in a significant way only when the influence of derived powers is reduced on weakening of karma and our perception changes from indirect to direct.

The psychic powers and biological powers work in specific ways. The manifestation of psychic powers affect cognition that generates knowledge: this knowledge of the external world is, however, called ajnana, ignorance, in Jainism as it does not help in the ultimate goal of attaining salvation. As psychical karmas are reduced the natural powers of the soul are manifested in greater proportions and when this happens in large measure the soul attains the ability of direct cognitions. When all the psychical karmas are eliminated the ignorance is also eliminated and the soul attains omniscience, the state in which infinite jnana and darshana attributes, the natural powers of the soul are manifested.

At the start of life cycle from one-sense beings least amount of biological powers are manifested. As physiological karmas reduce the soul derives powers to have body with more numbers of senses and in the later stage acquires a human body. The sense organ with which the soul performs intelligent activities of mind, speech and body and the power to perform these activities is called karan in Jainism. As the physiological karmas are further reduced the soul develops abilities to manage the body in extraordinary ways which are known as supernatural powers. In the state of omniscience only minimum amount of physiological karmas are in balance and the whole body becomes karan and every part of body becomes means of super-sensory perception. The senses now become Omni-directional and normal sense organs lose their importance.

The physical sense organs, dravyendrian, have their counterpart in the soul structure known as bhavendrian or the psychic senses. The psychic senses are in the form of manifested jnana and darshana due to removal cum subsidence of respective karma. The physical sense organs are formed by rise of morphological (naam) karma and function because of existence of corresponding psychic sense that is the intelligent action performed by sense organs is due to manifestation of jnana and darshana attributes of the soul or upayoga of consciousness of the soul. Mere existence of organs in physical form, as in a dead body, cannot result in intelligent action in the absence of soul.

Physical sense system has two parts nirvriti and upakaran and each of these has two sub parts. The sub parts of nirvriti are (a) the outer part in the form of physical sense organ, and (b) the inner part in the form of some soul structure. Upakaran assists nirvriti. The outer part of upakaran is physical, implying brain that assists senses to comprehend the object. The inner part of upakaran is again some structural aspect of soul. Physical sense organs successfully work when both nirvriti and upakaran are functional; in case of malfunctioning of any of them the intelligent action is hampered.

The psychic senses have two parts labdhi and upayoga. Labdhi refers to power of the soul due to removal or removal-cum-subsidence of knowledge obscuring karma. Upayoga refers to manifestation of power of the soul and it is of two types one vested with form, sakara or plural, and the second formless, nirakara or singular. The first refers to jnana and the second to darshana. So bhavendrian essentially mean manifestation of consciousness of the soul as jnana and darshana attributes, which are instrumental in performance of intelligent action by an organism.

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# Doer, Deeds, Nimitta, and Upaadaan in context with modern science and spiritual science

(भौतिक विज्ञान एवं अध्यात्म विज्ञान के परिप्रेक्ष्य में निमित्त, उपादान, कर्त्ता एवं कर्म)



डॉ. पारसमल अग्रवाल

## l ljikk

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## Introduction

It is a human tendency that we look for the doer of an activity. Who is the doer of a rainfall? Who is the doer of earthquakes? ... But in Physics, we do not find the word 'who'. Instead, in Physics we find 'how'. In Physics, we ask, "How does it rain? How do we have earthquake? ...," Based on the way, Āchārya Kundakunda has logically explained various concepts in Samaysaār, one may find that Āchārya Kundakunda was aware of the limitation of answering the questions related with 'who'. This is evident from various facts which we are going to discuss in this article.

## Doer of the self

It would be appropriate to look at Samaysaār, where Āchārya Kundakunda [1] writes the following:

OmOpåh JWokidogmAÊUpåh XvU gØ\$\_{X Xidik gmAÊU\_gØ\$/mH\$h V\$n[aUm\_E Xidi\$&103& XidJWñg` AnkmU H\$U{X nntdb\_`påh H\$h\_påhik V\$C^`\_H\$d§/mVpåh H\$h\$Vñg gmH\$imik&104&

Meaning: The attributes and substance (Dravya) of any Dravya do not change into those of another Dravya. Without such change, how can one Dravya transform another Dravya?

A soul cannot do any attribute or substance (Dravya) of Pudgal Karma. Without doing these two how can a soul become the doer of that (material Karma)?

It may be noted that Āchārya Kundakunda does not confine to the above concepts based on real point of view. In Samaysaār, we find that on one hand Āchārya Kundakunda explicitly writes that in reality (from the real point of view) a soul cannot be the doer of pitcher, cloth, chariot, senses, karmic matter, physical body, etc. [2] but a soul can be the doer of one's own Bhava [3]. On the other hand from the relative point of view (Vyavhaār Nay) a soul becomes the doer of pitcher, cloth, chariot, senses, karmic matter, physical body, etc. [4]. This concept of real point of view has been narrated by other spiritual teachers also. For example, refer to Paramātma Prakāsha [5]

**Question:** Based on the above description, how can we show the agreement between Āchārya Kundakunda and modern Science?

**Answer:** We have seen that Physics does not answer the question 'who is the doer?' whereas Āchārya Kundakunda answers this question in the following two ways:

- (i) In reality, a Dravya is the doer of any change in itself only. Thus a soul cannot be the doer of any other soul or any material particle.
- (ii) A Dravya can become the doer of transformation in other souls and material particles from the relative point of view.

Thus the point (i) conveys that a cook cannot make even one particle of food. This answer is in total agreement with Physics. But the point (ii) is meaningful when the wages to cook are to be given. The salary of a cook is a subject of Economics, not of Physics. Physics cannot certify the cook as the doer of the cooking. It should be noted that the spiritual science as well as any religion has to cover natural sciences as well as social sciences. Here it is clear that point (i) is in agreement with the natural science. Thus there may be difference in words, but there is agreement between modern science and Āchārya Kundakunda [ see point (i)] as regards the answer of the question– 'who is the doer?"

The central theme of Samaysaār related to this aspect is simple. In the treatise Samaysaār, Āchārya Kundakunda answers the question, 'who is the doer?', related with all events in two ways: (i) Relative point of view, and (ii) Real point of view. From the relative point of view he accepts the conventional answer. But the reality is described by the real point of view. According to Āchārya Kundakunda, in reality, one is the doer of oneself only. Each and every Dravya is a sovereign entity and has 'divine' powers to do its tasks.

In other words, as per the real point of view, one Dravya cannot be the doer of another Dravya. Āchārya Amratchandra [6] has very nicely summarized this concept in the following verse:

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`: n[aU_{V g H$Vn? : n[aUm_no^d@mVËH$_``&
`mn[aU{V: {H$ mgmÌ`_{n {^Þ$Z dñVW`n`&&
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**Meaning:** The doer, deed, and action, all three, correspond to the same Dravya (substance).

A scientific example to illustrate the above verse is the law of conservation of energy, which says that the energy can neither be created nor be destroyed, it only changes its form. Thus in reality, nobody can be the doer or maker or creator of energy. The energy in the form of mass in the uranium converts into the electrical energy in the nuclear power plant.

**Question:** When a child throws a stone at a glass window then we say that the child has broken the glass. We do not say that the glass has broken the glass. How can we say that the glass has been broken by the glass itself?

From the relative point of view we say that the child has broken the glass window. For the sake of teaching the lesson to the child, and maintaining the law and order it is important to have this point of view.

