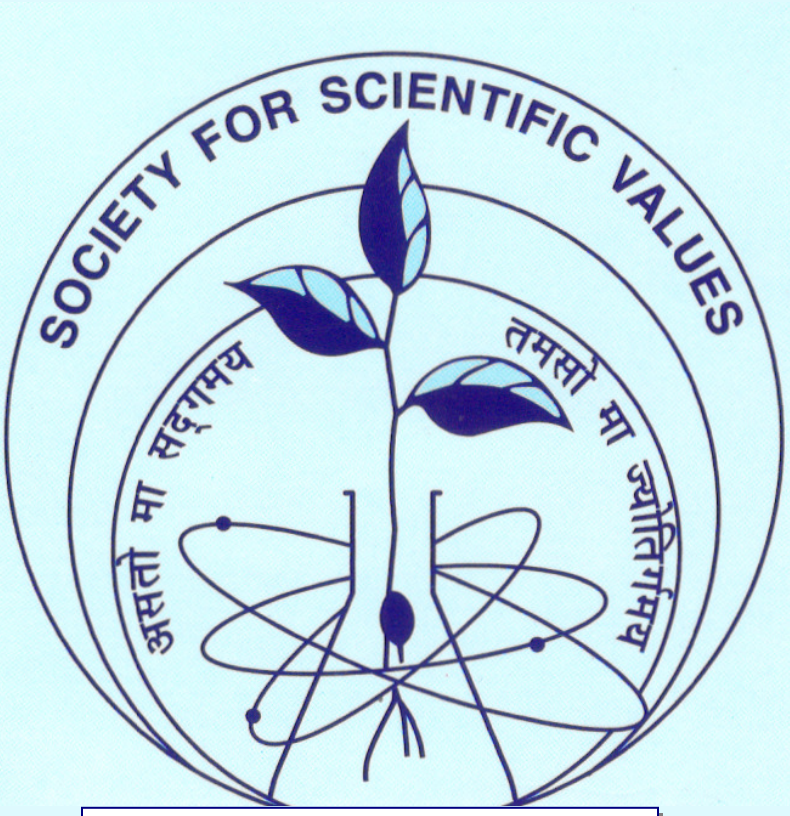
Society for Scientific Values

Ethics in Scientific Research Development and Management

News And Views

Volume 8 March, 2010 No. 1



Let Truth Prevail

Regd. Office: DST Centre for Visceral Mechanisms
V. P. Chest Institute
University of Delhi, Delhi

Main objectives of the 'Society for Scientific Values'

1. To promote objectivity, integrity and ethical values in pursuit of scientific research, education and management, and
2. To discourage the unethical acts in these areas

Contents

Editorial

In every society there are good and honest people and there are bad people - law breakers, criminals and those who perpetrate misery to others. The percentage of good and bad varies. Inculcating the good and restricting/punishing the bad is the core of governance in which societal value system and bringing up young human plays a major role. Over the years, there has been a degradation of human values - many reasons are there, print and visual media are two of them. Violence and evil are shown to triumph incessantly, the lack of punishment or condemnation by society is other things. Almost everybody aspires to have wealth and fame. They are sacred possessions when earned through productivity - there is nothing bad in the efforts to EARN it. Not amass wealth from others by crooked means or earning reputation by practicing unethical ways - there is the evil. The two driving forces for corruption are money and power – for which people are doing anything, making corruption the core problem of the decaying value system. Most people think of corruption in terms of amassing unearned money. But there is a bigger evil - corruption of the moral values.

What are moral values? They are different from religion or the political beliefs of individuals. We are talking about basic human values, which sustain human life, its environment and society. I quote here from Ayn Rand "Since life requires man to produce what he needs, productiveness is a moral value. Since life requires man to use his own judgment rather than submissively accept the assertion of others, independence is a moral value. Since life requires the mind, man's political system must allow him to use it i.e., freedom is a moral value." The morality of reason establishes a genuine culture of life. The initiation of force is antithesis of reason and that's what is prevalent today. Education is one weapon, but the moral education that whatever one is by profession, one must at first be a practitioner and protector of human values; that being successful is good, but not at the cost of others destruction - is lacking. The most evil thing that can happen to a society is moral degradation - which is what is happening now. As science searches the truth, it is a sacred profession and practitioners of science are expected to be human with uncompromised integrity. Hence a great responsibility lies with scientists that in the course of research and publication, honesty, ethics and truth must prevail. To err is human, one can try again. But scientific dishonesty and unethical practices, false claims, are such evils which unless curbed strictly, are bound to bring disgrace not only to individuals but to the organization and the country.

Santa Chawla

Honours and Awards to SSV Members

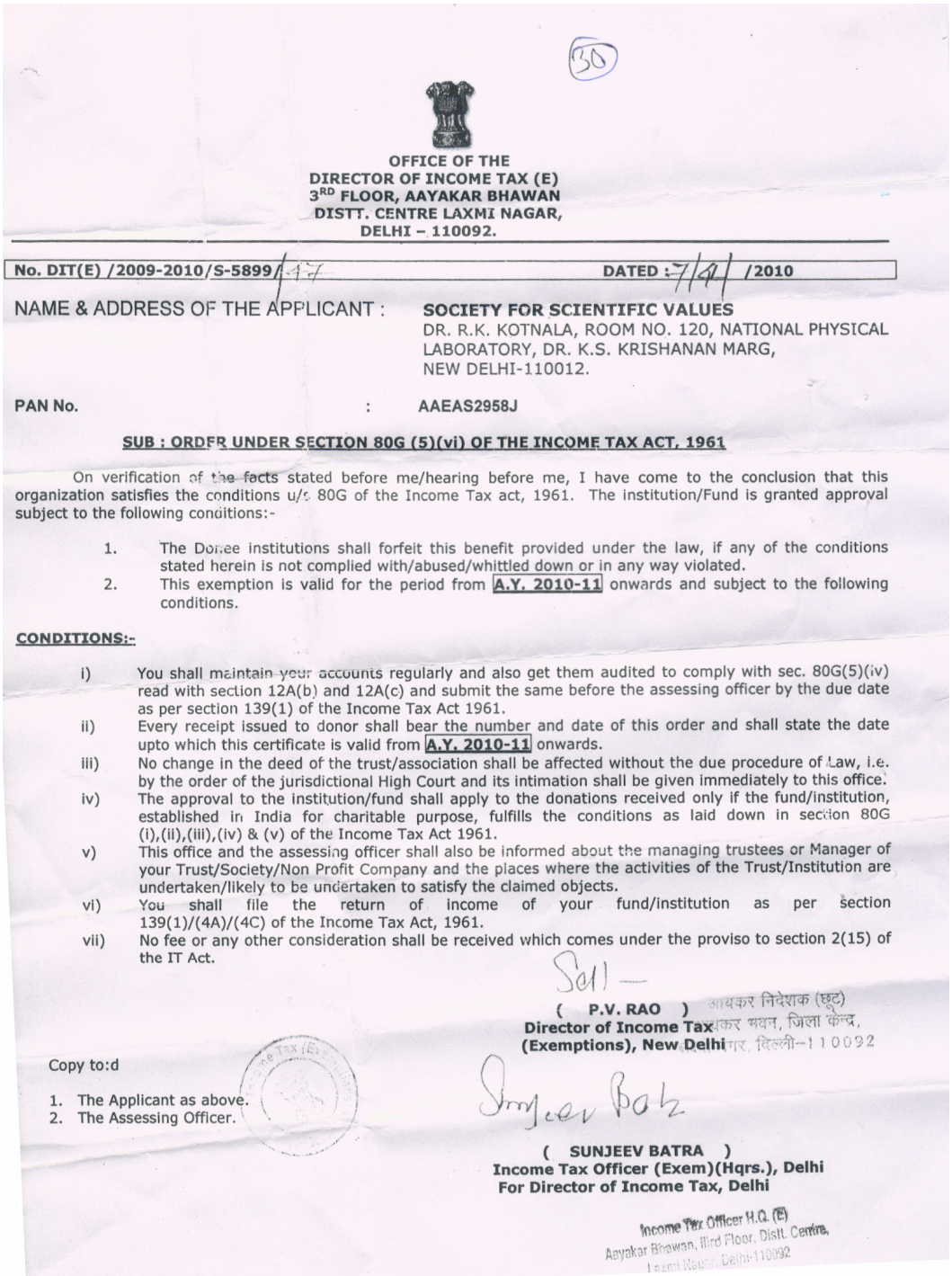
Prof. Sisir Sen, Former Dean, IIT Kharagpur, has been awarded the 'National Mineral award for Excellence' for the year 2008 by Ministry of Mines, Government of India on 27th February, 2010.

IIT Kharagpur will confer an Honorary D.Sc. to Prof. K. L. Chopra, on July 17 in recognition of his fundamental contributions to the science and technology of Thin-Films, now popularly called two-dimensional Nanomaterials

SSV activity highlights in the current period

SSV gets Income tax exemption under 12A Act

SSV Donations get exemption from Income Tax under section 80G



OFFICE OF THE
DIRECTOR OF INCOME TAX (E)
3RD FLOOR, AAYAKAR BHAWAN
DISTT. CENTRE LAXMI NAGAR,
DELHI – 110092.

No. DIT(E) /2009-2010/S-5899/ 47 DATED : 7/4/ /2010

NAME & ADDRESS OF THE APPLICANT : **SOCIETY FOR SCIENTIFIC VALUES**
DR. R.K. KOTNALA, ROOM NO. 120, NATIONAL PHYSICAL LABORATORY, DR. K.S. KRISHANAN MARG,
NEW DELHI-110012.

PAN No. : AAEAS2958J

SUB : ORDER UNDER SECTION 80G (5)(vi) OF THE INCOME TAX ACT, 1961

On verification of the facts stated before me/hearing before me, I have come to the conclusion that this organization satisfies the conditions u/s 80G of the Income Tax act, 1961. The institution/Fund is granted approval subject to the following conditions:-

1. The Donee institutions shall forfeit this benefit provided under the law, if any of the conditions stated herein is not complied with/abused/whittled down or in any way violated.
2. This exemption is valid for the period from A.Y. 2010-11 onwards and subject to the following conditions.

