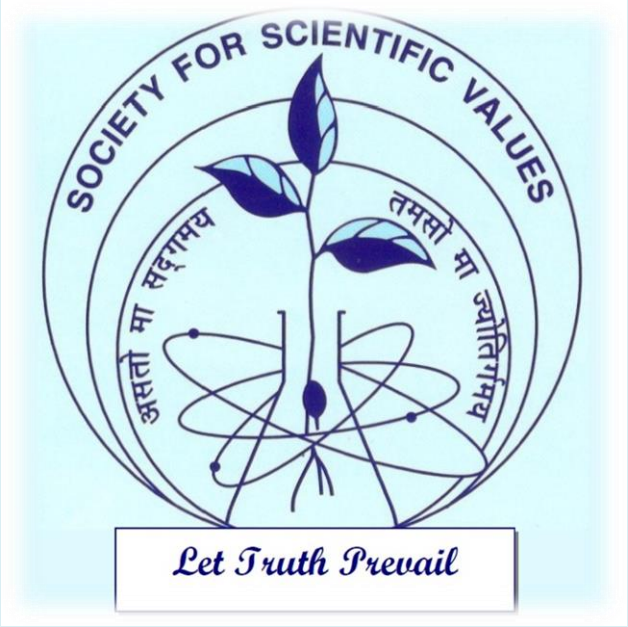
Society for Scientific Values

Ethics in Scientific Research Development and Management



News and Views

Volume 16 No. 1 October 2017

Editor

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Executive Council Members

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 area

Contents

From the Desk of the Editor

Plagiarism is an act of representing someone idea word by word without appropriate citation of the original source. This may be in the form of copying information from books, website, published research articles, email messages, or any other source. To avoid plagiarism, it is necessary that one must quote the proper references after using the phrases from the original source.

The current issue brings the article on draft prepared by UGC on Promotion of Academic Integrity and Prevention of Plagiarism in Higher Education Institutions Regulation 2017 and Feedback of SSV on it.

The committee formed by the UGC has defined the Plagiarism "an act of academic dishonesty and a breach of ethics. It involves using someone else's work as one's own. It also includes data plagiarism and self-plagiarism".

The committee was formed with specific objectives such as (i) to create awareness about plagiarism among students, faculty and higher education institutions, (ii) to setup mechanism for education and training to facilitate responsible conduct of research, (iii) to detect plagiarism at institute level.

The Committee has recommended the set of penalties on different levels of plagiarism but with limited utilities. SSV has advocated in its comments that such regulations should also be applicable to physical and chemical sciences, engineering, medical, biosciences, agriculture sciences, and pharmaceutical sciences, etc. SSV has also suggested that Integrity and responsible conduct should apply to all steps of the research process – from formulation of idea, identification of the methods, actual execution of the research work and finally its dissemination in the form of a report/dissertation/thesis/journal article/book etc.

This issue has also reported a draft base paper prepared by Praveen Chaddah and Subhash C. Lakhotia for developing an academy policy document on "Dissemination and Evaluation of Research Output in India". It is stated that a large number of research journals are being published in India. However, none of them has been able to make a significant mark at international level since our own community believes that papers in journals published in India are not of high quality and, therefore, these journals have low or no 'impact factor'. The article reported that the one of the major concerns of Prof. C. V. Raman while launching Current Science was that unless the country has its own high quality research journals, the quality of science in the country would not be high. To raise the standard of quality of research, SSV has suggested that academic institution involved in S&T must be required to set up at least a technology incubator if not a technology park. In fact, innovation, incubation and entrepreneurship should be an integral part of learning process for the students, as also for faculty.

The content of this news and views will provide the information to the readers about the measures taken by the UGC to emphasize the plagiarism in broader way and to improve the quality of research theses.

As the Editor of News &Views of the Society for Scientific Values, author request all the members of SSV and other readers to send the news and views consistent with the mission and vision of SSV for publication in the future issues of N&V. The views expressed by author are not necessarily those of his employer.

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No.F. 1-18/2010(CPP-II) **1st September, 2017**

PUBLIC NOTICE

University Grants Commission had constituted a Committee of experts to look into issues of Plagiarism and recommend some institutional mechanism to eliminate the scope of this menace in higher education system in the country. The objective of the regulations is to promote academic research and deterrence from plagiarism by developing systems to detect plagiarism. As a result, the Committee emphasized on the needs to refer plagiarism in a broader way by putting appropriate systems and checks in place.

The draft University Grants Commission (Promotion of Academic Integrity and Prevention of Plagiarism in Higher Education Institutions) Regulations, 2017 prepared by the Committee is attached herewith for observations and suggestions of stakeholders. The Feedback and Comments on the above draft may be sent to UGC on pgmhei.2017@gmail.com on or before 30th September, 2017.

(P.K. Thakur)
Secretary

Preamble

Whereas, University Grants Commission (UGC), as per UGC Act, 1956, is mandated to coordinate and determine the standards of higher education;

And whereas, assessment of academic and research work done by a student or a faculty or a researcher or a staff, in the form of essays, assignments, term papers, project reports, course works, thesis and dissertation leading to the awards of degrees, research papers, policy papers, chapters in books, full-fledged books and any other work including computer programs is instrumental in identifying and certifying the academic standards accomplished by such student(s) or faculty or researcher(s) or staff and projecting them far and wide as an objective and impartial indicator of the performance of individual(s);

And whereas, any academic and research work undertaken in any form by a student or a faculty or a researcher or a staff, reflects the extent to which elements of academic integrity, originality and innovation have been injected in various processes of education adopted by Higher Educational Institutions(HEI's);

Therefore, in exercise of the powers conferred by clause(j) of Section 12 read with clauses(f) and (g) of sub-section(1) of Section 26 of the University Grants Commission Act, 1956, the University Grants Commission hereby makes the following regulations:-

1. Short title, application and commencement-

a. These regulations shall be called the University Grants Commission (Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutions) Regulations, 2017.

b. They shall apply to the students, researchers, faculty and staff of all Higher Educational Institutions in the country.

c. These regulations shall come into force from the date of their notification in the Official Gazette.