In a laboratory, where the research on the development of a new rough and tough glass material is carried out, a scientist tests the new material to find its strength. After completing the experiment, the scientist reports the minimum impact necessary to break it. His emphasis is on the nature of the material. He knows that the material breaks according to its own nature. He understands that he is the instrumental cause to impart the impact. Thus in the real sense, the scientist does not become the doer of the breaking of the glass, because he knows that the glass has its own breaking parameters under which it would break. In other words, from the view point of the science, the glass breaks according to its own property (nature).

#### Nimitta and Upādāna

In the language of scriptures, we call the instrumental cause as Nimitta. Any happening in an Upādāna in accordance with the definite laws of nature due to one or more than one Nimitta is technically known as an outcome due to Nimitta- Naimittika relationship. The phrase 'Nimitta- Naimittika relationship' of scriptures may be understood as the happening of transformation in accordance with definite laws of nature. For more clarity let us discuss some concepts in the question-answer format.

**Question:** What about the involvement of engineers and scientists in the production of electricity in the nuclear plant? Does natural science give any place to engineers and scientist in the process?

**Answer:** The Physics clearly says that in the nuclear power plant, the electricity comes from the nuclear fuel, not from the pockets of engineers and scientists. The engineers and scientists cannot create energy. We all know that without labor force, security guards, politicians, scientists, engineers, clerical staff, finance, physical space, etc. the power plant can neither be functional nor can be sustained. But all these aspects are recognized by the social sciences and engineering disciplines, not by the natural sciences. None of these persons becomes the part of scientific equations describing the transformation of nuclear energy into the electricity.

**Question:** If engineers and scientists are needed in the nuclear power plant, then how can we say that they are not the doer or creator of the electricity?

**Answer:** The engineers and scientists deserve appreciation and salary for their contributions. But in the equations of Physics related with the production of electricity, they do not get any place. If public does not recognize this fact then on one hand the public may be too much thankful to them and on the other hand the public may have too much expectation from them. In such case, even the public may expect a continuous supply of electricity irrespective of the availability of nuclear fuel.

**Question:** Can we say that engineers and scientist associated with the nuclear power plant are the Nimitta (instrumental cause) for the production of electricity?

**Answer:** The Physics does not use this word 'Nimitta' (instrumentalcause). The Physics is interested indescribing 'how'. This 'how' is described through machines, forces, and the laws of nature. Ācārya Kundakunda and other Indian philosophers use 'Nimitta' word in a proper context. If all other components including engineers and scientists work properly and the electricity is produced, then each component is called the instrumental cause (Nimitta), and the actual source of energy (nuclear fuel) is called Upaadaan. If they make mistakes or if any component is missing and the electricity is not produced then they are not called as Nimitta. If by their mistake there is an explosion and many persons loose their lives then they would be Nimitta for the deaths of those persons.

The above description of Nimitta is very crude. In more advanced description, the things, souls, persons are not called as the Nimitta but the specific actions and states leading to the desired specific outcome are considered as Nimitta.

This concept of recognizing specific actions of a person or a soul or a robot, as the case may be, leading to the desired outcome, as Nimitta is so important that it would be worthwhile to explain it by giving some examples: In a cricket match, suppose a cricket player makes six sixes on six successive balls. Certainly, he deserves appreciation, credit, award, etc. But on the basis of this, if his fellow citizens and fans say, 'You did very good job. Now we know that you can make six runs on every ball. Therefore, we request you to continue this practice. Please go on making such sixes. If you do this then we shall reward you, but if you do not continue making such sixes on every ball then we shall consider it a match fixing and we would criticize and punish you." Would he agree to this request by his fans? Would it be possible to make such sixes on all balls?

At this point, the player may say, "It is not possible for me to make six runs on every ball. The making of a six runs is a matter of circumstances based on the conditions of my body, mind, incoming ball, etc. which are beyond my control." This answer of the player seems reasonable. In effect, he is saying that the conditions of his body, mind, and incoming ball are the instrumental cause for such a happening, and he is not even an instrumental cause for the making of sixes. Therefore, it is not always possible to repeat the same.

Just like this cricket player, a teacher, a doctor, parents, and many others should also accept similar limitations. In the technical language of scriptures, one can say that the state (Paryāya) of a Dravya becomes the Nimitta (instrumental cause), not the Dravya (substance or entity). The logic is simple: if a Dravya is an instrumental cause (Nimitta) then such a task can happen every time by that Dravya. The happening of the task again and again by a Nimitta in association with the Upādāna has been termed as Nitya Kartratva by Ācārya Amratchandra in the commentary of Gāthā 100 [7]. There he explains that Nitya Kartratva (always same success in doing the same task) is not always possible. Therefore, the participating Dravya cannot be called as a Nimitta, but the states of Dravya responsible for the completion of the desired task are to be called as Nimitta.

In the above example, the cricket player says that if I can be Nimitta of making six runs on every ball then I would love to do so, but I am unable to become such Nimitta.

## More advanced concept of Nimitta

Only the specific situations leading to a Six can be called as Nimitta, not me. However, when the six-run event takes place, then for my 'involvement' in this process, the public gives me credit of making the six runs. But the public must realize this fact that I cannot always be Nimitta of making six runs on every ball. In this regard, we can take one example of Chemistry: Depending on the specific situations, carbon and oxygen may combine to form carbon monoxide (CO) or carbon dioxide  $(CO_2)$ . It is also important to note that under many situations carbon and oxygen atoms may not combine even if they are compelled to come close to each other. These possibilities can be expressed by the following equations:

$$C + O_2 = CO_2$$

 $C + O_2 = CO + O$ 

$$C + O_2 = C + O_2$$

The author has conducted extensive research on this area of state-to-state Chemistry using Molecular Dynamics to investigate such issues of combination and dissociation of atoms and molecules, and have found again and again that the states of the reacting atoms and molecules play a significant role in the chemical reactions.

## Practical application in our day-to-day life

#### **Curing power of medicines**

No doubt, the right medicines become instrumental cause (Nimitta) for curing a person. But this is an incomplete information. The medicines alone cannot cure. According to the medical science, the cure takes place when the right kind of molecules of a medicine react appropriately with the molecules responsible for the sickness. Many times in such biochemical events, the environment and psychology of the patient play a crucial role. Due to this reason, the same medicine can cure one person but becomes ineffective for another patient having same sickness. The success in curing every time (Nitya Kartratva) is not observed. Therefore, in strict sense, we cannot grant the status of Nimitta. This again reminds that only specific states of a Dravya can become Nimitta, a Dravya cannot be called as a Nimitta in the strict sense. What to learn from this description? Answer: Don't depend entirely on medicines; in addition to the appropriate medical treatment, think of improving your beliefs, psychology, and the environment also.

Your one student passes his examination with the first position in the merit list of the university and another student fails in the same examination. In such situation would you like to be called as a Nimitta for the success of one and failure of another. If you boast for one then you should feel guilty for another. In both the cases you are mistaken. We should understand very well the teachings of Ācārya Amratchandra described here that the same classroom lectures delivered by you are received differently according to the state of minds of the recipients. Therefore, think of the state of minds of the recipients also before boasting or feeling guilty.

The same applies to the effect of your teachings to your sons and daughters, and other tasks being carried out through your body and mind.

#### Peace and happiness by witnessing

I am a soul, not the body. I am not the doer of any physical event. I am not a doer but an observer (a knower) of others. I am not the doer of even my own thoughts. The thoughts are not possible without soul but it does not mean that the soul is the doer of thoughts. Without light the scenes of fire, rain, fight, etc. are not possible on the screen of the cinema hall, but it does not mean that the light is the doer of all those scenes 'stored' in the film. In BhagvatGītā [8] also we find that the soul is beyond mind. Such an understanding of oneself beyond mind and body leads oneself to identify as a witness of all events including the actions of the body and mind.