CONDITIONS:-

i) You shall maintain your accounts regularly and also get them audited to comply with sec. 80G(5)(iv) read with section 12A(b) and 12A(c) and submit the same before the assessing officer by the due date as per section 139(1) of the Income Tax Act 1961.
ii) Every receipt issued to donor shall bear the number and date of this order and shall state the date upto which this certificate is valid from A.Y. 2010-11 onwards.
iii) No change in the deed of the trust/association shall be affected without the due procedure of Law, i.e. by the order of the jurisdictional High Court and its intimation shall be given immediately to this office.
iv) The approval to the institution/fund shall apply to the donations received only if the fund/institution, established in India for charitable purpose, fulfills the conditions as laid down in section 80G (i),(ii),(iii),(iv) & (v) of the Income Tax Act 1961.
v) This office and the assessing officer shall also be informed about the managing trustees or Manager of your Trust/Society/Non Profit Company and the places where the activities of the Trust/Institution are undertaken/likely to be undertaken to satisfy the claimed objects.
vi) You shall file the return of income of your fund/institution as per section 139(1)/(4A)/(4C) of the Income Tax Act, 1961.
vii) No fee or any other consideration shall be received which comes under the proviso to section 2(15) of the IT Act.

(P.V. RAO)
Director of Income Tax
(Exemptions), New Delhi

आयकर निदेशक (छूट)
कर भवन, जिला केन्द्र,
नगर, दिल्ली--110092

Copy to:d

1. The Applicant as above.
2. The Assessing Officer.

(SUNJEEV BATRA)
Income Tax Officer (Exem)(Hqrs.), Delhi
For Director of Income Tax, Delhi

Income Tax Officer H.Q. (E)
Aayakar Bhawan, IIIrd Floor, Distt. Centre,
Laxmi Nagar, Delhi-110092

Some cases of scientific misconduct

(i) SSV has brought to the attention to the authorities of Delhi University two cases of plagiarism by its members without any action from DU. One of the faculty, Prof Parada Saradhi has charged his Vice Chancellor, Prof Pental of having committed a fraud by submitting a report on his DST sponsored project which appears to have been plagiarised from the report of Parada Saradhi on a similar project. Dr. Parada Saradhi submitted to SSV a complaint against VC of Delhi University for using his student's work in a project of biotechnology by VC during 2001 in south campus of DU. He presented the case before SSV EC. The EC unanimously felt that there was no evidence of the involvement of the VC in this case.

(ii) Dr. Manoj Kumar, MNIT faculty; Maths Deptt., an assistant professor from NIT, Allahabad has plagiarized and published several papers. The SSV President has written to the Director to conduct an investigation with no corrective action so far from the Director.

(iii) Dr. Kumar, the director of NERIST who has been charged with plagiarism, remains suspended for over three years. He continues to draw salary without doing any work. Despite inquiry committee reports and reminders, MHRD has taken no decision so far whether to dismiss him or reinstate him. The EC advised the President to write to the Minister, HRD in this connection.

(iv) The case of dismissal of organic chemist Animesh Roy of National Institute of Pharmaceutical Education and Research (NIPER), in October 2005, needs updating in the light of the report of the inquiry committee set up by the Chairman. The institution earlier had refused to renew his contract alleging poor performance and disobedience. Telegraph, Kolkata has reported the matter on September 9, 2009 with reference to SSV and its presidence. A five-member inquiry panel set up by Niper board of governors has reported that the institute punished Roy for blowing the whistle on unethical research practices by the head of its pharmaceutical technology department, Uttam Chand Banerjee. Dr.Banerjee, an award-winning biochemical engineer and IIT Delhi alumnus, has denied wrongdoing. The panel has called on the institute to reappoint Roy and initiate action against Dr. Banerjee. The whole story is available online at: http://www.telegraphindia.com/1090909/jsp/frontpage/story_11466747.jsp

(v) T.M. Srinivasan & T. Srinivasan have published several plagiarized papers in the reputed Int Journal SIAM. The authors have apologized to the journal for their misconduct.

(vi) A review article written by Mohammad Irshad, a senior faculty member of AIIMS on Genetic diversity in hepatitis C virus (HCV), has been retracted by the Int Medical Journal on account of its plagiarized contents.

(vii) A senior scientist, Dr. Ajay Acharya, from Dhanbad complained against Dr. B. Dhar who has received an award from NRDC recently on his work which was developed in 1986 and published in 1992. The SSV President will write to to NRDC in this connection

(viii) Dr. Krishnamurthy, presently a scientist working in the Southeast Institute of Biomedical Research, USA and funded by NIH grants has published some 12 papers on Crystal Structure Studies in JBC. The published data has been found to be fabricated by the author. It is decided to post a brief summary of this case on the SSV website.

a. A complaint has been received against Prof Sanchetti (Director, NIT, Surat) and his student for publishing a plagarised paper which has been retracted by the Journal. In response to a letter by the President , the Chairman , BoG of NIT, Prof Goverdhan Mehta, has informed the President that he is conducting an inquiry into this case of plagiarisation and will place the report before his BoG for a decision
b. Dr Manoj Kumar, a faculty member of the Math department of MNIT, Allahbad has published three papers plagiarized from the publications of a faculty of IIT Delhi. After an exchange of several letters with the President,, the Director, NIT has finally decided to take a very mild action by warning the faculty concerned

Over past years, allegations of research misconduct have surfaced in public institutions in Cochin, Delhi, Lucknow, Mumbai, Nirjuli (Arunachal Pradesh), Pune, Tirupati and Varanasi. Institutions, usually, deny charges, delay action, then dilute charges. The SSV has long been urging the government to create a mechanism to investigate science misconduct. Science policy makers and SSV members say there is no evidence to suggest that research misconduct is more common in India than elsewhere. But many countries have formal mechanisms to deal with this (said Chopra, the SSV president). The SSV in India is a watchdog with genuine intentions but it has no administrative power.

New cases under consideration with SSV

Under pressure from the media, the parliament and SSV's PIL in the Supreme Court, the Union health ministry issued orders last week revoking the suspension of its last three public sector vaccine units, PII-Coonoor, CRI-Kasauli and BCGVL-Chennai. They were closed in Jan 2008 on the pretext that they did not meet GMP standards when Ramadoss was the health minister, whereas it was his job to make them GMP compliant. This malafide action led to the diversion of vaccine orders worth crores to private industry at higher prices, inspite of which shortages for essential vaccines remained throughout 2008 and 2009, as per data obtained through RTI. Afterall, in a country where 25 million children are born every year, the half a dozen vaccines they need for the universal immunization program of the government makes business worth hundreds of crores.

SSV is one of the petitioners in public interest litigation currently ongoing in the Supreme Court against the suspension of vaccine PSUs and other related issues in vaccine policy. Though the main demand is now met by the government, all the other petitioners agree that we must continue with our PIL to ensure that the government delivers on the GMP upgradation, as well as to ensure that clear guidelines are adopted on new vaccines and irrational combination vaccines, and most importantly, till a national vaccine policy is adopted. These are some of the other prayers in the PIL that are pretty much valid even now. For the time being, SSV can be proud of its role in giving a new lease of life for vaccine PSUs and health security of the country.

News pertinent to SSV's cause

Global

High cost of leading scientific journals

Nature Publishing Group has proposed a big jump in the cost of their journals. University of California has taken a tough stand on the proposed rise of 400% cost of California's license for Nature group's journals. The current average cost for the Nature group's journals is $4,465; under the 2011 pricing scheme, that would rise to more than $17,000 per journal, according to the California Digital Library. UC has a strong presence in NPG journals as faculty and researchers author a significant percentage of all articles and has major influence in shaping the prestige of its publication. UC may not only suspend subscription but also "a system wide boycott" of Nature's journals by no contribution and no review. This may extend to researchers resigning from Nature's editorial boards and encouraging similar "sympathy actions" among colleagues outside the University of California system if the publisher does not relent.

Unique author ID system (ORCID)

A proposed author ID system - Open Researcher and Contributor ID (ORCID) is gaining widespread support and could help to give due credit to unsung contributions to scientific workers by way of an academic-reward system that does not only depend upon publications and citations. ORCID) would be an alphanumeric string that uniquely identifies an individual scientist in much the same way that a Digital Object Identifier (doi) uniquely identifies a paper, book or other scholarly publication. A number of publishers have been exploring the idea, and the International Organization for Standardization in Geneva is developing an international standard name identifier to track contributors to media content such as books, television programmes and newspaper articles. But most of those developers have already joined or are working closely with the ORCID group. Moreover, the intention is to make ORCID freely available for anyone to use, and interoperable with existing ID systems. Details are available at www.orcid.org

In India, there is a project with NISCAIR to develop an Indian citation index.

Plagiarism Policing by Journals

Major science publishers are gearing up to check and control the growing menace of plagiarism in research papers. Nature Publishing Group. Else3vier, Springer are all trialing CrossCheck, a plagiarism checking service (launched In June, 2008 by CrossRef.). The powerful service employs the iThenticate plagiarism software which takes help of a large database of full text articles.

Publishers subscribing to CrossCheck must agree to share their own databases of manuscripts with it. So far, 83 publishers have joined the database, which has grown to include 25.5 million articles from 48,517 journals and books.

In an earlier report by Nature (Vol 453,19 June 2008), a statistics of the cases of misconduct were reported, the data of the report is quoted below.

"SUSPECTED MISCONDUCT: 201 CASES OBSERVED BY 164 SCIENTISTS

	Number of cases
Type of misconduct	
Fabrication or falsification	120 (59.7%)
Plagiarism only	73 (36.3%)
Unknown	8 (4.0%)
Rank of those suspected*	
Professor or senior scientist	44 (21.9%)
Associate professor or scientist	28 (13.9%)
Assistant professor or scientist	34 (16.9%)
Postdoctoral fellow	50 (24.9%)
Graduate student	29 (14.4%)
Other (includes 1 unknown)	24 (11.9%)
How it was discovered	
Directly observed	23 (11.4%)
Observed products	53 (26.4%)
Told first, then observed	60 (29.9%)
Other direct evidence	30 (14.9%)
Other	30 (14.9%)
Don't recall	1 (0.5%)
No answer	4 (2.0%)
Was it reported?	
Yes, reported by responder	49 (24.4%)
Yes, reported by someone else	67 (33.3%)
No, not reported	75 (37.3%)
Don't know	5 (2.5%)
No answer	5 (2.5%)

* Eight cases identified more than one person involved in incident."