2. Definitions-

In these regulations, unless the context otherwise requires-

a. "Academic Misconduct Panel" shall mean the body constituted to investigate allegations of plagiarism as described under clause 11 in these regulations.

b. "Academic Integrity" is the intellectual honesty in proposing, performing and reporting any activity, which leads to the creation of intellectual property.

c. "Author" includes a student or a faculty or a researcher or staff of Higher Educational Institution(HEI) who claims to be the creator of the work under consideration;

d. "College" means any institution, whether known as such or by any other name which provides for a course of study for obtaining any qualification from a university and which, in accordance with the rules and regulations of such university, is recognized as competent to provide for such course of study and present students undergoing such course of study for the examination for the award of such qualification;

e. "Commission" means the University Grants Commission as defined in the University Grants Commission Act, 1956;

f. "Degree" means any such degree, as may, with the previous approval of the Central Government, be specified in this behalf by the University Grants Commission, by notification in the Official Gazette, under section 22 of the University Grants Commission Act, 1956;

g. "Faculty" refers to a person who is teaching and / or guiding students enthralled in an Institution of Higher Education in any capacity whatsoever i.e. regular, ad-hoc, guest, temporary, visiting etc.;

h. "Higher Educational Institution (HEI)" means an institution of learning including a university, an institution deemed to be university, a college, an institution of national importance declared as such by an Act of Parliament, or a constituent unit of such institution, which is imparting (whether through conduct of regular classes or distance education systems) higher education after twelve years of schooling leading to the award of a degree or diploma;

i. “Information” includes data, message, text, images, sound, voice, codes, computer programs, software and databases or micro film or computer generated micro fiche;

j. “Notification” means a notification published in the Official Gazette and the expression “notify” with its cognate meanings and grammatical variation shall be construed accordingly;

k. “Plagiarism” means an act of academic dishonesty and a breach of ethics. It involves using someone else’s work as one’s own. It also includes data plagiarism and self-plagiarism;

l. “Programme” means a course or programme of study leading to the award of a degree or a diploma in Institution of Higher Education;

m. “Researcher” refers to a person conducting academic / scientific research in Institution of Higher Education.

n. “Script” includes research paper, thesis, study, project report, assignment, dissertation and any other such work submitted for assessment/opinion leading to the award of degree or publication in print or electronic media by students or faculty or staff of an Institution of Higher Education;

Note: This shall however exclude answer scripts submitted in response to a question paper set by a HEI.

o. “Source” means the published primary and secondary material from any source whatsoever and includes written information and opinions gained directly from other people, including eminent scholars, public figures and practitioners in any form whatsoever as also data and information in the electronic form be it audio, video, image or text; Information being given the same meaning as defined under Section 2(1)(v) of the Information Technology Act, 2000 and reproduced here in Regulation 2(l)

p. “Staff” refers to all non-teaching staff working in Institution of Higher Education in any capacity whatsoever i.e. regular, temporary, contractual, outsourced etc.

q. “Student” means a person duly admitted and pursuing a programme of study including a research programme in full time or part- time or distant mode;

r. “University” means a university established or incorporated by or under a Central Act, a Provincial Act or a State Act, and includes an institution deemed to be university

s.

t. “Year” means the academic session in which a proven offence has been committed.

Words and expressions used and defined in these regulations but defined in the University Grants Commission Act, 1956 shall have the meanings respectively assigned to them in UGC Act, 1956.

3. Objectives

3.1 To create academic awareness about responsible conduct of research, study, project work, assignment, thesis, dissertation, promotion of academic integrity and prevention of misconduct including plagiarism in academic writing among students, researchers, faculty and other members of academic staff as well as any employee of HEIs.

3.2 To establish institutional mechanism through education and training to facilitate responsible Conduct of research, project work, assignment, thesis, dissertation, promotion of academic Integrity and deterrence from plagiarism.

3.3 To develop systems to detect plagiarism and to set up mechanisms to prevent plagiarism, and punish a student faculty, or staff of HEI committing the act of plagiarism.

4. Duties of HEI:

Every HEI should establish the mechanism as prescribed in these regulations to enhance awareness about responsible conduct of research and academic activities, promotion of integrity and deterrence from plagiarism.

5. Awareness Programmes and Trainings:

(a) Every HEI shall instruct students, faculty and staff about proper attribution, seeking permission of the author wherever necessary, acknowledgement of source compatible with the needs and specificities of disciplines and in accordance with rules and regulations governing the source.

(b) All HEIs shall conduct sensitization/awareness programmes every semester on responsible conduct of research, project work, assignment, thesis, dissertation, promotion of academic integrity and ethics in education for students, faculty and other members of academic staff.

(c) All HEIs shall

i. Include the cardinal principles of academic integrity in the curricula of Undergraduate (UG)/Postgraduate (PG)/Master's degree as a compulsory course work.

ii. Include elements of responsible conduct of research and publication ethics as a compulsory course work for M.Phil. and Ph.D. Scholars.

iii. Include elements of responsible conduct of research and publication ethics in Orientation and Refresher Courses organized for faculty and other members of academic staff.

iv. Shall train student, faculty, staff and researcher for using plagiarism detection tools and reference management tools.

v. Shall establish facility equipped with modern technologies for detection of plagiarism.

vi. Shall encourage student, faculty, staff and researcher to register on international researcher's Registry systems.

6. Curbing Plagiarism

a) Every HEI shall declare and implement that technology based mechanism using appropriate software so as to ensure that documents such as thesis, dissertation, term papers, reports, publications or any other such documents are free of plagiarism at the time of their submission.

b) Every student submitting a thesis, dissertation, term papers, reports or any other such documents to the HEI shall submit an undertaking indicating that the document has been prepared by him or her and that the document is his/her original work and free of any plagiarism.

c) Every faculty, researcher and M.Phil/Ph.D students should be provided account in plagiarism detection tools for checking the content of their scripts.

d) The undertaking shall include the fact that the document has been duly checked through a Plagiarism detection tool approved by the HEI.

e) The HEI shall develop a policy on plagiarism and get it approved by the relevant statutory bodies of the University.

f) Each supervisor shall submit a certificate indicating that the work done by the researcher under him / her is plagiarism free.

g) All HEIs shall submit to INFLIBNET soft copies of all M.Phil, Ph.D. dissertations and thesis carried out in its various departments after the award of degrees for hosting in the digital repository under the "Shodh Ganga e-repository" programme.

h) All HEIs shall create Institutional Repository on institute website which shall include dissertation/thesis/paper/publication and other in-house publications.

7. Similarity checks for exclusion from Plagiarism

The similarity checks for Plagiarism shall exclude the following:

i. All quoted work either failing under public domain or reproduced with all necessary permission and/or attribution.
ii. All references, bibliography, table of content, preface and acknowledgements.
iii. All small similarities of minor nature.
iv. All generic terms, laws, standard symbols and standards equations.

8. Zero Tolerance Policy in core area:

The core work carried out by the student, staff and researcher shall be based on original ideas and shall be covered by Zero Tolerance Policy on Plagiarism. In case Plagiarism is established in the core work claimed then Plagiarism Disciplinary Authority (PDA) of the HEI shall impose maximum penalty.

The core work shall include abstract, summary, hypothesis, observations, results, conclusions and recommendations.

9. Levels of Plagiarism in non-core areas

For all other (non-core)cases, plagiarism would be quantified into following levels in ascending order of severity for the purpose of its definition:

i. Similarities upto 10%-excluded
ii. Level 1: Similarities above 10% to 40%
iii. Level 2: Similarities above 40% to 60%
iv. Level 3:Similarities above 60%

10. Detection/Reporting/Handling of Plagiarism

If any member of the academic community suspects with appropriate proof that a case of plagiarism has happened in any document, he or she shall report it to the competent/ designated authority of the university. Upon receipt of such a complaint or allegation the university authority shall refer the case to the Academic Misconduct Panel (AMP) of the HEI who in turn shall submit a report to the Plagiarism Disciplinary Authority (PDA).