Many western psychologists and philosophers also have emphasized the importance of being witness. This act of being witness is also valuable in improving the peace of mind and health of the physical body. In this regard the following lines written by Wayne Dyer in Your Sacred Self are worth noting [9]:

"Stephen Wolinsky describes it this way in his book: Quantum Consciousness: 'If I can begin to observe and witness my reactions, then I will feel freer and more at peace. It is only by the identification and fusion with a thought or feeling that I limit myself from being the observer to becoming the experience itself.' "

At another place, Wayne Dyer provides a practical method to become witness. He writes [10]:

"First you want to watch your thoughts. Then you want to watch yourself watching your thoughts. Here is the door to the inner space where, from all thoughts, you experience the bliss and the freedom that transport you directly to your higher self."

#### Duties without guilt and boasting

In this regard the following comments regarding detachment with emotions provided by Gary Zukav and

#### Linda Francis are worth noting [11]:

"Detachment allows you to remain aware of what you feel while the events of your life unfold. When you are detached, your emotions run through you like water through a hose. You are the hose. The same water does not stay in the same place in a hose when the faucet is turned on. Your emotional faucet is never turned off. The fear, resentment, anger, depression, contentment, jealousy, rage, or joy that you feel do not stay, either. When you look at your emotions in this way you can detach from them enough that you will not be controlled by them."

#### (d) Prevention of depression

The spiritual masters explain that your sons/daughters/ friends/servants/, etc. receive benefits through you but not from you. When you start thinking that due to you your son has been rich and famous then think again. Such a notion may become the source of your frustration and depression.

The religious teachers preach that every son and daughter should be loving, caring, and respectful to his/her parents. But at the same time they also teach that every parent should understand the notion of nondoership described in this article from the real point of view to avoid frustration and depression based on the behavior of his/her sons/daughters.

The writings of spiritual teachers based on the real point of view become valuable not only when you have complaints with others, but such teachings are also valuable when you have complaints with yourself. The chronic complaints with yourself produce guilt feelings which can also lead to frustration and depression. Despite your sincere efforts within your limitations, you might have not been able to save your loved one. Your son/daughter might have not achieved as much as your neighbor's son due to your financial condition. Your son/ daughter might have adopted the wrong track due to some reasons beyond your control. In all such cases, a correct understanding of Upādāna and Nimitta described here on the basis of teachings of our spiritual masters can be helpful. Ask yourself this question: "How long can I keep the feelings of guilt and shame for the actions or inactions beyond my control?"

One should be a responsible person in the society in all walks of life, but in the heart and mind one should not forget this fact that he/she is not omnipotent. It is important to realize that there are many factors which are beyond our control. Further, one should always remember one's identity as the soul different from the body and mind.

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- 3. Ibid. Gāthā 91, 100.
- 4. Ibid. Gāthā 98.
- Ācārya Yogendu Deva, Paramātma Prakāsha, Gāthā 64 and 65.
- 6. Ācārya Amratchandra, Ātmakhyāti, Kalasha 51.
- 7. Ibid, Commentary on Gāthā 100. In this commentary following lines are worth noting:

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These lines convey the following: The soul is not even the Nimitta doer (instrumental cause) of anger, pitcher, etc. If it is the doer then always it should be able to do the same. After writing these lines, Ācārya Amratchandra further writes that only specific temporary Yoga and Upayoga of soul are Nimitta doer. The soul may (note the word 'may, not 'can') be the doer of Yoga and Upyoga produced by ignorance.

- 8. BhagvatGītā, Verse 3.42 and 3.43. Further, regarding doership, verse 3.27 and 13.29 are worth noting.
- 9. Wayne W. Dyer, Your Sacred Self, Harper Paperbacks, 1996, p. 130.
- 10. Ibid, p. 136.
- 11. Gary Zukav and Linda Francis, The Heart of the Soul: Emotional Awareness, Simon and Schuster Source, New York, 2001, p. 110.

## Uniqueness of Concept of 'God' in Jainism – A Comparision of Various Ideologies and Theories of Modern Science

Er. Piyush Jain

## Abstract

As a student of science, and that too from the field of Electronics, I am used to see things in ones and zeros – either it is there or not-there. During my early exposure to Jain spiritualism and philosophy, one question about God always haunted me – literally the whole world says, GOD IS! I ask, IS GOD? They say - Hey Bhagwan! I ask - Hai Bhagwan?

Let us start from beginning; do we have a definition of GOD?

One will be surprised to know that only Jainism provides for its definition; all other religions, philosophies and beliefs provide description. According to Jainism –

"GOD is a soul liberated from the bondages of karmas. That is a soul (atma) which sheds its apparent duality with body (sharir) and attains singularity (siddha)." Jainism, unlike others, comprehensively rejects the idea of any creator, perpetuator or destroyer God and emphasizes on the potential of divinity of each and every soul alike. A soul in Moksha is devoid of rebirth, attachment, aversion, pleasure, pain, misery, sufferings etc. and attains eternal bliss - which is the ultimate divinity.)

When I went on to have a reality check on the so-called attributes of GOD as described by various religions, I had a shocking conclusion – reality does not match with the portrayal. For example, the stipulated attribute of HIS compassion falls flat on the all encompassing misery. Belief that HE has infinite intelligence as creator, too, does not hold the ground as all his models (living beings or otherwise) are failures as they perennially face death, disease and destruction. My presentation, therefore, focuses on the three aspects –

- i. Sources of our knowledge about GOD.
- ii. Attributes of GOD eternal conflict of faith versus reason.
- iii. Science and Jainism do they have meeting ground?

Renowned scientist, Stephen Hawking writes in his best-seller 'Brief History of Time', "the sun always rose in the east and set in the west, whether or not a sacrifice had been made to the sun god. God would choose how the universe began and what laws it obeyed, but he would not intervene in the universe once it had started. In effect, God was confined to the areas that nineteenth-century science did not understand." In another book 'Why God Did Not Create the Universe', he writes, "As recent advances in cosmology suggest, the laws of gravity and quantum theory allow universes to appear spontaneously from nothing. Spontaneous creation is the reason that it is not necessary to invoke God to light the blue touch paper and set the universe going."

- Why is it essential to settle this issue of GOD's existence in the context of present social scenario?
- Will it provide us a break-through to overcome our miseries and sufferings?
- How uniqueness of Jainism can help bring a paradigm shift from culture to future?

### Let us examine

## Introduction

#### They say - God is! I ask - Is God?

Asking questions is the fundamental rule of the game named knowledge. In democracy, media asks grueling questions from politicians and bureaucrat about their dealing and wheeling. Public, too, asks several questions before casting its vote. Customarily, we ask several questions before solemnizing marriages, before buying any product, before choosing a doctor to treat us and so on and so forth. In short, we normally ask multiple questions, find appropriate answers and then take a decision. It is, in fact a universal procedure of coming to a conclusion or of unearthing the truth. But, strangely, before putting our entire faith in God, we, in general, do not follow this norm of asking questions and getting answers. We, for time immemorial, have not sincerely tried to replace our faith with knowledge.

We do not believe that there exists an animal as huge as Himalaya, we do not believe that humans can have hundred eyes or limbs, in short, in we not believe in anything unbelievable. Then, why those who believe in God's existence do so?

Is it because of majority does so? Is majority view guarantee to truth?

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Is it because it is our culture? Isn't one bound to fall if one runs on the path of future with head turned backwards?