Iran condemns plagiarism

A recent case of alleged plagiarism by Iranian scientists (see Nature 462, 704–705; 2009) has been condemned by the Iran chapter of the Academy of Sciences for the Developing World. It is said that Iran's scientific community is largely free of such unethical behaviour. There has been substantial growth of Iran's scientific output in recent years as reflected by research articles published in high-quality, peer-reviewed international journals. Factors that contribute to such improvement in Iran's research output are sustained and generous government support for science and young researchers.

News from UNESCO

'The Avicenna Price for Ethics in Science Awarded to Professor Renzong Qiu

Established by the Executive Board of UNESCO at its 166th session on the initiative of the Islamic Republic of Iran, the Avicenna Prize for Ethics in Science, awarded every two years, is intended to reward the activities of individuals and groups in the field of ethics in science. The 2009 Avicenna Prize has been awarded by the Director General of UNESCO to Professor Qiu Renzong, a pioneer in the field of bioethics whose research in the ethics of science and steadfast public advocacy of ethical issues related to science have established him as a major figure both in the Chinese academic community and across the world.'

website at: **www.unesco.org/shs/ethics/geobs**

'Extraordinary Session of the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST), Paris, France (28-30 June 2010)

The members of the World Commission on the Ethics of Scientific Knowledge and Technology will convene in Extraordinary Session at UNESCO headquarters in Paris (Room XI, Fontenoy Building) on 28-30 June, 2010. COMEST is an advisory body and forum of reflection composed of 18 independent experts and 11 ex officio representatives of international scientific bodies. The Commission is mandated to formulate ethical principles that could provide decision-makers with criteria than go beyond economics. The agenda will focus on environmental ethics with an emphasis on ethical principles in relation to climate change, an interim report on which will be adopted at the Session. In addition, questions concerning the ethics of science, nanotechnologies, and converging technologies will be an integral part of the programme. The session will be open to the public with the exception of the morning of the 28 June and the afternoon of 30 June. Advance registration, which is free of charge, is required for persons wishing to attend the Session.

'UNESCO Ethics Teacher Training Course in Dubrovnik, Republic of Croatia (28 June - 2 July 2010)

One of the activities undertaken to disseminate information concerning the *Universal Declaration on Bioethics and Human Rights* is the Ethics Education Program. This program is mapping existing teaching programs in the area of ethics in the Member States of UNESCO. The various programs are described, discussed in expert meetings, and made available in the Global Ethics Observatory (www.unesco.org/shs/ethics/geobs). Experiences concerning the contents, intensity, methods and materials of existing programs are therefore publicly accessible and can be exchanged among experts. Teachers who want to initiate ethics teaching can find suggestions and ideas in the database. UNESCO has organised meetings with ethics teaching experts in Budapest, Moscow, Split, Istanbul, Muscat, Marrakech, Dakar, Abidjan and Kinshasa.

The quality of ethics teaching programs, however, also substantially depends on the quality of the teachers. Ethics teaching can be made much more influential and attractive for students if it is presented by a highly qualified, stimulating and inspiring teacher. In order to promote the quality of ethics teaching, UNESCO has developed an Ethics Teacher Training Course. These courses so far have taken place in Bucharest (Romania), Egerton (Kenya), Bratislava (Slovak Republic), Minsk (Belarus) and Riyadh (Kingdom of Saudi Arabia). The next course will take place from 28 June until 2 July 2010 in the Inter University Centre in Dubrovnik in the Republic of Croatia.

This course will provide training to ethics teachers with the purpose to enhance their skills and abilities. It aims particularly on a younger generation of university teachers so that ethics teaching programs in the near future can expand and improve in all Member States of UNESCO. The course is supported by the Croatian National Commission for UNESCO, the Israel National Commission for UNESCO as well as the UNESCO Chair of Bioethics in Haifa, Israel. It is organised in cooperation with the Inter University Centre in Dubrovnik.

In the selection of participants, priority will be given to nationals and permanent residents of one of the following countries: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Croatia, Kyrgyzstan, the Former Yugoslav Republic of Macedonia, Republic of Moldova, Montenegro, Georgia, Russian Federation, Serbia and Ukraine. For these countries scholarships are available (covering travel, accommodation and food).

We would like to bring this new initiative to your attention, encouraging you to stimulate young teachers to use this opportunity to enhance their competencies in the field of ethics teaching. More information as well as a registration form can be found on the SHS website:

http://portal.unesco.org/shs/en/ev.php-URL_ID=13033&URL_DO=DO_TOPIC&URL_SECTION=201.html

Deadline for registration is **1 May 2010**.'

www.unesco.org/shs/ethics/geobs

National

The Paintal memorial lecture, 2009 of SSV was delivered by Dr. T. Ramasami, Secretary, DST on 17th March, 2010 at National Physical Laboratory, New Delhi.

The annual Paintal memorial lecture, since its inception, has been delivered by the following eminent scientists:

- *Prof. M. G. K. Menon, former President INSA*
- *Dr. R. A. Mashelkar, Former DG, CSIR*
- *Prof. Deepak Pental, VC, Delhi University.*
- *Prof. V. K. Gaur, Indian Institute of Astrophysics, Bangalore*
-

Annual General Body Meeting of SSV was held on 17th March at NPL auditorium, New Delhi, followed by Paintal Memorial Lecture. The minutes are as given below:

Minutes of the 17th Annual General Body Meeting (AGM) of the Society for Scientific Values

The Seventeenth AGM was held at 5.30 p.m. on March 17, 2010 at National Physical Laboratory immediately after the 5th Professor A S Paintal Memorial lecture delivered by Dr Ramasami, Secretary DST. It was attended by 24 members of the Society.

The President welcomed the members. He talked about the various activities undertaken by SSV during the year and urged member to actively participate in the activities of the Society.

The AGM decided as follows:-

1. The annual report of the activities of SSV by the Secretary as attached was approved.
2. The Financial Report for FY 2008 – 09 was presented by the Treasurer and approved. A copy of audited accounts for 2008 – 09 is attached.

3. The members discussed at length various ways of making SSV role more effective besides nurturing, sensitisation activities and as a watch dog. It was suggested that some more activities be planned after discussion with members
4. Dr. P. N. Tiwari suggested that a course of lectures/reading material on Ethical Issues , Values and Conduct be compiled and posted on our Open Access website .A committee consisting of the following was requested to compile the requisite material in different domains:

    1) Dr. Indira Nath (Bioethics)- Coordinator
    2) Dr. Raghu Ram (Bioethics)
    3) Dr. Indramani (Agriculture)
    4) Dr. K. Satyanarayana (DDG, ICMR)
    5) Dr. Sujeet Chaudhary (IIT,Delhi)
    6) Dr. P. N. Tiwari- Convener

5. Dr. Indira Nath was requested to write a suitable proposal for a Seminar / Workshop on Bioethics to be submitted to ICMR for obtaining grant-in-aid.
6. The AGM approved the election of Dr Indira Nath, Prof. N.R.Jaganathan, and Dr. S. N. Singh to the EC against the existing vacancies.
7. The suggestion of Prof. Sisir Sen that SSV membership should be open to persons from humanities and social science background was approved.
8. Dr Krishan Lal pointed out the need for updating and maintaining of the list, addresses and email IDs of the members. It was agreed that the Secretary will circulate the list to all the members and request them to help in updating the information on the basis of their personal knowledge.
9. The AGM decided to remove Dr. P. K. Nagar from the primary membership of SSV with immediate effect because of his publication of a plagiarized article in the News & Views of SSV.
10. The AGM congratulated Prof. Sisir Sen on his being awarded the National Medal Award 2008 for Excellence by Ministry of Mines, GOI on Feb. 27, 2010.

Document by SSV on code of conduct for research & academic interest for education in DTU.

Prof. P. B. Sharma proposed to prepare a document by SSV on code of conduct for research & academic interest for education in DTU. EC accepted the proposal. More details can be chalked out later on.

Seminar/ courses in Ethics

The International Conference on “Science & Spirituality” was organized by Bhaktivedanta Institute, Kolkata & MNNIT, Allahabad at MNNIT, Allahabad during 15 – 17 Jan. 2010. President SSV Prof. K. L. Chopra, Secretary SSV Dr.R.K.Kotnala, Founder member SSV Dr. P. N.Tiwari have delivered lectures in the conference. Further, SSV has been requested by the organizers to conduct a workshop on “Research and Academic Ethics” during the conference. Prof. K L Chopra & Prof. P B Sharma will be conveners of this workshop

Prof. P. B. Sharma has proposed to organize an international conference on "Scientific Values & Professional Morality" jointly by SSV and Delhi Technological University. The EC endorsed the idea and requested Prof Sharma to be the Convener of the conference.

Some concern

The cases of bribing to get the approval for opening new private educational institutes are a matter of concern. HRD minister Mr. Kapil Sibal promises to end government regulations with a new system where academic experts "will be charged with the responsibility of accreditation and valuation of the quality of institutes." The apex National Commission for Higher Education and Research, which will merge the multiple regulators in education, proposed by the Yashpal Committee is supposed to take care of this. The Commission would report directly to Parliament.

An all around menace in the students and scientific community is the 'copy and paste' syndrome from internet claiming the material as their own, without acknowledging the source. Though making school projects have become much easier now for students, it has become very difficult for teachers to track such sources of information. This syndrome has a very negative effect of killing the creativity of the student who had to think, search, read and present the topic in his/her own innovative way earlier. The copyright act allows the use of electronic material for teaching and research purposes but claiming the material as one's own intellectual property can warrant payment upto Rs. Five crore to the owner. Cyber ethics needs to be taught at the school level otherwise when the same children grow up as scientists/technocrats, they might plagiarize even without realizing that they are violating scientific ethics.

Compiled by
Santa Chawla

Paintal Memorial Lecture, 2009

Professional Ethics in Research in Cultural Dimension of India

T Ramasami
Department of Science and Technology, Government of India, New Delhi

Preamble

The other day when Dr Chopra asked me to deliver this Paintal Memorial Lecture, I agreed readily as a mark of respect to a thought leader. His professional contributions were significant and stellar. He developed techniques which are routinely deployed by clinicians in the assessment of heart and lung diseases today. He stood for certain professional standards that separated him from many others. He was truly a standard setter. He set codes. To me, professional ethics is all about setting standards and code. What a pleasure would this be to any to speak in memory of a leader! Therefore, I accepted the responsibility. When I started to make preparations for the lecture, however, I recognized that this assignment is more difficult than many others. It is difficult because of the nature of the topic and the responsibility that comes with this assignment. The first difficulty, in my view, is because ethics is something to be practiced and not to be talked about or giving lecture upon. The second difficulty arises because of the fact that this lecture is being delivered to a special group of people for whom being correct is even a obsession. In society, some are assigned the functions of playing "role models". In modern times, many role models prove to be made of feet of clay. I do not want to be one such model made of feet of clay covered with leather shoes. Ladies and gentlemen let me simply present myself as "a student of science raised in a rich cultural heritage of India, for whom the right and wrong has been defined through ages and to whom practicing has been more valuable than preaching." Therefore, this lecture is based more on personal education and experience rather than moral lessons learnt for preaching.

