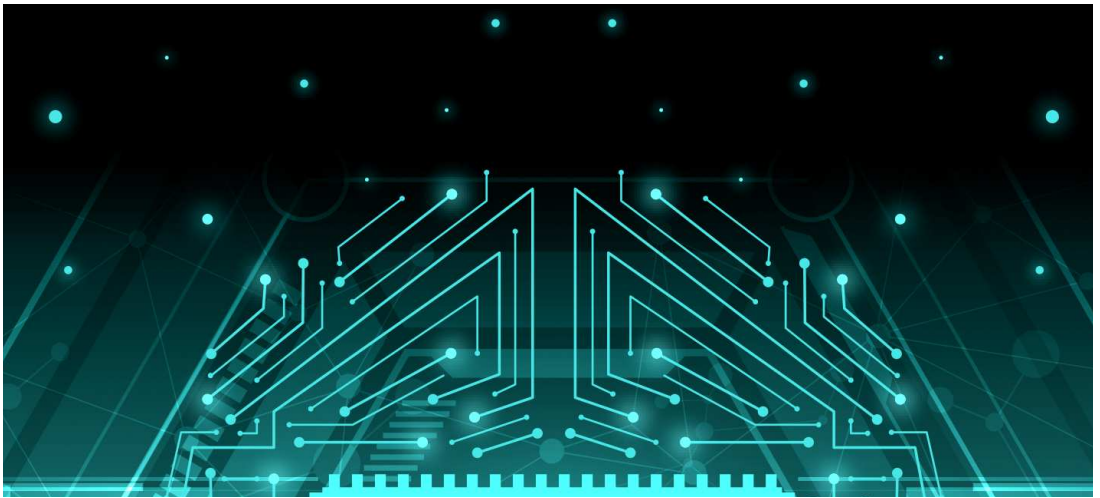


RESEARCH AND PUBLICATION ETHICS



Editors

**V.K. Ahuja
Kankana Baishya**



National Law University
and Judicial Academy, Assam

2024

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National Law University and Judicial Academy, Assam
Hajo Road, Amingaon, Guwahati – 781031

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PREFACE

The book “Research and Publication Ethics” is published by National Law University and Judicial Academy, Assam with the sole objective to help researchers for the responsible conduct of research.

National Law University and Judicial Academy, Assam was established by the National Law University and Judicial Academy, Assam Act, 2009 (Act No. XXV of 2009) as the fourteenth National Law University of the country in Guwahati, the capital city of Assam. National Law University and Judicial Academy Assam is committed to inculcate academic excellence for preparing leaders of law who shape the country by their knowledge, wisdom, discovery, and creativity. Further, the University is committed to cultivate an inclusive environment that celebrates plurality and leverages on the creative potential of diversity. The University strives for a distinctive niche in the academic firmament of the country as a forbearer of creative ideation and leadership development.

University Grants Commission in its 543rd meeting held on 9th August 2019 approved Two-Credit Course for awareness about publication ethics and publication misconducts entitled “Research and Publication Ethics (RPE)” to be made compulsory for all Ph.D. students for pre-registration coursework. Therefore, the book aims to achieve the objectives of University Grants Commission and intends to provide the concepts of Research and Publication Ethics in a more comprehensive way. It is expected to gain more insights on the Academic integrity in the realm of new technological influxes.

ACKNOWLEDGEMENT

It is indeed a great pleasure to acknowledge the valuable contributions of the learned authors. The editors place on record sincere appreciation to Prof. (Dr.) R. N. Sharma, Visiting Professor of Law and Prof. (Dr.) Debasis Poddar, Professor of Law of the University for their academic patronage in publishing the book. Our deep sense of gratitude is due to Mr. Gunajit Roy Choudhury, Registrar, and Dr. Nandarani Choudhury, Assistant Registrar (Academic), of this University, for extending their administrative patronage toward publication of this book. Last yet not least, Mr. Satyajit Deb, Systems Operator of this University, deserves acknowledgement in getting this book published in professional format.

DISCLAIMER

The authors carry whole and sole liability for all statements written in their respective chapters. Both editors hereby remain indemnified and cannot be held jointly and severally liable anyway.

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Chapter -1

RESEARCH AND PUBLICATION ETHICS: SOME REFLECTIONS

*V. K. Ahuja**

“Knowledge creation and research are critical in growing and sustaining a large and vibrant economy, uplifting society, and continuously inspiring a nation to achieve even greater heights”.

-NEP 2020

I. Introduction

Research and publications are *sine qua non* for the development of any institution of higher education. Research is also important for the progressive development of the society as it is responsible for the advancement of knowledge, problem solving, innovation, and critical thinking. “Research” may be defined as the diligent and systematic enquiry or investigation into a subject in order to discover facts or principles.¹ According to Daniel Seng Kiat Boon, “research” requires a person to discern new and unstated information.² Joseph M. Moxley writes that “research refers to a systematic investigation carried out to discover new knowledge, expand existing knowledge, solve

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¹ See the judgement of Federal Court of Australia in *De Garis v. Neville Jeffress Pidler Pty Ltd.*, (1990) 18 IPR 291.

² Daniel Seng Kiat Boon, “Reviewing the Defence of Fair Dealing for Research or Private Study”, *Singapore Journal of Legal Studies*, 1996, p. 159.