Is it because our ancient texts and wisdom say so? When everything else contained in them regarding universe has been proved wrong, how is it that what is said about atma-parmatma is right?

Or, is it because that we do not have any other plausible explanation? Isn't it prudent to wait till we have one?

Here I am trying to answer all these questions.

Over the last few decades, we have acquired a treasure of knowledge and have shattered several myths in the process. For instance, just a few hundred years back, we believed the Sun is revolving around the earth. Today, it has turned out to be an irrefutably false myth. Just imagine, a person devoting almost his entire life

## Chapter 1: Sources of Information

The journey of quest, if successful, ends with an answer and if unsuccessful, ends up in a belief, which could be true or false depending on your luck. Since I was keen on getting an answer, I shed all my beliefs (in His various forms) with which I was born, brought up and indoctrinated with. The first question which sprang was about the sources of information about Him. We, normally look up to our elders for this so did I. Finding their answers to be based on faith rather than knowledge, I turned to friends who, in turn, direct me to religious leaders. The buck eventually stopped at the classical, historical and so called sacred religious texts and literature. Those with faith in Hinduism point to Vedas, Christianity to Bible, and Islam to Qur'an - just to mention a few from otherwise exhaustive list. With only exceptions of Jainism and Buddhism, almost all other religions believe that either the world is His or belongs to Him. Whereas the former, along with the modern science, believe that the world is spontaneous. Here again, Jains and Buddhists part their way with science in believing that we the human can attain 'Him-ness' through managing our lives as per spiritual teachings.

While getting the broad idea, and finding no consensus on the issue, my quest became more curious. Inter and intra religious contradictions came to fore as I dug deeper. Now it became essential for me establish the authenticity of each religious text so that a clear and distinct winner emerges. Various prevailing ideologies can be summarized as – Polytheism – Christianity, Hinduism Monotheism – Judaism, Islam Non-theism – Jainism, Buddhism believing in the existence of God Almighty, finds on his death bed that IT was a mirage! Do you want to be one such person? At least I would not.

I, for a change, would like to undergo the grueling process of finding answers before I bow in front of God for mercy, favor and protection; before I pray to Him for health, wealth and happiness. The path I thus treaded was –

- To find out various sources of information about Him and ascertain their authenticity.
- To unearth truth behind His universality, omniscience and omnipresence.
- To uncover His role as Creator, Perpetuator and destructor.
- To investigate the role of science in this scenario.

#### Polytheism –

In polytheism, all natural forces and destiny were treated as divine. They were departmentalized and appointed with a symbolic head. These heads were then worshipped as gods and goddesses. Soon, a large army was imaginarily created and need for a 'General' was felt to look after, organize and discipline them. And, so an omnipotent God came into being.

A. Hinduism – It is commonly perceived as a polytheistic religion. Indeed, most Hindus would attest to this, by professing belief in multiple Gods. While some Hindus believe in the existence of three gods, some believe in thousands of gods, and some others in thirty three crore, i.e., 330 million gods and goddesses. However, learned Hindus, who are well versed in their scriptures, insist that a Hindu should believe in and worship only one God. Very confusing, isn't it?

Main source of their divine beliefs is the set of four Vedas – Rig, Yajur, Sam and Atharva. The concept of divinity seems to have evolved in the later scriptures like, Upnishads, Bhagwad Gita, Brahma Sutra etc. Starting with polytheist worship of personified powers of the nature namely, gods of heaven, air and earth, as described in Rigveda, Hindu faith shifted to Trinity of Brahma, Vishnu and Shiva. On the other hand, Yajurveda, Upnishads, Gita and later texts were vehement about the concrete monotheism. A maddening cocktail of all possibilities thus exits.

I am quoting a few statements -

#### **Rigveda:**

"Gods of upper world, air, earth, abstract deities, inferior deities, demon deities and ancestral spirits can be invoked by recitation of Vedic hymns and oblation of soma-ras."

Atheism – Science

#### Rigveda Book II hymn 1 verse 3:

"Brahma means 'The Creator'. He has four heads witheach head having a crown. Vishnu means 'The Sustainer'. He has four arms, with one of the right arms holding the Chakra, one of the left arms holding a Shankh, He rides a bird and reclines on a snake couch."

#### Yajurveda:

"Na tasya Pratima asti" - "There is no image of Him." [Yajurveda 32:3]

The Brahm Sutra of Hinduism is:

"Ekam Brahm, dvitiya naste neh na naste kinchan" -"There is only one God, not the second; not at all, not at all, not in the least bit."

#### Bhagavad Gita [7:20]:

"Those whose intelligence has been stolen by materialdesires surrender unto demigods."

Upanishads [Chandogya Upanishad 6:2:1]:

"Ekam evadvitiyam." - "He is One only without a second."

Besides these beliefs, there are other popular concepts of Advaita, Vishishtadvaita and Dvaita, just to name a few. All these, and many more ideologies, belong to Hinduism.

Which one of these has come from divine source; I leave it to your prudence.

B. Christianity – Unlike Hinduism which started with polytheism and ended up with monotheism, Christian faith, an offshoot of Judaism, started with monotheism and ended in limited polytheism of Trinity – God the father, the Son and the Holy Spirit.

Catholic Encyclopedia unpacks the doctrine as follows -

The idea that there is One God, who is Father, Son, and Holy Spirit means:

- There is exactly one God
- The Father is God
- The Son is God
- The Holy Spirit is God
- The Father is not the Son
- The Son is not the Holy Spirit
- The Father is not the Holy Spirit

Again, I leave it to your prudence to decipher it; wether one God splits in three parts or three parts join to make one. A hair-splitting puzzle! The Trinity is a controversial doctrine; many Christians admit they don't understand it, while many more Christians don't understand it but think they do.

#### Monotheism -

When a large army of gods became practically difficult to worship and the highest authority (God) was already in place, people subtracted a few of them and uphold the ultimate One. Why waste time, energy and money for a lesser being when the final authority can take care of everything?

A. Judaism – Historically, both Islam and Christianity are its offshoots or derivatives. Judaism revolves around thirteen principles of faith all of which advocate unquestioned faith in the Creator. Their monotheism is more ethical and social than philosophical. This skygod concept made Gore Vidal, an American essayist and political activist to comment, "The patriarchal Omnipotent father and His earthly male delegates have loathed women for 2000 years in those countries afflicted by the sky-god concept". However, Jewish philosophers often debate whether God is transcendent, and whether people have free will or their lives are determined?

B. Islam – There is a subtle difference between the Hindu and the Islamic monotheism – while the former says 'everything is God', the latter believes 'everything is God's'. Islam, the very word means submission, and the one and only God named Allah means 'the strong', 'the powerful'. Islamic prayer categorically states that there is no God but Allah and Muhammed is His prophet. As its predecessor, Islam too is a law unto itself rather than a philosophy. As the interpretations vary from region to region and from person to person, ideological differences are abundant within Islam too.

Muslims regard the Qur'an as the literal word of God, as revealed by the Angel Gabriel to the Prophet Muhammad. However, critics allege that Muhammad wrote the Qur'an from Christian and Jewish sources. Islam is also charged, with regular recurrence, for oppression of women, extremism, intolerance and jihad. Though Muslims deny all these charges vehemently and attribute it to twisted interpretation of Qur'anic verses by the vested interests, one question remains – if it was God's revelation through Angel, how its verses remained ambiguous to be interpreted in a free-wheeling manner?

#### Non-theism –

Initially, when polytheism became unmanageable, a few gods were subtracted and replaced with a trinity. They further trimmed it to one. Now, subtract the remaining one as well and you are left with either non-theism or atheism. While the non-theists believe that individual godliness (not in terms of omnipotence) can be attained, atheists treat life as a one-time affair – from default to death.