Definitions of Terms

Dictionary definition of ethics would read as "a code of behavior considered correct, especially that of a particular group, profession or individual" or "the moral fitness of a decision or course of action"

Culture would be defined as "the total of inherited ideas, beliefs, values and knowledge which constitute the shared bases of social action".

Research as a term would be described as "systematic investigation to establish facts or correct information on a subject" or in other words research should seek truth and correctness.

Ethics in Research and its Cultural Context

Whereas the terms involved in the topic "Professional ethics in Research and its Cultural Dimension" are somewhat easily described, the subject matter of the issue in itself is conceptually hard to comprehend fully. It is easier to be ethical in research than to be delivering a lecture on ethics in research.

"Professional ethics in research" would mean that there is a code of behavior considered correct in the manner in which the truth is sought and profession is pursued. Any deviant practice from the correct behavior would need to be considered as unethical in the framework of professional ethics.

Who will define the code of behavior is then the next question? Is it defined by a set of practicing professionals in research for use in a particular period of time or is it defined by the society for use in universal or at least long time base? In other words, does the definition of the correctness of behavior change with time and social context or is there a time invariant component in definitions of correctness of actions. It is in this framework, cultural setting gains importance.

Learning is a cognitive process of a human mind. We learn from our parents, teachers, peers and life. There is a role for culture and heritage in education. A child in early stages of learning is influenced strongly by the parental and family values, inherited from the age old past. Some definitions of correct actions and behavior have been made in culturally rich social groups long before the life time of the individual.

There is a shared basis of concepts of correct actions by social groups on a universal time base. A child of rich and inherited culturally protected value system will be restrained in deviating from the correct behavior defined by the traditions and centuries of practice. Ethics is like wine. It gains values when it ages and is preserved by a social group for long periods of time. It is in this context, ethics in research in the cultural setting of India gains paramount importance.

Injunctions and Prohibitions of Social Ethical Systems

In any definition of ethical codes, there is a need for a detailed description of correct and incorrect actions. Man in general has come to understand the distinction between good and bad as well as correctness and incorrectness. In social context of India, there are religious scriptures which defined right and wrong, good and bad, correctness and incorrectness. Incorrect actions were prohibited by the social order. The restraint from taking recourses to incorrect actions was prescribed to a learning child in the social context of India. Family prescribed distinctions between correct and incorrect steps. Social controls which are based on family and social relationships regulate against deviance from the socially enrolled norms of behavior. Indian ethos has been prescriptive of good and bad. Learning has been based on rote principle. Registration of information was prioritized. Analysis and understanding of truth were left to the imagination of the individual. Code of conduct and social control system in the distant past were rigid. Goal setting attitude was weighed down in social esteem and value. Perhaps, the society recognized that goal setting is not without the

dangers of unethical behavior. Desire was considered in some sense a root cause of human miseries. Buddhism preached overcoming of desires.

Desire for the fruits of actions has been considered the root cause of many deviant practices from the social codes of correct actions. Gita preached action without attachment. For highest form of ethics, fruits and products did not matter. The process through which the pursuit is made needs to be correct and should be free of self gains. In a pragmatic world, questions are being asked as to whether this highest form of self regulation is practicable or not? These are presented in the current social context as being against professionalism. In modern world, to be a professional means also to accomplish tasks, goals and achieve targets.

Modern Interpretation of Professionalism

In order that some one is described as a true professional, it is necessary that the person demonstrates success in completing difficult tasks ahead of others. Success in modern world is measured in terms of goals achieved, outputs recorded and outcome created. To be considered a true professional in modern world, one needs to succeed. Means do not matter. End justifies the means. Respect of the society is to those who win regardless of whether there were deviations from the goodness of conduct or not. Not prioritizing winning is considered as possessing an easy going attitude. "Not winning" is consigned to be one of "absence of professionalism". This social behavior is not limited to any one profession. It has affected the global research community even more than other professions. To win and surpass others is mind set of the modern scientific world. Ethics of profession in the interpretation of professionalism undergoes serious changes.

Professionalism in Science

It is now a considered opinion of the scientific world that search for truth cannot be carried out in what is termed as easy going attitude or with a frame of mind that delight of work is in the journey and pursuit and not in the destination and goals achieved. Perhaps it should be explained as to what is meant by the term "easy going attitude". It does not imply lack of professional commitment to work but refers to a state of mind in which the goal setting is absent. Newton is presented as the model of modern scientist. He was conscious of issues of priority and credit for his discovery. He ensured of course that his solutions were as complete as they can be. He was hardly popular among his fellow scientists. His behavior with the social groups of scientists was deviant. He was not popular but was respected by his fellow scientists and is continued to be respected. He is praised for his professionalism. In modern science, Newton is a role model.

Unethical Social Behavior: Where does it originate?

It is perhaps appropriate to review various modern theories of unethical social behavior of a professional. In the development of human brain, there are several stages. Inner brain is thought to promote selfish and self centered behavior of a man. As civilization progressed and the man became evolved, self restraints and concerns for other life forms became more apparent. Social group formation and cultural

development introduced social controls on the behavior of man. In societies where the social control became stratified and discriminative, rebel attitudes of social groups became a part of a social system. It appears that contentment and social cohesiveness form good control systems on unethical professional practices whereas expectation and excessive urge to gain social esteem and power are promoting factors to deviant ethical practice. Power struggle of man kind may even provide a psychological predisposition for unethical professional practice.

Sociological Theory of Anomie

Anomie by definition means lack of social or moral standards in an individual or society. The word emanates from a Greek term for lawlessness. Sociological theories predict that modernization encourages a decline of traditional social controls. A pressure for deviance from institutional structure and cultural values has been predicted by theory of anomie. The cultural values which emphasize achieving materialistic and economic ends over ethicality or legitimacy of the means are focused in discussions on sociological theory of anomie. Choice of a deviant means to achieve an end is more likely when achievement of goals is emphasized. Social stratification is attributed as a major cause for deviant practice in theory of anomie. Stronger family units are shown to counteract forces that encourage unethical practices in profession. Marital and family discords are shown to disrupt social controls and lead to deviant practices from professional ethics.

Decision Making on Ethics: Human Tendencies in Modern Theories

Modern theories discuss the costs and benefits of unethical practice in professional pursuits. Goal setting attitudes of human kind have come up for analysis in terms of benefits and costs. Modern theories propose that people with specific unmet goals will be more prone to overstate their performance than those without specific goals such as the people doing their best. Theories state also that people with unmet reward goals are likely to slip into unethical practice more than those with just mere goals without connotations of reward. A third hypothesis on unethical practice in profession states that those who fail to reach a reward goal by a small margin are likely to deviate from professional ethics more than those who fail by a larger margin. These are modern theories of social behavior on professional ethics.

Summarizing various theories emanating from the western culture, it is possible to observe that a) competition, b) power struggle against social stratification, c) urge to succeed in social perception and d) lack of social and family cohesiveness may form the main promoting factors for unethical professional practices. Social control mechanisms for ethical standards in profession seem to emphasize the role of family and a non-materialistic attitude to life.

Cultural Context of India and its Impact on Professionalism in Research

Cultural context of India has presented a strikingly different social behavior to leaders in modern science. The educational system that prevailed in India prior to British rule was different. Of course, in ancient times, there have been great universities with self regulation and governance as in Nalanda. Group learning in

tens of thousands of scholars in Nalanda has been documented. By and large, however religious learning and spiritual pursuit have dominated the minds of Indians for long. Spirituality focused search for absolute and ultimate truth whereas modern science is based on trial and error mode of searching for perceived truth. These dichotomies are not fully resolved in the minds of several well meaning scientists of this country. It is not perhaps uncharitable to say that there remains a state of confusion in the minds of a modern Indian scientist in selecting standards for professionalism in research. Whereas cultural setting preached ultimate truth, pragmatism of modern competitiveness demands acceptance of perceived truth. Ethos emphasized the role of *Nishkama Karma* (or in other words practices of work without desires).On the other hand, tools of measurement of performance of a professional promote the use of dogma of "end justifies the means". Product is the focus of modern life and process without any regard to fruits is the lesson of the distant past. Heritage described one set of definitions for correct behavior and the modern definitions of professionalism defined another set of correctness. Confusion may be genuine and in this confused state of affairs, ethical systems may even be violated both knowingly and unknowingly. It is therefore necessary to discuss the manner in which a modern Indian scientist needs to fashion one's own research

To-Be or Not- to-Be: Current Situation in Indian Research System

An Indian researcher raised in a family of heritage values is expected to imbibe facets of professionalism in the practice of science in the global context. The need for a balance between goal setting attitude and correctness of processes dictated by ancient value systems most often challenges a committed researcher of Indian origin in situations of to-be or not-to-be. Competitive economy and comparative growth profiles constantly challenge a researcher to focus on goals, targets, outputs, outcome and other measurable parameters. Claims of having arrived first and demands of credits are the current set of operating paradigm in modern research. Social stratification and a relentless power struggle in pluralistic society in India promote the urge to claim and demand credits. The primary motivating factor in plagiarism in science is truly the urge to win in power struggle within.

Professional codes are framed today by some peer groups and this forms basis for ethics in research. Such men and women who cast ethics in research should form the role models in the modern days of professionalism in research along the paths of Newton.

In ancient past of India, there were several cases of reverse plagiarism. People had added to the texts of scriptures without claiming credits and sought to gain credibility. Today's world is opposite. Hierarchical ordering in research systems poses a problem of one type. Technical research where the group endeavor is primary, equitable sharing of credits in a socially stratified community is not without the challenges. Insecurities form the basis of ambivalence in building relationships within the scientific community. Recognitions and rewards systems of the country face severe challenge from within. Court is approached to intervene in the selection of future scientists, technologists, teachers and even Bhatnagar Prize winners. These

raise some fundamental questions as to whether the best suited model for India is to be sourced from the experience of the more successful western world in modern research or India needs to spin one model for herself.