The authorities of HEI can also take *su motu* notice of an act of Plagiarism and initiate proceedings under these regulations. Similarly proceedings can also be initiated by the HEI on the basis of findings of an examiner.

11. Academic Misconduct Panel (AMP)

i. AMP shall be constituted by the HEI to investigate about the allegation of plagiarism and submit the report to the PDA.

ii. The AMP shall have the power to assess the level of plagiarism and thus recommend penalty (ies) accordingly.

iii. The AMP shall consist of four members who shall be senior academicians with good publication record with at least one member nominated by the Head of HEI from outside the HEI. The Chairman of the AMP shall be an academic functionary (Dean/Pro-VC/Senior Academician) of the HEI. The third member shall be a reputed Academician from the Discipline in which the plagiarism is alleged. The fourth member shall be an expert well versed with anti-plagiarism tools.

iv. The AMP shall follow the principles of natural justice while deciding about the allegation of plagiarism against the student, researcher, faculty member or any other employee of HEI.

v. The AMP shall send the report after investigation and the recommendation on penalties to be imposed to the PDA preferably within a period of 45 days from the date of complaint / initiation of the proceedings in case of *su motu* notice.

vi. The AMP shall provide a copy of the report to the person(s) against whom inquiry report is submitted.

12. Plagiarism Disciplinary Authority (PDA):

i. PDA shall be constituted by the HEI to consider the recommendation of the AMP and take appropriate decision after giving a hearing to the accused person.

ii. There shall be three members in the PDA chaired by head of the HEI / The Head of the institution/ Appointing

iii. The decision of the PDA shall be final and binding.

13. Penalties

Penalties in the cases of plagiarism shall be imposed on students pursuing studies at the level of UG, PG, Masters, M. Phil., Ph.D. and faculty & staff of the HEI only after academic misconduct on the part of the offender has been established without doubt, when all avenues of appeal have been exhausted and individual in question has been provided enough opportunity to defend himself or herself in a fair or transparent manner. While developing policy document, the HEI may consider penalties in the cases of plagiarism. It shall be ensured by the competent authority in the HEI that the degree of penalty served is commensurate with the degree of seriousness of offence and misconduct established. Since act of plagiarism, witting or unwitting, is potentially detrimental to the academic credibility and social reputation of the individual concerned, all proceedings of investigations and imposition of penalties shall be conducted in camera so as to prevent encrustation of stigma and slur upon individual concerned:

(a) Penalties for Students

Plagiarism Disciplinary Authority (PDA) of the HEI, based on recommendations of the Academic Misconduct Panel (AMP), shall impose penalty considering the severity of the Plagiarism.

i. **Level 1: Similarities above 10% to 40% -**Such student shall not be given any mark and/ or credit for the plagiarized script and shall be asked to submit a revised script within a stipulated time period not exceeding 6 months.

ii. **Level 2: Similarities above 40% to 60% -**Such student shall not be given any mark and/ or credit for the plagiarized script and shall be asked to submit a revised script after a time period of one year but not exceeding eighteen months.

iii. **Level 3: Similarities above 60% -**Such student shall not be given any mark and/ or credit for the plagiarized script and his/her registration for that course to be cancelled.

Note 1: Penalty on repeated plagiarism – Such student shall be punished for the plagiarism of one level higher than the previous level committed by him/her. In case where plagiarism of highest level is committed then the punishment for the same shall be operative.

Note 2: Penalty in case where the degree / credit has already been obtained – If plagiarism is proved on a date later than the date of award of degree or credit as the case may be then his/her degree or credit shall be put in abeyance for a period decided by the AMP and PDA.

(b) Penalties for faculty, staff, researcher of HEI

(i) Level 1: Similarities above 10% to 40% - shall be asked to withdraw manuscript submitted for publication and shall not be allowed to publish any work for a minimum period of one year.

(ii) Level 2: Similarities above 40% to 60% - shall be asked to withdraw manuscript submitted for publication and shall not be allowed to publish any work for a minimum period of two years and shall be denied a right to one annual increment and shall not be allowed to be a supervisor to any UG, PG, Master's, M.Phil., Ph.D. student/scholar for a period of two years.

(iii) Level 3: Similarities above 60% - shall be asked to withdraw manuscript submitted for publication and shall not be allowed to publish any work for a minimum period of three years and shall be denied a right to two successive annual increments and shall not be allowed to be a supervisor to any UG, PG, Master's, M.Phil., Ph.D. student/scholar for a period of three years.

Note 1: Enhanced penalty on repeated plagiarism – Shall be punished for the plagiarism of one level higher than the lower level committed by him/her. In case where plagiarism of highest level is committed then the punishment for the same shall be operative. In case level 3 offence is repeated then the concerned person shall be dismissed.

Note 2: Penalty in case where the benefit or credit has already been obtained – If plagiarism is proved on a date of benefit or credit obtained as the case may be then his/her benefit or credit shall be put in abeyance for a period decided by the AMP and PDA on recommendation of the AMP.

Note 3: If there is any complaint of plagiarism against the Head of an HEI, a suitable action, in line with these regulations, will be taken by the Competent Authority/Governing Board/Governing Council as the title may be.

Feedback of Society for Scientific Values on UGC Draft Gazette Notification

PROMOTION OF ACADEMIC INTEGRITYAND PREVENTION OF PLAGIARISM IN HIGHER EDUCATION INSTITUTIONS REGULATIONS – 2017

Society for Scientific Values (SSV) appreciates that UGC has recognized the need to formulate regulations to deal with the epidemic of scientific misconduct in academic and R&D institutions in India. For your information, SSV was registered during 1987 by several senior scientists and INSA Fellows. SSV nurtures responsible conduct of research and ethical values in academia and R&D institutions in the country through national and institutional seminars /discussions. It also acts as a watchdog for unethical practices particularly by senior professionals, conducts inquiries, and exposes such cases through "Name & Shame" when the concerned authorities take no action against the guilty.

Following is our Feedback on the UGC Draft Gazette Notification:

1. Although the title and objectives of the draft document are broader (and ought to be so), the detailed regulations have limited their scope and focus only to plagiarism. As such, the Document is very myopic and of limited utility. With increasing focus on R&D in multidisciplinary areas, such regulations should be applicable to physical and chemical sciences, engineering, medical, biosciences, agriculture sciences, pharmaceutical sciences, etc.

2. The regulations should focus on all aspects of promotion of academic integrity and responsible conduct of research (as mentioned in Objective at 3.1) which include : *plagiarism/self-plagiarism, falsification and fabrication of data, multiplication of publications, conflict of interest, authorship manipulation (Guest-Gift-Ghost publications), purchased authorship and degrees, publications in predatory and open –access payment journals without any peer review, conference proceedings published without any critical peer review by well-known global publishers such as Springer, Elsevier, Wiley etc. , ethical treatment of chemical , medical and bio waste and research subjects such as animals/humans in biomedical research, etc.*

3. Integrity and responsible conduct should apply to all steps of the research process – from formulation of idea, identification of the methods, actual execution of the research work and finally its dissemination in the form of a report/dissertation/thesis/journal article/book etc. Regulations should clearly spell out the consequences of violations on all these counts.