A. Jainism – It is worth mentioning here that in Western

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English literature whenever and wherever religions are mentioned, Jainism is rarely included. Because they treat it more an ethical way and philosophy of life. Personally, I treat it as a tribute to its greatness.

God has a very unique place in Jainism. It rejects the omnipotent, designer, creator, perpetuator, destructor idea. Jain stipulations are –

- There is no God to maintain the universe
- There is no God of judgment
- There is no God the ruler
- There is no God who helps people
- There is no God who demands worship
- There is no God compared to whom each of us will always be inferior
- The heavenly beings are not gods

From Jainism's view point, world neither had a beginning nor will have an end, thereby eliminating the need for creator/destructor. Systems in Jainism are cyclic in nature and entities infinite. This beauty brings it very close to logic and science. As a giant wheel, time keeps on changing from one extreme to another without any divine intervention. Destiny is not divine controlled but is dexterity driven. So, individual karma is supreme. The onus is on the human to become a god and not the other way round. A god, in Jain philosophy is a soul devoid of death-rebirth, attachment-aversion, pleasurepain, misery-ecstasy, etc. Soul attaining an eternal bliss is godliness. This god, however, is not potent to rule the universe. Discussions on fine matter, space-time, and perceptions of brain and constitution of universe are elaborately described in Jain canons. All these are worth a scientific look, however though, some questions still remain unanswered.

B. Buddhism - In essence, theories of Buddhism as far as God is concerned are same as that of Jainism. But in the absence of elaborate theories about constitution of universe, composition of matter, characteristics of time and space, it would be difficult to bring it at par with science. Quoting Buddha from Woodward's Gradual Sayings, "So, then owing to the creation of an Ishwara, men will become murderers, abusive, covetous, malicious etc. Thus, for those who fall back on the creation of an Ishwara as the essential reason there is neither desire to do, nor effort to do, nor necessity for an action or inaction not being found to exist in truth and verity, the term recluse cannot reasonably be applied to yourselves, since you live in a state of bewilderment with faculties unawarded. Such is my rebuke to those recluse and Brahmins who thus teach and hold such view."

Buddhism teaches the path of Nibbana – state of perfection, real supreme divinity.

#### Atheism –

No super-human, no birth-rebirth, no reward for good deeds no punishment for sins, no prayers, no religion, no soul, no salvation and last but not the least no God. Atheists treat universe as nature – spontaneous, undesigned and self governed by its own laws.

A. Science – As far as known history is concerned, it all started with the conflict of Galileo, the father of modern science, with the Church. When for the first time, Galileo inspired by Copernicus's heliocentric (suncentric instead of prevailing geo or earth-centric) model of planets, confronted the teachings of Bible. Dents in the God hypothesis were consistent and became deeper as science progressed. Later, blow came from Darwin, who threw God out of biology. He conclusively replaced design with evolution. God met similar fate in the field of physics first, by Albert Einstein and later by Stephen Hawkins. Last nail in His coffin is, however, yet to be hammered by the science. Unlike the religious leaders, there are no designated leaders in the realm of science. So, while the official line of thought is available for religions, there is no such authentic proclamation from the science per se. We can only gauge the mood of science by what famous scientists have to say about the concepts prevailing across the religions. Though there is no dearth of scientists who advocate the concept of God, the voices against are steadily growing. Some such voices, which compel us to think otherwise, are quoted below.

B. Individuals – Some documented landmarks in the history of science existed because of a few individuals who are revered for their outside the box thought process.

"God wrote the universe in the language of mathematics"....Galileo

"I do not feel obliged to believe that the same God who has endowed us with sense, reason and intellect has intended us to forgo their use.".... Galileo

It is said that Galileo accepted the God for the fear of church's wrath, but sown the seeds of dissent simultaneously.

"Thus disbelief (in God) crept over me at a very slow rate, but was at last complete."...Charles Darwin

"The mystery of the beginning of all things is insolvable by us; and I for one must be content to remain an Agnostic."...Charles Darwin

"It was, of course, a lie what you read about my religious convictions, a lie which is being systematically repeated. I do not believe in a personal God and I have never denied this but have expressed it clearly."...Albert Einstein
"If something is in me which can be called religious then it is the unbounded admiration for the structure of the world so far as our science can reveal it."...Albert Einstein

"Because there is a law such as gravity, the universe can and will create itself from nothing. Spontaneous creation is the reason there is something rather than nothing, why the universe exists, why we exist....It is not necessary to invoke God to light the blue touch paper and set the universe going." – The Grand Design (Hawking and Mlodinow 2010)

"Ignorance of nature's way led people in ancient times to invent gods to lord over every aspect of human life." – The Grand Design (Hawking and Mlodinow 2010)

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Broadly, therefore, two categories emerge – They: as believers and I and others like me: as non-believers. They relied on the vulnerable oral or written word dating just a few thousand years back, while the others relied on non- vulnerable fossilized movie of facts dating back to the time of inception itself. For them the sources of information are ancient treatises and for others the sources are science and logic. All concepts and philosophies including the one of God start with a hypothesis. If proved right – it becomes science; if not – it becomes belief.

An ostrich's belief is ignorance.

A scientific truth is prudence.

After classifying various ideas, as above, about God in ancient canons, I set on to establish their authenticity. In each case it turned out that due to lack of printing and data storage capabilities, most of the information got corrupt in the due course of time. Even when the texts were inked, prevailing beliefs were freely distorted to suit the reigning authorities and to get rid of the uncomfortable questions. And, I am sorry to observe that the process is still on. Besides, if I keep historical background in perspective, I find that the human knowledge was in its infancy in the era dating a few thousand years back. We are knowledge-adults today. How, therefore, an infant knew more than an adult?

A pet reply that the religious texts were invariably narrated or dictated by the agents of God themselves was also scrutinized by me. When I read them in their totality, I was amused by the fact that they knew everything about Atma-Parmatma terming them as invisible and intangible but pathetically ignorant about everything tangible in this world. They were either silent about the internal body organs, extent and constitution of universe, composition of matter, or were miserably off the mark in stating that the sun revolves around the earth. So, if they were wrong on most of the facts of this universe, isn't it questionable that the so called agents of God, saints etc. were mere marketing tactics of a few shrewd against ignorant masses? Concepts like earth being a flat disc, earth being supported on Sheshnag's hood, creation of Adam and Eve, Six Days of creation and settling down on the throne etc. are all seem to be figments of imagination. For all religions, the universe starts with earth as centre and a few planets and sun complete the entirety. We now know that very many galaxies are out there and who knows how many civilizations inhabit those celestial bodies!

With authenticity questionable, let us put the God hypothesis to litmus.

# Chapter 2: Inherent Paradox

They say – He is Universal! I ask – then how is He perceived differently by each individual?

Everyone has his own idea about the appearance, personality, powers and manifestations of God. If He is omnipresent, why do we need to worship His idol in designated places only? Why loudspeakers are deployed to communicate with him when a whisper could be good enough? Paradox needs resolve. Quoting from Richard Dawkins' 'The God Delusion', "Not surprisingly, since it is founded on local traditions of private revelations, the God Hypothesis comes in many versions." There are as many gods as the number of brains. At times even within one's conscience the perception of god keeps on changing.