We may need to seek inspirations for development of models for pursuit of science from our own ethos and ethical systems. Indian scientist may have to superimpose over the modern Newtonian methods of west derived professional research our own eastern ethos of pursuing work without desire for reward. I venture to share with you some personal anecdotes which have shaped my own personal ethics in research system.

Lessons from Heritage

My grand father, just few hours before his death, beckoned "Ramasami, every one of God's creation is with a purpose. Your life must have a purpose. Find it. Pursue this selflessly. Selflessness should be such that it is devoid of even self satisfaction." He probably felt that self satisfaction could form a potential reward, which could corrupt my character. I was running ten then. I registered the message. I did not understand. I am not even sure that I understand the advice fully even now. The advice is actually *Nishkama Karma*. I recognize now that it is from Gita. I used to wonder as to why he gave me this advice at the very last stage of his life. It was a parting advice. Perhaps, he thought that it will make a deep impression on me. He was perhaps hoping that it will register better, if it was delivered at the time of his death.

Lessons from Teachers

When I was turning ten, one of my teachers was asking all of us as to what we wanted to become. I had an aspiration to become a scientist. When I mentioned that I wanted to become a scientist, he took me to a room where there was a photograph of Prof K S Krishnan, who had worked with CV Raman in the Nobel Prize work and presented his life as a role model. He defined three qualities for a scientist. They are a) seeking the ultimate truth, b) no compromise in quality and c) perseverance to seek truth at any cost and price. These are all drawn from Indian models of ethical systems.

When I started my PhD work with Professor Sykes in UK, I was inducted into the modern practices of completing a work and publishing before any one else did. I learnt the art of finishing projects. I was trained in generation of quantifiable outputs. There were goals set and achieved. I did face problems in early part of my research initiation. There was a cultural gap. Professor Sykes valued my idealism. He recognized that I had the rooting of a strong family and heritage based value system. He gave that much needed extra space to me and me alone among his students. He honed my skills. He made me a researcher that I would have otherwise never been. I have had two other collaborators from the western philosophy with whom I have shared my work delight. One of them was clearly drawn by our value system of family. The interaction was mutually gainful. It helped me to shape for myself a model for research profession based on western methods and our own cultural values.

Co-learning with a Student

About ten years was going through a series of internal questions as to whether I have outlived my need in research. I had contemplated an early exit from professional research. At that time, one of my best students walked into my office and asked as to why she should strive to excel, when her role model was going through an internal quest. She was concerned that she should not find one day that the whole exercise of seeking truth was futile. I recalled from my memory what my grand father advised at the time of his death. I beckoned, "Dear young lady, every life has a purpose. One needs to find it and pursue the purpose selflessly. Those with a superior mind need to constantly sharpen the intellect as a process in itself regardless of outcome. When the process of pursuit is towards a noble value, the outcome cannot but be good. Education need not target excellence; because excellence is an outcome of relativity. Education should address an internal quest. In your life, I see a purpose for a social good through research. You are endowed with a superior mind. Intellectual search for universal truth should be your purpose. Pursue your search for truth along the path of goodness. This is the lesson I have learnt in life". As she walked out, she was perhaps more confused than what she was when she came in, but my mind became clear. I decided to stay in research for the sake of young people like her. I felt I had a call of the duty, a call made from the heritage of the past.

Eastern Ethos and Western Modes: A Formula for Work Delight

Let me examine as to why I believe that we need is a fusion of western methods and eastern models in our educational and research systems. An educational system which addresses to the needs of life as well as living is really the most ideal. Could there be such a system? Fusion of the western methodology based on deductive logic and the eastern ethos derived from inductive rationale and lateral thinking could possibly provide for the world a better system of education and research.

While the eastern ethos has emphasized “process” as the sole basis, the western models related education to the “product”. It should be possible to balance the stress on both process and product suitably and at the same time. Such a balance should serve to adjust to the demands of time, place and social good. A synthesis made out of eastern ethos and western methods seems the answer. To me, truth is the ultimate destination of science. Seeking truth along the path of goodness is a preferred process taught to us from the old cultural moorings. In this we need not borrow from western world.

Four "Es" of Universal Education and Work Ethics

I like to emphasize the role of four "Es" in learning and professional ethics in research. Let us draw examples from the universal laws of physics. The four "Es" of importance to me in education and professional ethics in research are Ethos, Ethics, Excellence and Economics.

Ethos: Ethos represents a social order inherited from the distant past which influences mind sets. Social ethos would form an integral part of the way a mind reacts to a given situation. The influence of ethos on minds is like that of a distant star on the planet. For the same external stimulus an oriental mind reacts differently from the mind of westerner. It is largely because of prevailing ethos of the culture of orient.

Ethics: Ethics change with social priorities of the time and relate to home truths. Preparedness of the mind varies in resonance with the place and time and social behavior changes even within the same social culture with time. The role of ethics on professional life is like that of the gravitational force keeping bodies onto the Mother Earth.

Excellence: Excellence is like a repulsive force that keeps the heavenly and earthly bodies at safe distances from each other. Satisfaction of mind forms the primary motive for seeking excellence. Excellence can be obtained through completely different paths. To excel means to surpass. Path of excellence may by seeking to surpass others. This path is critically dependent upon the internal urge to seek recognition and gain leadership. This is to a large extent is the western model in research. Giants like Sir C V Raman and Sri Ramanujan demonstrated that Indian mind can excel. In this model, there is a goal to surpass others and claim to have arrived first. Clearly superior minds engaged in professional research gain from this model and when adequately trained in the western methods and rooted on oriental ethos, many researchers remain competitive and gain peer recognition. However in this model, there have been reports of deviant behavior from the global norms. In socially stratified societies like ours, ethics compromise is not avoided.

There is another path of seeking excellence. It is in eliminating one's own errors on a continuous basis. Seeking perfection through error elimination and "your best" model is safer mode of research without ethics compromises. Near term successes of this model are often infrequent. Most shining example of this model is Mahatma Gandhi. His model has provided solutions to India in seeking excellence as well as economic development.

Economics: Economics are like the energy that sustains the whole universe; of course only when the energy is just right to match the needs of the matter. It is true that knowledge is linked to economy in more than one fashion. Economics of education and consequent returns form important parameters for the governments and the society in decision-making. If individuals and institutions engaged in research relate the material rewards carefully, ethical compromises are avoidable. When desire of money and reward goal form the primary goal of research, it may resemble a high-energy particle in space. Atoms possess both potential and kinetic energies. The unleashing of kinetic energy of atoms has led the mankind to disasters. In such an analogy, the need for right sizing the reward priorities assumes paramount importance.

India: The Land of Riches: India is a Nation with Rich Ethos.

India is Nation of leaders in human history. These men gave not only to the country, but also to the world, ethics that last centuries. Search for excellence is a craving need of an average Indian. These riches relate Indian mind to some special social controls when the family cohesiveness and cultural heritage is dominant. There appears to be a changing paradigm in our ability to relate matters of money with professionalism. Partly this is a result of a mal-adjustment of Indian psyche with western modes. This readjustment is hard. It needs true mentors.

Roles of Mentoring, Family Traditions and Cultural Systems: as Social Control Devices in Unethical Behavior in Research

Mentoring: Mentoring in institutions needs to help the growing minds to balance the priority of professional delight and quantified outputs. Mentoring should focus on building of character and not only competence.

Family Traditions: Social control systems in India against unethical behavior in research can be easily placed on ground by virtue of a strong family bondage. Ladies and gentlemen, social control system embedded in me can be traced to my ancestors, teachers, friends and peers and students who have shared the journey. A happy family forms the foundation for balanced growth. In fact the leadership models deployed using the concept of Super families work wonders in India.

Cultural Setting and Ethos: Whereas oriental method of seeking the ultimate truth through spirituality may seem impractical in modern world, there is no greater universal principle of social control than Gita that man kind has ever seen. It is a sure way to avoid unethical professional behavior. *Nishkama Karma* is a fundamental step to achieve without deviations in ethical codes.

Concluding Remarks

I like to share with you all an honest internal feeling of mine in gaining a self control over my own mind. Gaps between where we are to where we could be provide an aspiration for growth. If we view the gap from the position of where we are with a sense of contentment, the alignment of the mind is positive. It means a positive aspiration. It provides an assured means to avoid ethical compromises. On the other hand, if the gaps are perceived from the position of where one wants to be, the position of being leads to negative alignment. If one achieves the position of want, it leads to delight as well as ego. If we fail, it leads to frustration and in some bad cases also to ethical compromise. I would therefore urge strongly a frame of mind that is filled with contentment. We need to accomplish, and the accomplishment should lead to delight of the society

A performing mind in research should seek physical outputs, psychic delight, cultural harmony and spiritual elevation of thought. The professional ethics in research in the cultural dimension of India, should aim at more than compliance to codes and responses to social control systems. It should pave a new culture of

performing professional research where aspiration overcomes expectation and service is prioritized over success.

Let India rise in professional research along the grooves of time tested ethos and “practice of work without desires”.

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Create Synergy between Science and Engineering

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Scientism is the enabling scientific horizon on which the power of science is to be integrated with the might of technology which in turn will ensure that the mankind continues to move forward on the path of prosperity and happiness. Scientism creates a human society deep rooted in the scientific ethos and scientific values which in turn create a civilized society adhering to the cardinal principles of peace, nonviolence, peaceful co-existence and harmony with nature. India as a nation of highly enthusiastic youth so keenly motivated to engineering and technology education can unleash an era of technology innovation in the country by integrating the power of science with the might of technology, so well nurtured in the environment of Scientism. Same is the case with the large contingent of science and technology manpower which we possess in plenty in our country provided we are able to create the necessary synergy between science and engineering. This will not only enable India to rise to the alters of scientific glory and engineering excellence but shall empower the country's economy with industrially relevant innovations to power the knowledge economy. No wonder the ancient glory of the "Wonder that was India" will then descend on Indian horizon creating fair prosperity and happiness in plenty. India holds a promise to the growth of scientism for the well being of the mankind and for the sustenance of nature.