4. Item 5 on awareness and training should incorporate all the aspects of academic integrity and responsible conduct of research mentioned above. It is to be noted that India is a signatory to the UNESCO International Declaration of Bioethics and Human Rights, which should be incorporated into the training and awareness programmes, ethics of dealing with illiterates/tribal, women/minorities or other vulnerable groups, environmental ethics etc.

5. Plagiarism is not just about text similarity (which is all that any software tool can catch as of today), but also recycling of copied figures, tables, photographs and other such related information.

6. It is important to incorporate separate items (at 8, for e.g.) titled "curbing falsification/fabrication of data/claim/information/ undeserving authorship manipulation through administrative control, or infrastructure support ,or through "Guest-Gift-Ghost" processes .and their prohibition needs to be elaborated . . The SSV enunciated principles on the criteria for authorship can be a very useful guide to promote ethical authorship policies and practices.

7. The zero tolerance policy (item 8) should include not only plagiarism but also all other violations/ related misconduct mentioned above. It would be more practical to elaborate this point by prohibiting only verbatim similarity beyond a sentence or two without citing the actual source of that sentence, or multiple sentences in succession without putting them under quotation marks or with minor modification and without citing the actual source. Unauthorized/uncited reproduction of any data should also be explicitly prohibited and covered under zero tolerance.

8. The scope of the item on "detection/reporting/handling" should also be expanded to cover not just text plagiarism, but all kinds of irresponsible conduct of research. Complaints are required to provide "prima-facie" reason/evidence for the complaint but need not be required to provide "appropriate proof". There should also be reasonable deterrence against frivolous or mischievous complaints that entangle the entire HEI system in trivial battles or professional rivalry. The report of investigation by the Academic Misconduct Panel (AMP) (item 11) should be made available to the accused and complainant.

9. The provisions of the Copyright and IPR laws and the consequences of violation thereof should be incorporated in the document.

10. The mechanical identification of levels of plagiarism (item 9) by percentages of words can be misleading and even dangerous, as it may empower mischievous leaders to harass their upright but outspoken faculty on trivial grounds. For example, in a non-core area like "materials and methods", it is common to reproduce verbatim the method actually followed for the

benefit of the reader, even if it was previously published. There is nothing ethically wrong in it, nor does it constitute a copyright violation.

11 (a) Similarity detection tools can identify both similar words as also similar sentences. In most cases, even a few percent similarities of sentences are a serious case of plagiarism. Further, similarity detection is possible if the original material is available on-line. A lot of old scientific literature from countries such as East Europeans is just not available on-line... A lot of plagiarized papers in India in such areas as Pharmacy, Medical, Biosciences, and Agriculture etc. are being traced to such publications. Any reliable and verifiable evidence of plagiarism should be acceptable for necessary action. *Plagiarism is THEFT.A Thief is a Thief whether he/she steals 10% or 90%* The degree of seriousness of plagiarism etc. can only be evaluated by the AMP and should be left to its judgment and recommendation.

b) It is very important to note that, as per experience in India and globally , most cases of unethical practices are exposed several years later , generally by a rival or a Whistle-Blower as and when the person concerned starts moving up or has moved up the professional ladder to a higher post ,or is about to receive an Award/Recognition.. In such cases, the credible evidence of plagiarism or any other misconduct is generally provided by a whistle-blower. In the absence of a Whistle Blower's Act which is hanging in our Parliament, it is important that the identity of the whistle blower be protected by the concerned institution

(c) If the case involves the Head of the institution (which is not uncommon today), the Inquiry should be conducted by a committee of experts selected by UGC. Recent examples of the two VCs of Central Universities being dismissed for unethical practices after about 3 years of discussions/meetings between UGC, MHRD and the Visitor must be avoided by a well-defined process for handling such cases.

(d) Since the AMP is supposed to understand the gravity of unethical conduct, the same committee should be asked to propose penalties for the guilty on the basis of seriousness of the case keeping in mind the following guidelines:

(i). Retraction of the paper/document, withdrawal of travel grant for attending conferences for a certain period
(ii) Name and Shame
(iii) Withdraw thesis based degree such as PhD
(iv) Withhold/ withdraw an increment in salary
(v).Withhold/deny promotion for some period
(vi) Demotion
(vii) Dismissal

There is no need for another committee such as Plagiarism Disciplinary Authority (PDA). since all institutions have their own administrative mechanism for considering the report of AMP and for approving an appropriate penalty.

12. The responsible conduct of the members of the AMP should also be covered under these regulations, including declarations of conflict of interest, institutions who have a role in nominating the members of AMPs should also be made answerable for any conflicts arising out of the AMPs, or for delays in receiving/investigating complaints and/or in issuing/implementing their verdicts.

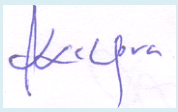
13 .Numerous R&D institutions and GOI departments (such as CSIR, BARC, ISRO, DRDO, etc. etc.) have been accorded the Status of a University , or are running universities (such as Depts. of Agriculture, Chemicals & Fertilizers,etc) .Such institutions run PhD programmes and also collaborate with researchers from various universities in the country. Many cases of plagiarism and scientific misconduct involving such institutions with UGC approved universities have come to light... How to take any action in such institutions needs to be examined.

14. It needs to be stressed that the rules and regulations should be applicable to all types of universities/academic/R&D institutions .We advise UGC/MHRD/S &T Ministry to prepare a freely available e-Handbook on the subject, a kin to "Academic Integrity at MIT", NAP's Publications on Academic Ethics, etc. etc. for wider circulation.

15 A signed certificate of originality of all contents by a student and his/her supervisor in a report/publication /thesis must be required. No thesis-based degree is awarded unless a copy of the Thesis is deposited with the Shodh Ganga e-Repository or an Institutional Repository linked with the National Repository

16. The list of genuine Journals approved by UGC for R&D publications by the universities has been questioned by some academics. The list includes a large no of predatory journals. Such journals are advertising their journals as "UGC Approved Journal". The no of predatory journals has mushroomed to over 9000 globally, with a good percentage of these journals originating in India .Such journals, as also books, get their ISSN and ISBN registration from MHRD without any scrutiny and on payment of a trivial subscription of few hundred rupees in India. This racket needs to be investigated by MHRD/UGC for an

acceptable solution. Efforts should be made to see that good quality papers are published in approved Indian journals managed by recognized institutions /societies/academies.



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Draft Base paper prepared by Praveen Chaddah and Subhash C. Lakhotia for developing an Academy policy document on "Dissemination and Evaluation of Research Output in India"

1. Introduction

Research adds to human knowledge by addressing well-posed questions about the unknown. Since similar and over-lapping questions in a given knowledge domain would be bothering many, an element of competition in finding answers often becomes an essential component of research. The need for a quick dissemination of the research output is thus a natural consequence of this competitive profession. Research output is also 'owned' by the disseminating researchers, as implied by the fact that research papers are not published without author names! The perceived importance of the research output is, therefore, used in the evaluations of an author's research contributions.