Besides, universality of any thought is not the guarantee of its truthfulness. Just a few hundred years back, entire humanity believed as earth being stationary and sun along with planets revolve around it. It was universal yet far from truth! Before the onset of modern medicine, all diseases were attributed to one or the other god/ goddess. Today, several diseases have been eradicated for good. What happened? Has the goddess of smallpox retired after causing enough agony for thousands of years? In India it was prevalent to hold the mother responsible for the birth of a girl-child, while the truth is just opposite! If a belief is widely accepted, it does not automatically become true. We must accept that we as human race have collected as much knowledge in past 5-6 hundred years as was never done in the preceding millions of years, thanks to science.

Even today there is no direct evidence of His existence or presence. Just hearsay! Yet, an overwhelming majority believes in Him, one way or the other. Two reasons are responsible for this – first, yearning to possess more than others - the sheer greed, and second, apprehension of ominous - the fear of unknown. A seed of fear is sown in every child's mind that if he denies the existence of

God, he will have to face His wrath and perish in hell. Conversely, if he bows to Him, he will be rewarded with the wealth, pleasures and joys of life besides, of course, the heavens. Doesn't it shock and surprise you that the entire edifice of god is standing on two weak pillars of human greed and fear.

They say – He is Almighty, all-powerful and omniscient! I ask – isn't it self-contradictory?

Then how He could not standardize the forms of life and types of death in these billions of years of existence? From plants to mammals, there are innumerate ways of reproduction and as many patterns of decay and death. Why has He complicated His own job? On my way to work place and back, I often witness carcasses of dead animals killed by a speeding vehicle. These dead bodies are repeatedly being run over by other vehicles creating a disgusting sight. Doesn't a creation of Almighty need a decent and respectable final good-bye? Yamraj, the god of death, should have been at least as much courteous as to throw the remaining corpse into a celestial dustbin after removing the soul (?) out of it! On the top of it, the entire cycle of reproduction has become a bone of contention among the prospective suitors. Sex is treated as dirty word and causes many a deaths, fights and heartburns both in human society and animal kingdom.

They have attributed above mentioned two very important qualities to the God, namely, omnipotence and omniscience. Can they exist together? It is an impossible preposition –

- If He had omniscience (infinite wisdom), why He could not foresee the dance and drama of death, disease and destruction on the stage of the world He Himself has set?
- And, if He could really foresee, why He did not correct or prevent it using His omnipotence?
- So, He is either omniscient and ruthless, or omnipotent and sadist, but in no case both the qualities can coexist simultaneously. And, if He has deliberately made us miserable so that we always remember Him and bow to Him, then be aware, He is not benevolent and thus is not worthy of our prayers of mercy.

They say – He is the Creator of the Universe! I ask – Why all His models are failures?

Some of them believe in God as it conveniently explains the creation of universe. But, as Stephen Hawkins says, "they are simply passing the buck, refusing to answer a more inconvenient question: if He has created universe, who created Him? Isn't it better that instead of shifting the onus to some Almighty we try to get answers from the laws of universe themselves?" In this regard, not only the perceptions of various religions are at disagreement, they depict paradox within themselves.

For example, Christians and Islamists believe that God created universe in six days and enjoyed vacation on seventh. There are two stark contradictions in this presumption.

- 3. If His creation completed in six days, how various species are still evolving? Even today, every moment, older stars are disintegrating and newer ones are being created in the massive universal kiln. In fact, in the realm of science, Darwin had already busted the myth of designer universe by his concept of evolution by natural selection. It is, therefore, a Default Intelligence and not the Designed Intelligence.
- 4. Second paradox emanates from the fact that the Almighty father could keep the massive galaxies, stars and planets in the discipline of their respective orbits, but could not prevent Adam and Eve from committing the morbid sin!

Similar contradictions are galore in Hindu religious texts, too. On one hand they proclaim Him to be formless and amorphous; on other they build His statues in innumerable shapes and forms. Entire Hindu caste system is based on His various body parts! They say He is omnipresent, yet designate specified places of worship!

Hindu mythology is in fact a confused lot. Rigveda, for example, has evolved the concept of God with each added hymn. Early hymns treated Aditi as mother goddess of the rest of the gods. Further down the lane, hymns state that it was Purusha through whose body parts everything was created. It was then replaced by Hiranyagarbha, the primeval egg. At some point of time, Vedas accepted their defeat,

"THEN was not non-existence nor existence: there was no realm of air, no sky beyond it. What covered in, and where?.... Who knows then whence it first came into being? He, the first origin of this creation, whether he formed it all or did not form it, Whose eye controls this world in highest heaven, he verily knows it, or perhaps he knows not." (Rig Veda 10.129.1-7)

Since this would mean closure of shop, as we move in history, Upnishads and puranas took over and varied concepts of Nirguna and Saguna Brahman, Vishnu and Shiva were floated. When nothing worked, they settled down to what we popularly know as trinity today.

Matter does not end there. Religions all over the world shower their obligation on Him for His benevolence brushing aside the stark fact that His creation is nothing but a battle ground and a graveyard. His infinite love for the mankind has made Him create a living world where

a dirty dance of violence is gesticulated every fraction of a moment. Each wave of wind kills innumerable micro-organisms, each moment uncountable big fish are eating smaller ones and every second an animal is killing another. And, these deaths of animal kingdom are so ruthless that the very mention may nauseate.

In His so called intelligent design, you must have seen, not live but at least on Discovery channel, butchering of a deer by a lion. If you have missed some salient points, let me enumerate them for you –

- the grief in the eyes of killed and vehemence in the eyes of killer
- the slow suffocation and the pain endured by the sharp teeth embedded in deer's neck
- in most cases, deer is only unconscious and still breathing when the lion starts the tearing of deer's skin with the lust of hunger.

This is, by and large the story behind every predator, be it a crocodile, a snake or a fish. How a snake's poison paralyses the victim and piranhas nibble up their live meal bite by bite are the tell tale loop holes of any intelligent and compassionate design. And do not spare humans, the most intelligent amongst all. Weapons, nuclear and chemical, of mass destruction, and mass scale construction of concrete in the forms of dams and buildings and simultaneous destruction of plant and animal lives is no less than exploitation of mother earth. Turn your eyes towards other aspect of His creation – stars. Sun, our life-support, is a fierce ball of fire. If sun has some sensations, you can simply imagine the plight which it undergoes. To be able to create such a universe one has be a sadist and not merciful.

Creation implies desire on the part of God, and desire, in turn, implies imperfection.

### How an immaterial God can create material world?

Seeing this predicament, religions like Samkhya, Vaiseshika, Jainism and Buddhism have replaced the concept of origin with cyclic patterns of time. Here, soul and matter preexist and join to begin the cycle. The good thing about this concept is its dependence on human dexterity and ruling out the mercy of any Almighty.

# They say – He is the perpetuator! I ask – have you seen the results?

Once the role of creator was assigned to Him, the mammoth task of running it necessitated Him to shoulder this responsibility as well. This has made us dependent on His mercy and discretion. Our destiny is no longer commensurate with our efforts, but is a parasite that needs to stick to His generosity. beggar, seeking His favors all the time. Praying on the tunes of film songs at highest possible decibels of the loudspeaker, we seek the mercy of omnipresent God! What an irony that to Somebody Who resides in every unit of the space, we need the help of modern acoustics to convey our prayers?