Introduction

Advancements in Science and Technology have been a powerful instrument to propel the growth and development of the modern Agro-Industrial Society ever since the discovery of Laws of Motion by Newton in 1687 and the Advent of Steam Engine by James Watt in 1769. In fact the steam engine developed by James Watt and its later versions of steam locomotives are the perfect examples of integration of the power of science and the might of technology created by the application of the scientific principles to provide to the humanity at large the wheels of growth and development. Likewise the development of motorized airplane of Wright brothers in 1903 and later development of the aerospace industry are yet other marvels of the synergy of science and technology. In the field of communication engineering the Marconi's discovery of radio signal receiver in 1901 and successive developments of television in 1926 and advances in communication science and technology to the modern day computer assisted communications, Internet technologies and IP telephony all go on to demonstrate that science and technology are to be pursued for the benefit of the mankind, supporting the growth of S&T powered enterprises, creating productive employment in plenty, assuring higher levels of

prosperity, sustaining ever increasing levels of quality of life and thus creating excitement in the pursuit of science and technological education, research and innovations.

The modern scientific age right from 17th century onwards has worked largely to the advantage of the human society, yet often creating serious concerns because of misuse of the scientific knowledge and technology applications. However this has much to do with the behavior of man in reaping the rich harvest of prosperity on S&T power and yet mindlessly sacrificing the interest of nature and human society. Well now that the S&T has taken a driving seat in the new knowledge age, it is important to succeed in creating a culture of science, practiced with scientific values and scientific ethos and embedded in the development and applications of technology to create a better tomorrow. This can be effectively done by creating scientism all around to create the synergy between science and engineering for integrating the power of science and the might of technology for the well being of man and to protect the interest of nature. 21st century promises growth and development without sacrificing the interest of man and nature and this promise can be delivered only by creating the desired synergy between science and engineering.

Science and Scientism

Let us examine therefore what science and scientism is all about. The science deals with discovering a better and profound understanding of nature and creation covering all aspects of human endeavors and cosmic activity. Now that the science has touched the nano-scale examination of the creation, natural as well as man made systems, it should be possible to decode the secret of life and carve out pathways of human endeavors in harmony with nature, creating the much desired enabling environment for a sustained advancement of human society.

Scientism, on the other hand is concerned with the creation of a culture of scientific thinking, application of mind to the available information using scientific tools of decision making at all levels, imbibing scientific values, ethics and professional morality while at the same time sustaining high interest in exploring better ways of doing the same work more efficiently and with a better care for the society and mother nature. Scientism therefore is the enabling scientific horizon on which the power of science is to be integrated with the might of technology which in turn will ensure that the mankind continues to move forward on the path of prosperity and happiness. Scientism creates a human society deep rooted in the scientific ethos and adores scientific values which in turn create a civilized society adoring the cardinal principles of peace, nonviolence, peaceful co-existence and harmony with nature. The new knowledge age which is ushered by talent and is driven by innovations requires the practice of science and engineering in the environment of scientism such that the thin line of divide between science and engineering disappears when a scientist is working in his laboratory or while a practicing technologist is exploring new ways of innovation

on the products, processes and phenomena involved. In fact, in the new knowledge age every scientist becomes a technologist and every technologist has all the opportunity to become a scientist. Thus, the difference between a scientist and a technologist is wholly blurred, in fact, if I may add totally disappeared. This has also compressed the product innovation cycle and has narrowed down the gap between scientific discovery and technology innovations. The recent example of the **Bloom Box** for energy pack is an example of what can be achieved by the synergy between science and engineering.

In the context of the synergy between science and engineering for integrating the power of science with might of technology, scientism holds a promising line of approach to ensure that the peace, prosperity and happiness is created in plenty in the new knowledge age. Scientism thus integrates scientists, technologists, medical scientists, biologists, social scientists and every single individual and groups closely associated in the pursuit of science for the well being of society and Mother Nature.

Basic Purpose of Education

- In the context of scientism, it is important to realize that the basic purpose of education is to create not only a literate society but a civilized society inhabited by men and women of knowledge and capabilities of nurturing this magnificent creation by their thoughts, deeds and actions.
- Creating people of competence and caliber having an un-clenching faith in the dignity of man, in the high ideals of humanity i.e. peaceful co-existence, strict adherence to truth and non violence.
- Constantly engaging into discovering the Truth, the true knowledge of creation and thus pave the way for raising the man to the level of divinity.

Education today thus, goes beyond the domain of knowledge, beyond Lab Lectures and Curriculum, LLC and covers innovations and new knowledge development as an integral part to drive a much bigger value out of education than it used to be in the past. This is the compulsion of the new knowledge age which is driven by the power of innovations and is propelled by the power of mind. But then besides education and capabilities to innovate we need caring individuals having high personal and professional morality unclenching faith in the dignity of man and in the high ideals of humanity. The conduct and behavior which form the essentials of the attitude and character of man thus become as important as the quest for knowledge or urge for innovations. In the true Vedic system of education the founding fathers of education system in India have ensured that educational systems not only trades and transact in creation and dissemination of knowledge but also ensure that conduct and behavior are all nurtured together so that the men of knowledge in true sense serve the society with utmost humility and strive to achieve harmony with nature in their chosen activities, in fact live life full of bliss of divinity, creating everlasting peace and happiness.

S&T Education

- S&T Education is all about equipping man with an attitude, a state of mind tuned to keenness of observation, unfailing analysis of the available facts and to filter the truth from untruth even under complex situations and phenomena.
- S&T Education is to equip and empower people with capabilities to scale the impossible, equip people with infinite capabilities and highly specialized skills to assure sustained and continuous improvements in the quality of life, maintain ecological balance and to find tangible solutions to the formidable problems including conquering death and mortality. "***Saha noh yasha, saha noh Brahmbarchasam", as the Tatreya Upnishad says.***
- S&T education is also to create fair prosperity and happiness in plenty, and not unfair prosperity and unhappiness which we see around these days in many quarters of the world.

Scientism also creates the necessary urge to innovate and integrate so that the benefit of the scientific advancement gets translated into innovated products and services for the betterment of the quality of life and also to scale up the nation's economy. The synergy between science and engineering being at the core of scientism also ensures that the gap between mind to market is significantly reduced in line with the compulsions of the highly compressed technology and product innovation cycle.

Scientism shall ensure the emergence of a new world order where science and scientific thinking shall create a fair and just society, adoring high levels of prosperity and spiritual enlightenment together. The "Wonder that was India", which to date remains both a mystery as well as an excitement; the Golden Eagle of the East was also the Kashi of Spiritual Enlightenment which bridged the gap between man and divine. Just imagine a tailor made Sita taking birth as a test tube baby during Ramayana times, tailor made 5 *Pandavas* including *Bhima* having the power of 100 elephants! And 100 sons of Kunti, the *Kauravas* of the Mahabharata times, *Sanjaya* communicating to the blind king *Dharatrastra* the narration of the minute to minute happenings of the Mahabharata war and that too without the modern microwave/satellite communication system are the glimpses of India's rich scientific heritage which still are a formidable challenge to the modern scientists and technologists. May be now that the pace of scientific discovery and technology innovations has accelerated the scientific explorations to encompass the realms of what was earlier considered supra natural. It should be possible for the scientific man to touch the horizons of *prajnana,* which shall equip man with infinite capabilities and specialized skills of the Vedic times.

India's Emergence as a Knowledge Super Power

Emergence of India as a Knowledge Superpower in the recent years is now being well acknowledged around the globe. All this could be possible primarily because of significant growth of science and technology power in India during the last 6 decades after independence, more so during the last 15 years, which have provided the much needed capacity for the development of human capital to propel the growth of knowledge industries both at home as well as abroad. India with its IISc, 7 IITs, 4 IIITs, 20 NITs and a good number of world-renowned engineering and technology institutions such as Delhi College of Engineering now Delhi Technological University, DTU, BITS Pilani, Anna University, Jadavpur University, Bengal Engineering College, now Bengal University of Science and Technology, Punjab Engineering College, Thapar Institute of Engineering and Technology, PSG College of Engineering and Technology, Coimbatore, etc. have enabled India to create a niche advancement in manpower development to meet the current demand of engineering manpower for the industries at home and abroad. Indian engineering graduates have found high acceptability in MNCs and in the industries and organizations in the developed countries. In fact, the world renowned IT organizations such as Microsoft, Intel, AMD, Oracle, CISCO and others have utilized the geniuses of Indian engineering graduates to propel technology innovations and product development. Further, R&D organizations and Research Centres set up in India both by Indian and foreign companies continue to attract engineering and technology graduates from Indian institutions. This goes to demonstrate that India has emerged as a major hub to propel technology innovations in the knowledge intensive industries. In the strategic defense sector, Indian engineers have already demonstrated their capabilities of technology innovations which have enabled India to attain near self-sufficiency for its strategic defense programmes.

Synergy between the World of Academia and the World of Research is needed

In the present era where knowledge reigns supreme, it is important to recognize that the development of a country is propelled by the power of scientific and technological innovations and is driven by the growth of knowledge intensive industrial environment. In this context, the focus on technology innovation, product innovation and process improvement leading to improved energy efficiency and reduction in environmental impact has assumed a much greater importance. Further, the power of connectivity unleashed by modern networked systems of communication has further created the enabling environment to accelerate product innovations by significantly cutting down the technology and product cycle. New horizons of design engineering based on life cycle assessment basis of design have enabled the growth of an integral approach to design for manufacturing, design for environment, design for maintainability, and design for recycle and reuse. These developments on the

design fronts when coupled with the advances in the manufacturing systems such as e-manufacturing and concurrent engineering have enabled to compress the total product cycle to unprecedented levels of human imaginations. Rapid pace of scientific advancements and technology innovations leading to the development of new, smart and intelligent and tailor made materials are bound to accelerate the pace of technology and product innovations in the coming years.

India with its vast technical education system can respond to this growing demand for technology and product innovation provided it succeeds in creating the vital synergy between the world of academia and the vast network of research and development laboratories it has under CSIR, DRDO, Department of Atomic Energy, Department of Biotechnology and also under specialized private sector R&D. This besides assuring an upsurge in the quality of research in the academic institutions and Universities shall ensure that the power of innovation is unleashed in plenty especially when the research oriented expert faculty works in synergy with the high profile scientists and scientific power of the research organizations. This vital synergy is the need of the hour and is a win-win situation both for the university research as well as for the accelerated growth of scientific power and technology innovations coming out of joint efforts of the academia and R&D organizations.