The increasing numbers of authors and, therefore, increasing competition, technological advances in the methods of dissemination of information and the inevitable geo-political biases have had a great impact on the research output dissemination process, which is largely in the form of research journals. Developments on the internet in recent decades have allowed dissemination of research findings without delay and with a much higher potential for better visibility than before.

A widely accepted and followed principle requires that any claim of a new knowledge addition should be independently verifiable. Dissemination is a prerequisite for wider validation. However, current models also require some validation prior to the actual dissemination of new findings to the community. The practice of review by peers prior to wider dissemination, in vogue for a few centuries, serves to ensure the scientific soundness of the research output being reported. There is an increasing debate in recent times (see HCSTC 2011;Baldwin 2017) regarding possible bias in favour of papers submitted from established institutes and about reviewers being biased towards established ideas and thus stifling innovation. This has raised serious concerns about the current system of pre-dissemination or pre-publication peer review being really objective enough to provide a rational validation. The pre-publication peer-review does not necessarily ensure a rational and complete validation because, besides the above concerns, errors in the manuscript may be missed by the limited number (typically 1 to 4) of experts who see the manuscript. The increasing number of manuscripts being submitted to increasing numbers of journals limits the availability of reviewers and often those who become available are not able to or willing to provide the required time and effort . Even fraudulent data have been published in the most respected journals. Such attempts are usually due to one or the other kind of material benefits to researchers that follow their publication. There have been reports (Woolston2014,) that journals with higher perceived prestige value also have higher retraction rates! This has been attributed, on the negative side, to authors being less honest and cutting corners to get a publication in such prestigious journals. On the positive side, this has also been attributed to higher visibility of the given journal resulting in a higher level of scrutiny. Such retractions of published papers are examples of post-dissemination (or post-publication) review at work. It follows that dissemination without delay but with a high level of visibility ensures both (i) ownership of the researchers and (ii) a proper post-dissemination validation and evaluation of the research output. Validation of major path-breaking research output has always been linked to the post-publication acceptance by the community of researchers in the field, and not just to its being published in any journal, however, 'reputed' it may be.

Developments on the internet in recent decades have allowed dissemination of research findings without delay and with a much higher potential for better visibility than before. Researchers now access the contents page of new issue of a journal, scroll to search titles of interest, and then read them at appropriate levels of detail. Old issues are accessed through a specific search process, or through a hyperlink to a particular paper in a more recently published paper. Accessing soft copies provides features that were not available with hard copies, e.g., one can magnify graphs or figures for detailed features, one can focus on

particular portions of a paper through a search for an appropriate keyword, one can read a cited paper by clicking on a hyperlink, the easily portable pdf files can be used for discussions with others by adding comments or highlighting key portions, etc. The online availability of a pdf file of the published work has thus become the preferred mode for a much wider dissemination of research output. The easy availability and the perceived conveniences of reading a soft copy are rapidly resulting in extinction of hard copies. As discussed later, the multiple conveniences of the availability of soft copies of published work on internet have also entailed several serious concerns.

Publishers have also been influenced by developments in the internet. The online submission of a manuscript makes it instantaneously available to editor and reviewers. The practice of 'ahead of print' online publication, increasingly followed by publishers, has enhanced the speed with which readers can read and comment upon the findings and thus influence the impact of new findings. In some cases, this has also resulted in corrections being incorporated in the final version after the corrected proofs were available online. Although a post-publication review has always existed, the internet has made it an effective alternative to the usual pre-publication peer review (HCSTC 2011).

2. Need for a consistent policy on dissemination and evaluation of research output in India

The research output from India has increased remarkably in recent decades, thanks to increasing investments in, and expectations from, R&D activities (Pohit et al 2015). This has obviously led to increased demand on methods to assess the quality and quantity of research output of an individual and/or institution. A variety of bibliometric parameters like the Journal Impact Factor, Citation Index, H-index etc. have been widely used in India. Several recent reports (Lakhotia 2010; Chaddah 2014, 2015; Noone 2016; Bornmann and Marx, 2016; Elango and Ho, 2017; van Leeuwen and Wouters 2017) have discussed the limitations and even undesirability of application of most of these parameters for assessment purposes. Besides the limitations of the various bibliometric parameters being used for the diverse assessments, the methodologies and parameters used by different agencies in the country show significant inconsistencies. Inappropriate guidelines about assessment by different agencies and their misuse have also seriously vitiated the research output scenario in the country. Notwithstanding the fact that no method of assessment can be completely free of subjective judgments, it is necessary that these issues are discussed to develop policies that promote healthy practices for dissemination and evaluation of research output in the country.

In this base paper we would like to consider issues relating to i) promotion of a pre-print archive publication policy, ii) promoting journals published in India, iii) Promotion of predatory journals and predatory conferences in the country due to the criteria used for evaluation of an individual or an institution , iv) suggested policies for categorizing and evaluating research efforts, and) policies for payment of 'open access' charges and publication of conference proceedings, specifically in Indian context. We believe that the recommendations in this report would be helpful to the growth of quality research in the country and elsewhere.

3. Preprint repositories and peer review after dissemination

Preprints are un-peer-reviewed manuscripts which authors use to share their current results to the scholarly community in their field prior to formal publication so that they can not only claim priority, but also get informed feedback from a large number of peers that is expected to be helpful in revising and preparing articles for submission to a journal for formal publication. Preprint archives provide a platform for permanently storing soft copies of such manuscripts with open access to any interested person. In this 'gold open-access' mode of dissemination, neither the author nor the reader is charged. Even prior to the internet, some specialist groups did circulate preprints as an extension of a seminar to an audience that could not be physically present. For example, the High-T_C Newsletter used to be delivered by post and contained titles of preprints, with commentaries on some of

them. With the advent of internet, one of the first and popular online preprint archives was 'arXiv' (http://arXiv.org) which in over 25 years of its existence, strongly influenced many publishers and impacted how science is disseminated (Nature Physics Editorial, 2016).Some of the currently available preprint archives in different branches of sciences are: *arXiv* (http://arXiv.org) for physics, mathematics, computerscience, quantitative biology, quantitative finance, statistics; *bioRxiv* (bioRxiv.org, Cold Spring Harbor Laboratory) for biological sciences; *Therapoid Preprint* (https://therapoid.net/ by Open Therapeutics) for biomedical sciences; and *ChemArxiv*(chemArxiv.org, by the American Chemical Society) for Chemistry.

These pre-print archives ensure that the submitted manuscripts become available freely within a working day of being uploaded, subject to some essential and sensible restrictions. These archived preprints are also citable like any other published paper. Since once uploaded, the manuscript cannot be withdrawn but would remain on the internet for ever, self-imposition of quality is built in because reputations are at stake. The pre-print repositories allow modifications, with all the versions remaining freely available for perpetuity. When the pre-print manuscript or its modified version gets published in a formal journal, author/s can add a note on the archived pre-print that provides link to the published paper. They can then provide open-access manuscript versions of papers published in journals that are 'reader-funded'. These pre-print archives also provide diverse metrics that go beyond those provided by any journal, which foreshadow the future evolution of bibliometric parameters.