The steadfast believers proclaim that 'not even a leaf can quiver without His will and intent'. Before you too, put your faith in this statement, concentrate your wisdom on a small question – how much planning and engineering a super-scientist will need to waver a leaf? Take it from me; it is not as simple as it sounds. Let us try to answer this question –

- Firstly the leaf. He needs all the precise data about the shape, size, weight, composition and the strength of the branch with which it is attached. How will he gather all this information? Let us presume he does it anyhow.
- Secondly the wind. He needs all the precise data about its molecules, temperature, humidity, dust particles, speed and direction. Where to start and where to end the flow?
- Thirdly the process. He will have to process entire data to calculate the angle and force with which the wind will strike the leaf. He needs to meticulously plan as to where will the wind rebound and to what extent of a millimeter does the leaf deflect?
- Fourthly the continuum. This needs to be done 24x7x365x∞ moments.

Interestingly, for our super-scientist, leaf and wind were readily available. What if he was asked to create them as well?! So much of chemical and mechanical engineering aided by physics for just one leaf!? Just imagine of infinite leaves on one earth alone! Running one's own creation is not a child's, or should I say God's, play. One leaf, one earth - so much of labor; is He left with enough time for other chores? Such mechanism of universe may have developed slowly and steadily over the billions of years, but they cannot be designed beforehand and run later on howsoever powerful the entity, that is, God, in question be.

Performance of a company's executive is gauged by the results he/she produces at the end of the day. Dwindling peace and escalating stress are parameters of our vulnerability. As a CEO of Universe Unlimited and Earth Limited, God has miserably failed in retaining a profitable balance sheet over the billions of years of His unquestioned management. Following two parameters highlight His incompetence –

3. More of everything bad – More houses, bridges, hospitals, roads, dams; more food, fertilizers,

We, as humans, have proudly accepted the role of a

medicines, cosmetics; more leather, fabric, plastics, minerals, wood; more fuel, drinking water, milk, electricity, vehicles; more schools, colleges, institutes; more arms, missiles, computers and robots; more consumption, desires, competition; more, more, more... sounds like a gang rape on mother-earth.

 And, less of everything good – less of peace, space, health, hygiene, happiness; less of security, serenity, purity, nature, co-operation, honesty, love; less of green and ozone cover, fertile land, forests, pristine rivers....sounds like we are getting bankrupt.

## And the end result is -

More of crime, pollution, malnutrition, diseases; more sufferings, corruption, violence, poverty; more global warming, exploitation, extinction of species, accidents, wars, superstitions, filth. In fact, the humans are treated as guinea pigs.

It is, therefore, high time for His compulsory retirement. What else do we do to a CEO who cannot run his company profitably?

If we are His sons and He is our father, then is it good on the part of a son to remain perennially dependent on his father? Isn't it time that we, as capable sons, ask our father to retire and take rest? Isn't it time to take control in our own hands and carve our own destiny?

They say – He is the destructor! I ask – why He destroys His own creation?

Our religions have entrusted even this dastardly act to Him. But, in doing so, they have overlooked that difficult questions will arise with the passage of time.

For example, just a few years ago, our average life span was estimated to be 40-50 years. With the progress in medicines, it now stands at 60-65 years. Has His generosity increased now? If so, then, why it is for humans alone? For all other species, the life span remained unaltered. In fact, for some animals, it has gone down due to increased human activities. For instance, common sparrow dies early due to mobile tower radiations. Some plant and animal varieties are extinct now. Why this selective and discriminatory charity on the part of God?

In the world of today's modern medicine it would be an exaggeration to say that God controls the births and deaths. With correct technique and knowledge anybody can prevent birth through various barriers, medicines and surgery, or conversely, can induce birth through artificial insemination and cloning.

It would have been more prudent on His part to standardize one refined technique for birth and another unique one for death. With wide variety of birth and death patterns, He has increased His own stress levels manifold. Even His agents of death have become so wary that they have outsourced the death mechanisms to us. Earlier God used to kill more often by diseases, animal attack, drowning etc. Now, He has become tech-savvy. He awaits some human to create AK-47 and its bullets, He awaits a space-craft to eliminate Kalpana Chawla. The proportion of natural deaths versus accidental deaths has drastically changed just in a span of few hundred years! If He is awaiting a human invention, then, how to term Him an Almighty?

Science Says – It was Big-Bang! I ask – how something can be created out of nothing?

Explanation provided by the scientific fraternity is Big-Bang. Their observations of galaxies drifting apart and the cosmic microwave background radiation coupled with the uncertainty principle and guantum mechanics have made them deduce that the universe was created 13.7 billion years ago. Their mathematics is - if equal positive and negative combine the result is zero; conversely, positive energy (matter) and negative space were created out of nothing due to quantum fluctuations (disturbance). To me it is full of the same paradox as was omniscience and omnipotent hypothesis. If nothing was there before bigbang then where from came the quantum disturbance? It must be observed that positive and negative 'attributes' can annul each other to become zero, but two 'entities', by whatever name you call it, cannot become zero. Accordingly, the converse is also untrue. 'Something cannot be created out of nothing'. Another fallacy of this unified theory is that diversity cannot be created from single source, even if it is there. The vast variety as we see in universe need a fundamental particle (scientists may call it boson) with wide ranging attributes, which in effect means - it is not unique in itself. It needs two to tango! Besides, particles need to be acted upon by the energy to manifest themselves as atoms and molecules. A pure form of anything – either particle or energy – cannot, I repeat cannot, create kaleidoscope like our universe. Keep on adding drops after drops; you can create oceans but not the life! A pure unique entity is devoid of creation.

While observations of science may have little to find fault with, its interpretations are not impeccable. Say, for example, the observation of galaxies ballooning away from each other may be correct but its interpretation that they were extremely close to each other a few billion years ago is farfetched. In doing so they are fully discarding the possibility of something happening outside the balloon. A balloon can expand – 1. due to pressure inside or 2. due to vacuum being created outside. Its equilibrium can be disturbed either way. Scientists have chosen to ignore one more fact – universe might be undergoing

an oscillatory pattern of expansion and contraction, and right now what we are observing is the expansion phase. Given the time frame the celestial bodies follow, the contraction might be observed millions of years down the lane. So, in either case, it is not essential that the universe was a tiny ball of fire at any point of time.

Another observation of cosmic microwave background radiation may be correct but the inference that the infinitesimally small ball of fire had temperature of millions of degrees at one point of time which has cooled down now is preposterous. In electronics, there is a term called white noise, which is directly proportional to the temperature. So, getting noise from a thermal body, in our case the universe, to the extent of 3°K does not necessarily mean that we extrapolate backwards, until and unless we wish to prove Big-Bang right any which way!

Energy has no meaning without fields; fields have no meaning without space; space has no meaning without time and time has no meaning without life. Therefore, pre-existence of six mattereals, viz. complementary pairs of fields, soul-matter and space-time, as defined in Jainism is more logical than a pre-existence of a pure unique entity.

I say – He is not out there! They ask – then who the creator is and how it all happens?

I started with asking questions to them (the believers), and I was prepared for this to come. Before I answer this, let me put my entire discussion in perspective –

To presume that the religious texts contain gospel truth is erroneous. Their falsehood on many counts stares on our face. Also, a belief garnered by a vast majority too, is not the guarantee of truth. To simultaneously grant both omnipotence and omniscience to the God is a fallacy as all His created models are failures in the sense that they are all suffering. He could neither foresee our misery as an omniscient should have, nor He corrected it using all His might. From an entity adored with such adjectives, a flawless design was expected.

## Creator-Perpetuator-Destructor hypothesis is illogical. Why on earth a super-intelligent and super-powerful entity will create something, nurture it and then destroy it? Is it a game being played?

# If human form of life is supreme, why do we beg for somebody's mercy?

If we are children of Almighty why don't we come to the rescue of our Father and relieve His overburden and, in turn, take charge of our respective and collective destinies?