If we look at the success of ISRO in the Space Science and Technology and DRDO in strategic defence we cannot overlook the fact that these two organizations have largely succeeded in creating technology temper for their scientists and scientific temper to their engineering and technology professionals. In fact, both space science and strategic defence being driven by innovations required that the technology missions including the design, development and launch of the innovated products such as the space craft, guided missiles etc. arise out of excellent team work of scientists and engineers working in the environment of scientism. What has been achieved in ISRO and DRDO in respect of synergy between science and engineering and in respect of a creation of the environment of scientism can be achieved by creating the desired synergy between academia and R&D organizations. Synergy between science and engineering being at the core of the collaborative alliance the accelerated growth of the power of science and engineering excellence is bound to emerge both in the universities and also in the R&D organizations. The resultant beneficiaries will be the industries, government and the society, the three vital components of the *Panchamrit* which in turn shall ensure that the science and technology create a much larger public good.

It is heartening to note that the knowledge industries around the world are making India a destination for outsourcing the knowledge services including R&D, software development and IT-enabled services. More recently, the emergence of Knowledge Process Outsourcing, KPOs, has resulted into the growth of KPOs in India. This is a highly welcome development for India's technical education system. The emergence of KPOs is further strengthened by the establishment of design centres and research and development centres by

leading MNCs for the development of new technology and innovated products. Many leading IT companies are setting up their product development centres in the country. As such it is absolutely essential that the technology innovation and product development becomes one of the major focus areas in the technical institutions and universities in the country. The synergy between academia and R&D organizations shall unleash a new era of cooperative research and also collaborative specialized manpower development essentially required to fuel and propels the knowledge economy of our country. Further, the scientism shall foster the culture of innovations backed by scientific quest to transform India into a global Knowledge super power. On the other hand in the absence of scientism, we shall continue to face the problem of research integrity and loss of scientific credibility to our S&T efforts.

Focus Areas for Technology Innovations

Let me finish by listing a few important areas of national priority for technology innovations in the Indian context which essentially require nurturing an enabling environment for integrating the power of science and the might of technology. These are related to:

1. **Providing energy security**-a significant increase in installed capacity, reduction in T&D losses, energy conversation devices and programs and technology break- through for making renewable energy economically viable. Green and Clean Energy Technology innovations can provide solutions to India's energy needs. India is expected to meet its demand of installed capacity of 3,50,000 MW by 2015. The current capacity is around 1,28,000 MW, largely from coal and gas fired plants.
2. **Environmental Sustainability** is yet another important area where technology innovations could provide solutions to monumental problems of drinking water scarcity, waste disposal, treatment of industrial affluent and de-pollution of rivers and water bodies, the life line of India's human habitat.
3. **Information security** is yet another area where technology innovations shall play an important role. Communication revolution is already sweeping India with the power of wired and Wi-Fi systems. This will have a phenomenal impact on our infrastructure sector including transportation where IT-enabled Transportation System, ITES, shall help improve congestion besides ensuring energy efficiency and reduction of pollution levels. This could further be strengthened by technology innovations in the areas of photonics and nanotechnology equipping India with invincible Info and Knowledge networks.
4. **Health care** is an area where science and technology innovations could make good health care for all a reality. Tele medicine, Tele diagnostics, innovated drug delivery systems, bio-sciences and genetic research are going to unfold hitherto un-imagined horizons

supporting a healthy life affordable to a common man. The success in this area however will also depend upon achieving energy security and environmental sustainability.

5. **Strategic defense** is an area where technology innovations provide a major fillip, whether it is the capability of surveillance or the fire power. An integration of information technology, satellite communication, radar engineering, explosive engineering, chemical technology, material science and recently bio-science is involved in strategic defense programs. India can highly be benefited from the developments in these core areas of technology in which the country has already created a niche advantage for technology innovations.

India could reap rich dividends, specially that its human capital has the capabilities to un-lease technological innovations which besides assuring higher levels of national prosperity will ensure higher levels of national security. The present GDP growth of 8-9 percent has been achieved through a vibrant industry environment including the IT Sector. If we are able to provide uninterrupted supply of electric power to our industries and also to other sectors of economy, the GDP growth will jump to 10-12 percent and even more. Technology innovations can help achieving energy security by cutting down enormous waste of electricity in T & D losses, promoting engineering efficiency in electrical devices and systems as also new and viable energy fuels including non-conventional sources. Similarly in the area of technical education leveraging advantage technology assisted by the power of technology innovations can help in significantly improving the quality of education and research and make S&T institutions emerge as the factories of innovations.

India as a nation of highly enthusiastic youth so keenly motivated to engineering and technology education can unleash an era of technology innovation in the country by integrating the power of science with the might of technology, so well nurtured in the environment of Scientism. No wonder the ancient glory of the "Wonder that was India" will then descend on Indian horizon creating fair prosperity and happiness in plenty. The journey of mankind from *Jnana* to *Vijnana* and then finally to *Prajnana* shall elevate man to the level of divinity, thus enabling man to visualize the purpose and meaning of life. Scientism thus holds the promise of creating the power of science and its integration with the might of technology for the well being of man and Mother Nature.

Delivered on the occasion of the Science Day at NPL Auditorium on February 24th, 2010. The author is a former Professor of IIT Delhi, Former Director, Delhi College of Engineering and the Founder Vice-Chancellor of Delhi Technological University and can be contacted at vcdtu@dce.edu. The views expressed are the personal views of the author.

An address to teachers

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[Editor's note: This is an excerpt from a talk delivered by Prof. A.K.Singhvi on the occasion of the Science Exposition PANCHAM 2009 organized by the Zenith Schools, Baroda. As this may be inspiring to teachers, some parts of this are reproduced here]

As a teacher, as a parent and as a proud Indian citizen, I have a dream of seeing India as a true world leader in the material and moral, ethical sense. I have often wondered as to if we can play any meaningful role in the society and if we can ensure that our dreams are realized in the years to come. I have had mixed feelings of hope and despair and today I want to share some of my thoughts. What I will say today is what I feel strongly and passionately about.

Today India and the world are at critical cross roads. Our actions during the next decade will determine the fate of our future generation and of future India. We today witness two India's – one that is working hard, is innovative, is enterprising and has a vision of growth and, the other that is unethical, corrupt, subversive, manipulative, intolerant, parochial and violent. Today, we have an India with well fed middle and upper class on the one hand and, over 51% under nourished, under-fed, without shelter and with no avenues or hopes for future. This India gets up hungry, lives hungry and sleeps hungry and goes hungry. This India was born without hope, lives without hope and will go without hope. A part of the world wishes to see us, (the youngest economy of international consequence), as the one, that is competitive, fierce and capable of countering China for their gains. Another part will like us to live in medieval times with all our archaic values and practices. Some see us as future markets and others as future dumping places. We also face the consequences of climatic change and its attendant import on food security, water security and energy security. Increasing population density also increases the risks. While some of the climate change debate has its roots in global economics and hence been extensively hyped to suit the developed world, there is a certainly a need to have an India centric approach to such issues. We need to think of our problems, of our people, in our frame work and our contexts. In saying so, I do concede that some of the climate threats are real, irrespective of man made climate change.

You may wonder, as to why I do say all this to you and how could a teacher in a school, not so valued, not so respected and valued by the society, help. I say so, because of my firm conviction that teachers alone are the most influential drivers of change for a society. A young mind that comes to you is

malleable putty and you mould this to human being. What you teach him is key to his persona for the rest of his life. We already have the biggest youth population in the world. And given that we will in 2034 become the most populous country, our huge youth population will stay. This putty will need very careful handling for; it is the character, approach and the future of this youth that will define the character and life of the future India. It is this future that I am concerned with, and want to talk to you about today.

Our future will depend on how we think and how we shape our generations in terms of their professional caliber, social conduct, ethics, logical and scientific thinking, respect for resources, respect for every thing around us and a deep concern for the under privileged. I really think that education with ethics and societal values will be the key to India's future. We a need a youth that is possessed with a sense of purpose, and that thinks beyond himself or his town or caste. We need a youth that can paint on a larger canvass. When I see the traffic on the road and the way we drive, I feel a sense of disgust and despair. If we can not respect the rights of a person on the road, how do we ensure that he will respect his neighbours right in a larger societal context. I also feel a sense of despair and hopelessness when I see children on the road moving for small tips. How many of us think of them as India's future despite that they possibly are in larger numbers. We therefore need to inculcate a sense of fairness and value system in the child, from the day he his born and from the day he is initiated into his formal education. Thus, education, in the true sense of the word will be the key to sustaining India's fabric as a nation. We will become a developed country only when ALL our children are educated, are socially conscious and morally ethical.

We will be developed when we have a rational youth and not an emotional youth that is easily swayed. We need a youth that thinks rationally and scientifically about issues like, Ganesha drinking milk or, sea water turning sweet, to the magic of god helping in exams. We need a youth that can educate their elders and nurture the toddlers. A youth with dreams for a country.

We will be developed when we have youth with societal concerns, a youth willing to participate in the welfare of others, a youth that is self sufficient in creating their own opportunities.

I therefore see an important responsibility on your shoulders, on our shoulders, of creating a humane, logical, rational, professional and caring future generation. This generation will start with a huge handicap of jobs left undone by us. This youth has to carry out the task of taking 350 million to school, providing 350 million with safe drinking water, and 600 million with clean toilets and over 1000 million with affordable health care. This generation will have to create nourishment and hope, for 51% of the children, many of whom we see every day on the road crossings and as house labor.

And friends, You will need to create this new generation and inculcate in them the values of ethical social conduct, social concerns, the values of environment, values of resource conservation and of course values of professional excellence.

Education and not literacy is the future of India. Most confuse one with the other. More so politicians and planners, for whom a child is a number. But, what you teach a child today will live with him. As teachers, we may be under paid, undervalued in the society but, we still can not disown a huge task before us. This is as only we have the license and the skills to change, train and mould minds. If we fail, India will FAIL. We therefore need to take ourselves seriously and participate in the creation of an India that is prosperous, with hope and opportunity for all and a decent moral and ethical fabric.

Extending Former American President's, Franklin Roosevelt,'s famous statement on Freedom, we need to actively participate in creating a free India, with freedom of speech and expression, freedom of religion, freedom from want, freedom from fear, freedom from hunger, freedom for education and, concern and respect for all things - living and non living.

India needs dedicated teachers and their contributions in building character of the new generation, more than ever before. Friends, we have a job to do and remember, that we can teach effectively only by setting ourselves as examples.