Preprint archives offer several advantages to authors because of which they are being taken seriously not only by authors but by funding agencies as well. As discussed earlier (Chaddah 2011, 2012, 2013, 2014, 2016; Nature Physics Editorial 2016), there are multiple benefits of uploading on a preprint archive, especially for researchers from developing countries. Preprint archiving enables immediate self-dissemination and helps establishing priority and counters idea-plagiarism. More importantly, such uploads enables researchers to bypass any bias that referees may have against new bylines. It is a common experience that in the process of ensuring publication authors, especially the young and less established researchers from developing countries, often dilute/modify their conclusions as they succumb to subtle or less than subtle pressure exerted by reviewers'/editors' against their new ideas that question the commonly held view/s. Uploading on a preprint archive ensures an open-access record of authors' original conclusions/interpretations. Preprint archiving also provides opportunities for feedback as in a seminar but from a much wider audience. All these points are succinctly summed up in a recent NIH (2017) note *"Scientists issue preprints to speed dissemination, establish priority, obtain feedback, and offset publication bias"*.

Recommendation: The current common practice of listing submitted or in preparation manuscripts in grant applications/nominations for awards etc., does not permit the assessors to learn about contents of the manuscript, have no peer reactions available to assessors, and thus preclude an objective evaluation. **Therefore, it is recommended that the various agencies/organizations in India that fund research or recognize quality research through various awards and rewards, should take cognizance of articles that have been deposited in established pre-print archives and are thus freely available for post-dissemination assessment.**

4. Promoting journals published in India

A large number of research journals are being published in India. However, none of them has been able to make a significant mark at international level since our own community believes that papers in journals published in India are not of high quality and, therefore, these journals have low or no 'impact factor'. This largely unstated but unjustified belief is reflected in the fact that most agencies that fund or reward, ask the applicants to provide separate lists of publications in 'National' and 'International Journals' (Lakhotia, 2013). An implied outcome of such distinction is that papers published in the 'national' journals are poorer than those in 'international' journals. Such unjustified implication has resulted in most of the so-called 'national journals' being trapped in the vicious circle of submission of poor quality manuscripts by the community and consequent low recognition and citations and therefore low-impact factor (Lakhotia, 1990, 2013, 2014). It may be noted that one of the major concerns of Prof. C. V. Raman while launching Current Science was that unless the country has its own high quality research journals, the quality of science in the country would not be high. However, in the absence of submission of quality manuscripts, the journals remain mediocre or poor. Although it is also true that in times of strong competition many have resorted to Indian journals, a few good papers amidst plethora of less than 'good' ones does not help in improving the long term recognition of these journals!

There is an urgent need to encourage our scientific community to also publish their quality research papers in journals published in India, especially those that have a track record of good policies and practices of peer-review and publication process. In fact many journals published in India meet these criteria but continue to languish because of dearth of quality manuscripts that become available to the Editor/s.

Recommendations:

1. **No agency should ask separate listing of research publications in 'National' and 'International Journals'.**
2. **Agencies/organizations in India that fund research or recognize quality research through awards and rewards should proactively promote and recognize Indian scientists who publish some of their quality findings in well refereed journals published in India. Well cited papers from journals published in India may be given a higher credit.**
3. **It may be made mandatory that some part of research supported by funding agencies in India need to be published in an appropriate journal published in India.**

5. 'Publisher perish' policy and evolution of predatory journals and open access charges

The advent of internet and very fast growth of the world-wide web has transformed research publication process. Publishing has become faster and easier. At the same time the volume of research papers being published has become very large, thanks to the rapidly increasing number of researchers and increased demands on them to publish or perish. Consequently, research publication has become an industry with enormous commercial interests. Contrary to the expectation that spread of internet and replacement of hard-copy journals by the online soft copy versions would make the dissemination of research outputs less expensive and thus benefit a wider audience, the ever-increasing subscription costs have resulted in the earlier practice of 'reader pays for reading a paper' to 'author pays for being read' model. The 'open access charge' that the author or his/her institution or the supporting agency is required to pay in this model is not trivial so that even for a reasonably funded researcher in India, it can be a substantial drain on the grants available for research. Generally, higher the rating/prestige of a journal, higher is the open access charge that the author needs to pay. Apparently the profit margins are very high (Lakhotia, 2017). Even professional learned societies use profits from publications for other academic and professional activities.

The increasing use of scientometric parameters for assessing individual's research contributions and institutionalized norms for certain minimal numbers of publications to be mandatory for eligibility (e.g., the current UGC regulations for minimum standards for Ph.D. or faculty appointment/promotion etc.) have fuelled the rush to publish. Unscrupulous business interests have exploited this situation resulting, especially during the past 5-6 years, in mushrooming of 'predatory journals' (Beall, 2012; Lakhotia, 2015, 2017, Patwardhan et al 2015; Clark and Thompson, 2016) which publish anything for a fee. Since prestigious journals often charge hefty amounts (can be as high as a few lakh Indian Rupees) per accepted open-access paper, there is plenty of 'room at the bottom' for the other publishers to exploit the needy and gullible authors. These publishers cannot be wished away; they wreck havoc with our existing evaluation system and must be contained and countered by evolving our evaluation system. India, unfortunately, is one of the leading countries in publication of such journals, thanks to some mis-guided and ill-implemented policies.

Parallel to the worrying scourge of predatory journals, there has been a rapid and widespread emergence of "predatory conferences" (Lakhotia 2015, 2017, Cobey et al 2016), which like the predatory journals, only help the 'predator' organizer to earn money from the 'prey' who 'earns' the required points to fulfill/improve the minimal 'academic performance index' (API) score defined by the University Grants Commission, New Delhi. Those who register for such predatory conferences are also assured of 'publication of paper in UGC-approved Journals' or as a chapter in conference proceedings based e-book with ISBN, besides 'Presentation & Publication certificates'. Such fraudulent exercises have no academic merit and yet help the person meet certain UGC norms, which ironically were put in place to promote quality academic activities.

Even some traditional conferences that have been regularly held since many years, have recently started publishing Proceedings through reputed publishers who charge a hefty amount, and put in a note that papers have been reviewed by the conference organizers. Such conference proceedings are hardly cited, but preclude submission of the work to standard journals. Thus not only the new knowledge fails to be properly disseminated but remain susceptible to possible plagiarism (Chaddah 2016).