There is no doubt that the entire creation has emanated

from a set of force or energy, but we cannot accept definition of Atma-Parmatma from the child-like wisdom of our ancestors. Nature is full of energy and dynamics and every particle and every life-form is bound by its own cyclic characteristic. From the birth of a star to its disintegration, from birth of a child to its death, from dawn to dusk and from a seed to a tree, everything is following a spontaneous and self-sustainable cycle. And all these cycles have inherent intelligence of their own which is entirely different from others. So diversified are these intelligences that it is difficult to accept as being created by one super-intelligence.

At first when I excluded God from my life, I felt a vacuum - what is the purpose of life at all? An aimless life would just be futile. Once I accepted the fact that God has not created the nature, I immediately extrapolated, "What if nature creates a God?" Not a bad idea. My position as a human was thus clear to me - an intelligent tool of nature. The way in which medical science in consonance with other science streams have grown over the past few decades, I foresee a distinct possibility that we will one day make the human race free from miseries and pain, who lives happily ever after. I am what I am because of generations of evolution. I find myself placed as a link between culture and future. Stronger the link better the future. If I have to be future-oriented, I cannot stay culture-centric. I will have to replace tradition with trend. I will have to contribute my little bit to strengthen the forces which are working for the betterment of humankind; the foremost amongst them is science in its various forms. Because it is the scientific attitude alone which is dynamic, rest all are static, stagnant and thus stale. So, aim of my life – 'is to do something new', and not to perpetuate the past. Parampara se Parivartan. Though the lower steps are important to support the ladder, it is essential to leave them to reach the higher ones.

Negating the God hypothesis will have several other intangible benefits. Prayers and places of worship will then become redundant. Just imagine the man-hours and money being spent in adoring innumerable gods and goddesses! If the places of worship are converted into workshops and just after paying our symbolic reverence to the great souls of history, engage ourselves in the activity of our choice; be it art, craft, painting, mathematics, space-science, medicine or any other stream of knowledge. If so many man-hours and colossal sums of money, which are presently wasted, engage in 'doing something new' the pace at which the human is approaching an ever happy, healthy and immortal status will increase manifold. We, thus, shall be truly liberated.

#### The Final Answer –

Ironically, I am trying to answer the unanswerable. Can

anybody tell where a circle starts, what is infinity or if 'nothing' is outside the boundaries of universe, how far this nothingness spreads? But my discussion is not about hows and whys of universe, it is about the God and which I have answered emphatically by now.

As we have seen, various ideologies are so diversified and none of them is flawless. However, there is a striking, if not surprising, meeting point. All of them presume 'something' pre-existed. For polytheists it was an army of gods and goddesses, or a trinity, for monotheist it was an Omni-god, for non-theists it was a set of mattereals, for science it was infinitesimally small ball of fire.

I will now bring in the Jain literature which says that six mattereals pre-existed. Namely, Statons-Dyanons, Soul-Pudgal and Space-Time. If I delete the initial inflationary event of a few fractions of second (10<sup>-35</sup>sec) from the big-bang theory, what remains is – a set of forces (weak and strong nuclear), fields (gravity, electromagnetic), matter, space and time. Now, compare both the lists. Do you find any difference? To me they read identical. I have already mentioned earlier that I would logically prefer to presume a set of mattereals to pre-exist rather than the God or tiny ball of fire, because in addition to explain the cyclic nature of time and soul, they explain the vast variety of matter as we see all around us. You might recall my earlier mention that any one pure cannot create variety.

Once, I came to this conclusion, I again relied on Jainism to get on to the next level which was the supremacy of human efforts and dexterity. With God sent on compulsory retirement, just imagine how many problems which the present world order is facing will vanish! To enumerate a few –

- Religious hatred and violence will be completely non-existent
- Money and man-power of places of worship will be diverted to science-workshops
- Prayers converted into scientific search with result in better tomorrow
- Once the life and death are not God-driven, population explosion will be curbed, which, in turn, is root cause of poverty, corruption and crimes.
- With aim of life shifted from God-appeasement to 'do something new', materialism and consumerism will take a back seat.

To me, resolving the God question is of immense social relevance and with the marriage of Jainism and science there born a new possibility –

A BLISSFUL SOUL CAN RESIDE IN AN ETERNAL, EVER HAPPY AND HEALTHY BODY – FREE FROM CYCLES OF DEATH AND BIRTH.

So, finally, I got my answer – no God, not at all.













































# » British-Raj Citizens

- **Ronald Ross** bor in, <u>India</u>, in <u>1857</u> was awarded the <u>Nobel Prize in Physiology or Medicine</u> in 1902 for his work on Malaria.
- **Rudyard Kipling** born in <u>Mumbai</u>, 1865 (then Bombay in <u>British India</u>), was awarded the <u>Nobel Prize in</u> <u>Literature</u> in <u>1907</u>. He remains the youngest ever recipient of the Literature Nobel Prize and the first English-language writer to receive the Prize.
- **Rabindranath Tagore** Rabindranath Tagore (1861-1941) was a poet, philosopher, educationist, artist and social activist. In 1913, he was awarded tyhe Nobel Prize in Literature
- **Sir Chandrasekhara Venkata Raman** Sir Chandrasekhara Venkata Raman (<u>1888-1970</u>) was awarded tyhe <u>Nobel Prize in Physics</u> fo the year 1930

# » American Citizens of India Origin

- Hargobind Khorana Hargobind Khorana (born 1922), a <u>person of India origin</u>, shared the 1968 <u>Nobel</u> <u>Prize in Physiology or Medicine</u> for his work on <u>genes</u>
- Subrahmanyan Chandrasekhar Subrahmanyan Chandrasekhar, (October 19, 1910- August 21, 1995) was an Indian American astrophysicist. He was a Nobel laureate in physics. He was the nephew of Indian Nobel Laureate Sir C. V. Raman
- Venkatraman 'Venki' Ramakrishnan Venkatraman Ramkrishnan, born in <u>Chidambaram</u>, <u>Tamil Nadu</u>, shared the <u>2009 Nobel Prize in Chemistry</u>. He is now a US Citizen.

# » Indian Citizen of Foreign Origin

Mother Teresa Mother Teresa (1910-1997) was born in Skopje, then a city in <u>Ottoman Empire</u>, She is of <u>Albanian</u> origin. She won the <u>Nobel Peace Prize</u> in 1979. Toiling for years in the slums of <u>Kolkata</u> (Calcutta),

# » People of Indian Descent (Descendants of Modern-Era Immigrants)

 V. S. Naipaul A British writter, V. S. Naipaul (Vidiadhar Surajprasad Naipaul) was born in 1932 into a family of <u>north Indian</u> descent living in <u>Changuanas</u>, close to <u>Port of Spain</u>, on <u>Trinidad</u>. He won the Nobel Prize in LIterature in 2001.

# » Foreign Citizens mainly residing in India

 Tenzin Gyatso, 14th Dalai Lama Former Head of state of Tibet and active leader of Tibetan Resistance towards <u>PRC</u>. Escaped to India when the PRC took over Tibet He got Nobel Peace Prize in 1989 for efforts for Tibetan Freedom through Non-Violence and Spreading Global Peace through Buddhism. Also during Prize Distribution, Head of Prize Committee commented that the prize was a part of tribute to memory of Mahatma Gandhi

# » Nobel Memorial Prize in Economics

• Amartya Sen Citizens of Indian Amartya Sen (born 1933) was the first Indian to receive the <u>Nobel</u> <u>Memorial Prize in Economics</u>, awarded to him in 1998 for his work on <u>welfare economics</u>



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