Basis of Scientific Values and Ethics

P.N. Tiwari

There are different kinds of persons in a society engaged in different kinds of activities, like politics and politicians, business and businessmen, law and lawyers, science and scientists. All these activities except science can survive even if some deceit and falsehood are a part of them because none of them except science seek truth. Politicians seek power by all means. Businessmen seek maximum profit not necessarily by fair means. A layer seeks to win all his cases whether based on truth or not. Scientist seek truth and only truth, the outcome of scientific research becomes misleading, hindering the growth of science if it contains an element of deceit either in setting up of experiment or acquiring data. Science is therefore different from other activities. Science is based on truth, the guiding principle through and through.

Development of Ethics for Science

While developing the ethics for science which derives directly from its own activities, Jacob Bronowski, at the outset thought that this study could lead only to a set of technical rules; elementary rules for using test rules, or sophisticated rules for inductive reasoning. But his enquiry turned out to be quite otherwise. He has stated that "there are, oddly, no technical rules for success in science. There are no rules even for using test rule which the brilliant experimenter does not flout: and alas, there are no rules at all for making successful general inductions. This is not where the study of scientific practice leads us. Instead, the conditions for practice of science are found to be of another and an unexpected kind. Independence and originally dissent, freedom, and tolerance; such are the first needs of science; and these are values which, of itself, it demands and forms" (1).

"The values of science derive neither from the virtues of its member, nor from the finger-wagging codes of conduct by which other professions remind them to be good. They have grown out of the practices of science, because they are inescapable conditions for practice of science" (1).

Science is search of truth. If truth is to be found and tested in action, what conditions grow from this? First is independence in observation and thinking. Second is originality. A person must see, do, and think for himself. Then comes dissent, one should have the freedom to disagree with the other persons' view and express it. Every scientist has to learn the 'hard lesson' to respect the views of the next man even when the next man is tactless enough to express it (1).

"Science confronts the work of one person with that of another, and grafts each on each, and it cannot survive without justice and honour, and respect

between man to man. Only by these values can science pursue its steadfast object to explore truth" (1).

Thus the values of science called scientific values are truth, honesty, trust, independence, originality, dissent, respect, tolerance, fairness, openness, objectivity, and justice. One may say that all these are human values that apply in everyday life of any good society. True, it is very good for the progress of science, if these values are the prevailing societal values. But when there is a conflict or contradiction between the values generally held in a society and those rooted in science, then scientists' choice would be for the latter, even if he has to struggle and suffer loss. These have to be born with fortitude for the progress of science (2). Such scientists deserve honour and full support.

Obligations of Researchers

Scientific research is based on the foundation of trust. No one can verify all the results of other scientists which he uses in his own work. Researchers trust that their colleagues have gathered data carefully, have used appropriate analytical and statistical techniques, have reported their work accurately and have given the importance to the work of other researchers in their field.

The researchers have three sets of obligations (3) that direct their adherence to scientific values and ethics. "First, researchers have an obligation to honour the trust that their colleagues place in them. Science is a cumulative enterprise in which new research builds on previous results. If the research results are inaccurate, others waste their time and resources trying to replicate or extent those results. Dishonest action in an area can impede the entire field of research or send it in a wrong direction, and progress in that field may slow."

Second, researchers have obligations to themselves. Violation of scientific values and ethics in research can make it impossible to achieve a goal, whether the goal is earning a degree or post doctoral fellowship and maintaining a reputation as a productive and honest researcher. Adherence to ethics and norms of science builds personal integrity in a research career.

Third, because scientific results influence society, researchers have an obligation to act in ways that serve the public. Some scientific results directly affect the health and well-being of individuals, as in the case of clinical trials or toxicological studies. And even when scientific results have no immediate application- as when research reveals new information about the universe such as the universe in which we live did not exist before 13.7 billion years ago, it speaks to our sense of wonder and pave the way for further research.

Researchers generally keep all these obligations in mind towards other researchers, towards oneself, and towards society in doing research and reporting the results. However, those who may be tempted to ignore these

obligations must know that their action causes harm not only to science and society, but it causes much greater harm to their own career and reputation. That is why advising by more experienced scientists is essential when beginning researchers are learning these obligations (3).

Research Misconduct

Any violation of scientific values and ethics like deceit and falsehood in research is called scientific misconduct. Anyone who does it is putting his or her scientific career at risk and is harming the overall interest of science and its use of society.

A statement developed by US office of Science and Technology Policy defines misconduct as fabrication or falsification or plagiarism in proposing, performing or reviewing research or reporting research results. According to the statement, the three main elements of misconduct are defined as follows (3):

1. Fabrication is making up data or results.
2. Falsification is manipulating research results, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in research record.
3. Plagiarism is the appropriation of another person's idea, process, results or words without giving appropriate credit.

In addition (a) abuse of confidentiality in peer review, (b) failure to allocate credit appropriately in scientific publication, (c) not observing regulations governing research, (d) failure to report misconduct and (e) retaliation against individual who reports misconduct are also included in the scientific misconduct. Other behaviours that seriously derivate from commonly accepted research practices may also be included in the possible scientific misconduct (3).

When researchers intentionally deceive their colleagues by falsifying information, fabrication research results or using other's words and ideas without giving credit, they are violating basic values on which science is based. These actions are seen as the worst violation of scientific values and ethics. Such actions should be treated very harshly. A healthy scientific community treats them as such. Some such persons have been jailed in USA (4).

Responding to Violation of Scientific Values and Ethics

Science is largely a self regulating enterprise. Scientific community is the source of the standards and practices to which researchers are expected to adhere. Self regulation ensures that the decisions about professional conduct are made by experienced and qualified peers. But for self regulation to work a researcher must be willing to inform others when they see that a colleague is violating scientific values and disciplinary practices (3).

But this has to be done carefully. Reprisals by accused and his supporters have occurred in the past. In USA, law prevents institutions and individuals from retaliating against those who report concerns in good faith (3). In India, Society for Scientific Values (SSV) has been trying to do the same. Allegations about violations of Scientific Values and Ethics can have serious consequences for all parties concerned. It should be done with care and responsibility.

Concern, at first, can be best raised in the form of questions rather than allegations. It is important to remain objective, fair, and unemotional in doing so. Another possibility is to discuss the situation with a good friend, trusted advisor and peers. Sometimes the broad outlines of the case can be discussed without revealing the names (3).

Despite possible difficulties, someone who has witnessed or witnessing a colleague in research misconduct has an unmistakable obligation to act. Research misconduct, especially, falsification, fabrication, and plagiarism has the potential to weaken the integrity of science and forfeit the potential benefit of research to the society. **"The scientific community, society, and personal integrity of individuals, all emerge stronger from effort to uphold fundamental values on which science is based" (3).**

While inaugurating the seminar on "Scientific Misconduct and Disciplinary Action", organised by the Society for Scientific Values in 1995, late Sri T.N. Seshon, Chief Election Commissioner of India, who made major reforms in the election process said:

"If the scientific community will not enable the country to recognize conduct and misconduct, and put it down with firmness after due process and impartiality, who else can do it? If there is one group which because of training and adherence to truth can probably bring back character to the country, it is the scientists. Character cannot be built by anything else than the primary adherence to truth. Truth is the fundamental basis of science. Any scientist who departs from truth is guilty of grievous misconduct. Please set an example for the rest of the country" (5).

This is what the Society for Scientific Values (Website; www.scientificvalues.org) has been trying to do since its formation is 1986. Most of the scientists, especially on high positions in India, know that someone is watching and will question any violation of scientific values and ethics in research.

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Secretary's Report 2009 – 10

1. Presently SSV consists of 367 members. Twenty new members have been elected during the year.
2. SSV was requested to organize two National Seminars on Ethical Values: one at Patna Womens College & the other at MNIT, Allahabad in association with Vedanta Bhaktivada Institute, Kolkata. Both seminars were attended by over 300 participant's consisiting of students and faculty. In addition, four institutional seminars have been delivered by the President, SSV at different academic institutions.
3. Four EC meeting was held during the year.
4. SSV Website is being regularly updated.
5. Dr. P. N. Tewari requested to be relieved from the editorship of News & Views magazine; EC requested Dr. Santa Chawla to take over as the Editor of News & Views.
6. The Fund utilization Report was sent to AICTE &DST. A proposal for funding of the SSV activities was submitted to DST by the Secretary, SSV.
7. SSV agreed to join a group of activists to file a PIL in the Supreme Court against the government of India in connection with its ethically questionable vaccine production policy of some PSUs.
8. An updated list of members has been prepared.
9. Financial accounts of SSV have been corrected and updated in conformity with its registration status.
10. Income tax exemption for SSV under 12A Act has been sought. PAN Card of society has been obtained. For 80 G (5) Income tax concession has been applied for Society.
11. Several cases of scientific misconduct & plagiarism have been discussed and pursued to conclusions which have been posted on the SSV Website.
12. A partially plagiarized article by Dr. P. K. Nagar published in our News & Views of SSV has been retracted.

R. K. Kotnala
Secretary, SSV

Executive Council of SSV
(August1, 2008 – July 31, 2011)

President	**Prof. K. L. Chopra** (Former Director, IIT Kharagpur)
Vice President:	**Dr. Vikram Kumar** (Former Director, NPL)
Secretary:	**Dr. R. K. Kotnala** (Scientist, NPL)
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Dr Indira Nath (AIIMS, New Delhi)

Prof. N.R.Jaganathan (AIIMS, New Delhi)

Dr. S. N. Singh (NPL New Delhi)

Membership of the Society for Scientific Values

Scientists who wish to join the efforts of the Society to promote ethics (support right and oppose wrong) in scientific research, development and management and, who meet the following requirements are welcome to become the member of the society.

1. He/she should have allowed his name to apppear as an author in only those publications in which he/she was actively involved, in data collection, theoretical formulation, design and construction of apparatus, field trips, mathematical derivation and calculations, statistical analysis and interpretation of results, as distinct from administrative support and providing funds or facilities.

2. He/she should have never plagiarized or made false claims or indulged in or supported and encouraged any kind of unethical activity in science.

3. He/she should agree to withdraw from the Society if he/she ceases to adhere to the requirements 1 and 2 above.

A scientist who wishes to become member should send his brief biodata to the President or Secretary of the Society. A member of the Society may also send biodata of such scientist for the membership. Non-scientists who have promoted ethics in their profession can also become member of the Society.