Recommendations:

4. **The academic community, especially the young research scholars and faculty need to be sensitized to predatory journals and conferences so that they do not fall prey to such un-academic activities.**
5. **Funding agencies should advise the concerned investigators to refrain from publication/participation in predatory and substandard journals and conferences. Such publications and participations must not be counted as research output.**
6. **Funding agencies and institutions should not pay open access charges, especially those that are required to be paid before acceptance of the manuscript, and should also not support publication of the proceedings of a conference/seminar.**
7. **Articles placed on pre-print archives, which provide free access to all, should be encouraged and counted for assessment of the person's academic output.**
8. **Emphasis has to be on quality rather than quantity.**

5. Criteria for evaluating research output: "what did you publish" rather than "where did you publish?"

Assessment and evaluation of research output of an individual or an institution over a period of time is inevitable in the current competitive world. A large variety of methods and metrics have been developed leading to emergence of new disciplines like Scientometrics or Bibliometrics. Each of the methods and metrics that have been advocated has its own limitations and associated controversies. Despite the fact that the journal impact factor has been seriously questioned by academic bodies across the world (Lakhotia 2009, 2013, 2014; Johnston, 2013; Jacobs, 2014, Callaway 2016 Kiesslich et al, 2016), this measure continues to be formally used in India, as evident from the fact that most assessment forms/nomination forms, ask for IF of the journals where the research has been published.

Research output of an individual and/or institution has to be evaluated by the impact it makes. The first measure of the impact is how many people read the paper. The metric giving the number of downloads is made available by many journals; the pre-print archives also provide this metric. This metric is generally not used as a measure for evaluation because the download is anonymous with no hint of the reaction on reading. This metric can, nevertheless, provide some indication of readers' interest in the paper. The other measure of impact is if the paper is relevant enough to be cited. This metric (Citation index) is currently used for evaluating a paper. It is also used for evaluating a researcher; either directly through the citation index or through h-index, both of which have their own limitations and associated controversies (Chaddah 2014). Another measure of impact of a paper is if it changes the research of other researchers, it would be cited/discussed extensively and/ or multiple times in a paper by non-overlapping authors. This metric is presently not generally available, but would be easy to be made available.

The evaluation process must distinguish between 'confirmatory' research and research that leads to 'incremental' or 'path-breaking' advance. The citation profile vs. time is different for different levels of 'novelty' (Stephan, et al 2017). This is obvious because in most cases, out-of-the-box novel ideas take time to be accepted. The time-profile of citations, a metric that is readily available, can be used in conjunction with the frequency with which the paper is cited in papers of non-overlapping authors.

While evaluating a researcher, we also need to look at the body of work. The work could be of the 'hit-and-run' variety, with few papers on many different topics. Or it could have concentrated on a few problems, which could have even created new directions and/or keywords. In this case papers by non-overlapping authors would cite many papers of the same author/s. 'How many papers of an author are cited in one paper of non-overlapping authors?' is thus another relevant metric.

While evaluating the research output of a researcher (as also of an institution), we need to move away from 'where did you publish' to 'what did you publish' so that instead of calculating the journal's impact factor, we actually look at what is published and what impact it had or may have on other researchers.

Recommendations:

9. **Assessment of an individual's research contributions should *primarily be based on the impact of what is published rather than on where it is published*. The 'impact factor' of a journal should never be used as the primary indicator nor should it be used in isolation.**
10. **Instead of assessing on numbers of papers published by an individual, assessors should find out if the research output was only confirmatory in nature or led to incremental or path-breaking advances.**

6. Concluding Remarks

This document has covered two aspects viz. dissemination of research output, and evaluation of research output. Dissemination is necessary for validation, a pre-requisite for the output to be accepted as an addition to human knowledge. Dissemination must also ensure ownership of the output, and prevent its being plagiarized before this ownership is accepted and registered. While an emphasis on patents that provide Intellectual Property Rights is necessary, research leading to patents, our ability to attract youngsters to this intellectually challenging way of life, and finally the prestige of the country's research community, are largely dependent on the 'basic' research carried out in country. Evaluation criteria are also very important, as the rise of predatory journals and predatory conferences is widely attributed to gaps in such criteria.

In order to promote quality basic research and develop scientific temper, country needs appropriate policies on dissemination and evaluation of our research output.

References

Baldwin M. (2017) in referees we trust? Physics Today 70, 44-49.

Beall, J. (2012). Predatory publishers are corrupting open access. Nature, 489(7415), 179.

Bornmann, L. and Marx, W. (2016). The journal impact factor and alternative metrics. EMBO reports, 17(8), 1094-1097.

Callaway, E. (2016). Publishing elite turns against impact factor. Nature, 535, 210-211.

Chaddah P. (2011) E-print archives ensure credit for original ideas SciDev.net Oct 17 http://www.scidev.net/global/communication/opinion/e-print-archives-ensure-credit-for-original-ideas.html

Chaddah P. (2012) Ensuring credit for original thought. Current Science 103, 350.

Chaddah P. (2013) Knowledge creation from our universities. Current Science 105, 566.

Chaddah P. (2014) Improving scientific research, even without changing our bureaucracy. Current Science 106, 1337-1338.

Chaddah P (2015) Lessons on impact factor from the DBT and DST open access policy. Proc Indian Natn Sci Acad 81, 553-555.

Chaddah P (2016) On the need for a National Preprint Repository. Proc Indian Natn Sci Acad 82, 1167-1170.

Clark, A. M. and Thompson, D. R. (2016) Five (bad) reasons to publish your research in predatory journals. J Adv Nurs doi:10.1111/jan.13090

Cobey K D, de Costa e Silva M, Mazzarello S, Stober C, Hutton B, Moher D, and Clemons M. (2017) Is this conference for real? navigating presumed predatory conference invitations. JOP DOI: https://doi.org/10.1200/JOP. 2017.021469

Elango B, and Ho Y S (2017). A bibliometric analysis of highly cited papers from India in Science Citation Index Expanded. Current Science, 112, 1653.

HCSTC (House of Commons Science and Technology Committee) (2011) Peer review in scientific publications. Report no. HC 856. https://www.publications.parliament.uk/pa/cm201012/cmselect/cmsctech/856/856.pdf

Jacobs H (2014) Something rotten. EMBO Reports 15, 817

Johnston M (2013) We have met the enemy, and it is us. Genetics 194, 791–792

Kiesslich T, Weineck S B and Koelblinger D (2016). Reasons for journal impact factor changes: influence of changing source items. PloS One, 11(4), e0154199.

Lakhotia S C (1990) Poor science, poor journals. Current Science 59: 773-774

Lakhotia S C (2009) Nature of methods in science: technology driven science versus science driven technology. Bioessays 31, 1370-1371

Lakhotia S C (2010) Impact factor' and 'we also ran' syndrome. Current Science 99, 411

Lakhotia S C (2013) 'National' versus 'International' Journals. Current Science 105, 287-288

Lakhotia S C (2014) Why we publish, what we publish and where we publish? Proc. Indian Natn. Sci. Acad. 80, 511-512

Lakhotia S C (2014) Research, Communication and Impact (Editorial). Proc. Indian Natn. Sci. Acad. 80, 1-3

Lakhotia S C (2017) The fraud of open access publishing. Proc. Indian Natn. Sci. Acad. 83: 33-36.

Marcus A and Oransky I (2015) What's behind big science frauds? New York Times May 22 2015

Nature Physics Editorial (2016) Keep posting. Nature Physics 12, 719.

NIH (2017) Reporting preprints and other interim research products.https://grants.nih.gov/grants/guide/notice-files/NOT-OD-17-050.html

Noone K J (2016). Beware the impact factor. Ambio, 45, 513-515.

Patwardhan B, Dhavale D D, Bhargava S, Deshpande R, Jaaware A, Ghaskadbi S,, More M, (2015) Guidelines for Research Publications (http://www.unipune.ac.in/uop_files/Report-Guidelines_20-5-15.pdf)

Pohit S, Mehta K and Banerjee P (Editorial Coordination) (2015) India: Science and Technology, Vol. 3. Foundation Books, Cambridge University Press (New Delhi) and CSIR-National Institute of Science, Technology and Developmental Studies (New Delhi)

van Leeuwen, T. N., & Wouters, P. F. (2017). Analysis of publications on Journal Impact Factor over time. Frontiers in Research Metrics and Analytics, 2, 4. doi.org/10.3389/frma.2017.00004

Woolston C (2014) High retraction rates raise eyebrows. Nature. 513, 283.

SSV Remarks related to the Report "Dissemination & Evaluation of Research Output in India"

It is a very well written report. And the authors should be congratulated. However, it is not exhaustive enough. Following are some of the issues which need attention of INSA.

1. In our article in Current Science many years ago, Chopra and Foster from USA called Predatory Journals as Journals of Plagiarism. If these Journals receive any complaint of a paper published in their Journal being plagiarized, it is simply Retracted by the publisher. The no of retracted papers is increasing very rapidly.

A recent article in Current Science has given data on who publishes papers in predatory journals. Shockingly, IITs contribute significantly (11%) to such journals. China followed by India contribute maximum no of plagiarized and retracted papers. IEEE Journals retract about 30-40 papers per year from India. A very high global ranking plagiarist is a Professor of Chemistry in a good Indian University. And, the Professor has not yet even been warned by the university.

Respectable publishers such as Springer, Elsevier, Taylor, AIP, etc. have also entered the predatory journal business by publishing self-plagiarised papers presented in all sort of conferences without any review. And, UGC recognizes these publications for faculty promotions. Funding agencies need to be advised not to provide any financial support for such publications from Indian institutions

2. For API score to be considered for faculty promotions, UGC certifies a list of approved Journals for publications by the faculty. This list contains a large no of predatory Journals which are known for publishing plagiarized papers. The UGC approval is being used by such Journals to advertise and attract research papers.

3. MHRD / UGC are guilty of providing ISSN and ISB nos for a trivial payment of some Rs. 500/ without any checking on the professional credibility of a Journal or a Book. This issue needs to be taken up seriously with MHRD

4. Fraudulent claims and doctored data in research proposals and reports are a global phenomenon. Indian scientists are no exception. The concepts of Outcome and Accountability do not exist in our R&D funding system . I recall the previous DST secretary telling me that his job is only to provide funds and it is the responsibility of the scientists to worry about results. He bemoaned that well funded projects in India such as high Tc superconductor or massive funds for Nanotechnology projects have so far yielded very little in the form of any product/process, or even a breakthough in any area of basic sciences. Most of the funds are used to import equipment and expensive materials(most of which could be prepared in our existing labs as has been done by my students since 70's). And, importing such simple things as conducting glass slides, nano titania powder, CNTs, etc. should not be allowed. Nobody wants to learn how to maintain expensive equipment and thus we have well funded labs full of non-working equipment (such as electron microscopes). Experts in the art of writing good R&D proposals on any subject with slight variations are able to get funds from different agencies. I have suggested to the DST Secretary that any R&D proposal should provide information on the Outcome of all previous projects of the proposer from all funding agencies, as also the Expected Outcome of the proposal in question. Such proposals should be evaluated for funding only by those who work in the same area, and not by an all- purpose committee as is being done by DST. INSA should support such a proposal.

5. Soliciting proposals for large outcome-based projects is a process followed by many funding agencies in different countries. We need to adopt such a practice at least for product or instrument development oriented projects which should lead to Make-in-India.

6. Academic institution involved in S&T must be required to set up at least a technology incubator if not a technology park. In fact, innovation, incubation and entrepreneurship should be an integral part of learning process for the students, as also for faculty. Funding agencies need to be persuaded to be liberal with such funding for young entrepreneurs. Let us learn from such processes followed by Israel, China , South Korea, etc. on a large and liberal scale.

7. Despite the efforts of the Society for Scientific Values for nurturing integrity and ethical values among students in numerous academic institutions in the country through seminars, and discussions, and the UGC advising academic institutions to incorporate scientific values in their curriculum of S&T , the same has yet to take off on a respectable scale. Most academic institutions have yet to provide to their faculty and students a simple document with rules and regulations for implementation .The Ethics Committee of INSA should be activated to learn from the activities of various Academies of the western countries, as also UNESCO.

8. We need an "Office of Research Integrity" to investigate cases of fraud .If this not feasible, the funding agencies should advise R&D institutions to set up appropriately authorized in-house committees for the purpose which mechanism exists in most western universities. INSA should address this problem.

9. GOI is stuck with a Whistle Blowers Act in the parliament . Legal protection of a Whistle Blower providing information on a serious unethical scientific practice in an institution should be provided by the R&D institutions / funding agencies.

10. That we need international level high quality Indian scientific journals hardly needs any elaboration. This will be possible only when all our academies and scientific societies understand the need for working together to create such journals. The GOI agencies which fund all such institutions must be persuaded to fund only those journals which have the academic support of all concerned academies/associations. Why should CSIR publish journals which are not read by most scientists in the country, let alone the outside world? Journal of Physics by CSIR or by IACS are hardly read by any physicist except the authors and the editorial committee. Why should Science/Eng. Academies publish their own journals /proceedings? My apologies to Prof Lakhotia for his heroic efforts in nurturing an INSA journal of not much merit.. Academies and Societies have plenty of other useful things to do which IASc , INSA and INAE are trying to do but can and should do a lot more. Why not bring out relevant and useful India Centric Status or Policy Documents /Reports and Review Books of the type brought out by the National Academies of Sciences. Engineering. Medicine of USA ?. The Report under discussion is a good example. I am glad that this has the approval of the present President. The previous INSA Presidents did not even acknowledge my suggestion for such reports.

A united forum of Science Academies is what is needed to be able to influence the policies of the GOI in relation to education , Science and Technology., Innovations and Entrepreneurship. Some half-hearted attempts have been made in the past to bring such Academies together on a single platform. If DST and other funding agencies are persuaded by a group of enlightened leaders of S&T to apply financial pressure ,such a union in some form, however loose, is feasible. Why waste public money on so many diverse groups of scientists and technologists in a variety of Academies which have very little influence on any govt policy related to S&T or higher education.

Let us not forget that our scientific civilization will prosper only when scientists and engineers in the country work together in harmony to create translational and transformational knowledge power to serve our society.

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President Society for Scientific Values
(Former Director, Indian Institute of Technology Kharagpur) **Aug 29,2017**