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practical problems and develop new products, apps and services”.³

The Department of Education and Training, Western Sydney University defines research in the following manner:

“Research is defined as the creation of new knowledge and/or the use of existing knowledge in a new and creative way so as to generate new concepts, methodologies and understandings. This could include synthesis and analysis of previous research to the extent that it leads to new and creative outcomes”.⁴

Research, thus, is known as the *systematic and organised* method of finding solutions to the identified questions. It is called organised for the reason that there is a planned structure or method, which is used to reach at the conclusion. It is systematic in the sense that it is a process which is “broken up into clear steps that lead to conclusions”.⁵ Depending upon the situation, the research may confirm the outcome at which you have arrived where you are still looking for some sort of reliability about your outcome. Further, research may also support your point of view or the line of argument. At the same time, however, research may also discover your mistakes and assist you to change the direction in which you were proceeding. The research may also guide you about the method by which you should

³ Joseph M. Moxley, “Research” at <https://writingcommons.org/section/research/> last visited on 07 October 2023.

⁴ See https://www.westernsydney.edu.au/research/researchers/preparing_a_grant_application/dest_definition_of_research#:~:text=Research%20is%20defined%20as%20the,to%20new%20and%20creative%20outcomes.

⁵ See <https://www.etu.org.za/toolbox/docs/development/research.html> visited on 20 July 2023.

proceed, so that you could find answers/solutions to the problems.

Research, therefore, plays an important role to find answers/solutions to the problems already identified. On the basis of the research so done, public policies may be framed by the government for the benefits of the society.

II. Research Ethics

It is extremely important for the researcher to conduct research ethically and in the most honest manner. Ethics may be defined as a set of moral principles that govern the behaviour of a person or the conduct of an activity. According to Legal Information Institute of Cornell Law School, the term "ethics" is derived from the Greek word "ethos", which means character, and from the Latin word "mores" which means customs.⁶ Ethics may be defined as "a system of moral principles and a branch of philosophy which defines what is good for individuals and society".⁷ Legal Information Institute of Cornell Law School also defines "ethics" in a similar manner as to mean "what is good for the individual and for society and establishes the nature of duties that people owe themselves and one another". Ethics may be said to have come from, *inter alia*, "God and religion; human conscience and intuition; and a rational moral cost-benefit analysis of actions and their effects".⁸

⁶ See <https://www.law.cornell.edu/wex/ethics> (accessed on August 8, 2023). See also *Ethics Guide* available at https://www.bbc.co.uk/ethics/introduction/intro_1.shtml (accessed on August 7, 2023), which states that the term "ethics" is derived from the Greek word "ethos", which can mean "custom, habit, character or disposition".

⁷ See *Ethics Guide* available at https://www.bbc.co.uk/ethics/introduction/intro_1.shtml (accessed on August 7, 2023).

⁸ *Ibid.*

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Research ethics can be described as a set of moral principles that a researcher should follow to conduct research in a responsible manner. Research ethics guide researchers about right and wrong during their research. According to the World Health Organization (WHO), “research ethics govern the standards of conduct for researchers.” Further, ethical principles must be adhered to “in order to protect the dignity, rights and welfare of research participants”.⁹ Though the views were expressed by WHO in relation to “ensuring ethical standards and procedures for research with human beings”, the same are applicable for other empirical research also. Research ethics, therefore, are important for integrity, truth, knowledge, trust, objectivity, values, societal good, and the orderly development of the society.

As the policy makers, researchers, students and others may follow one’s research, any data manipulation, plagiarism, incorrect or unsupported data, or any other unethical act may ultimately dent the image of the researcher and harm the society.

It is seen that teachers in the university do several research projects. Some of them are major projects, which require collection of data from various sources and from various places of the country. For example, a researcher may do a major project on tribal related issues for which he/she may cover a particular state or the entire country. The researcher may not be in a position to go to every place to collect data, so he/she takes assistance from various people including students from those places by guiding them or sharing questionnaire with them. It

⁹ World Health Organization, “Ensuring Ethical Standards and Procedures for Research with Human Beings”, available at <https://www.who.int/activities/ensuring-ethical-standards-and-procedures-for-research-with-human-beings> (accessed on August 8, 2023).

may be qualitative or quantitative research. Many a times, it is seen that the persons so appointed to collect the data from the field do not go there or do not visit all the places which they were supposed to visit. They pick a trend and follow it uniformly and produce data or simply by their own understanding they prepare data on presumption. Now if such kind of a data is used, what will be the quality of such research? The Principal Co-ordinator, therefore, is under an obligation to ensure that the data has been collected directly from the sources and has not been doctored. One should remember that the research findings of such projects may be used by policy makers as many of the projects are government funded projects. The policy makers may depend upon the findings and frame their policies for the public good. If the research has not been conducted in an ethical manner, and the data has been doctored, the findings are likely to be incorrect, which will ultimately result into bad policies, and the entire objective of that research will be defeated. Not only that, distorted research will do more harm, than good. It is, therefore, the duty of everyone involved in the research to ensure that the research has been conducted ethically using correct data.

The aforesaid acts are also known as research fraud, which mainly consists of two things – (i) fabrication and (ii) falsification. Fabrication means to make up research data and results and to report them. In other words, it involves reporting of “false or madeup data, results, or research outputs”.¹⁰

Falsification, on the other hand, refers to the manipulation of data and other materials, including images, to achieve the

¹⁰ See Enago Academy, *Research & Publications Ethics*, p. 29, available at chrome-extension://efaidnbmnnnibpcajpcgclefindmkaj/https://www.enago.co.kr/academy/wp-content/uploads/2018/05/Research_Ethics.pub_V2.pdf, last visited on 07 October 2023.

desired results.¹¹ Falsification may be said to involve “misrepresentation of the research by changing data or results or by tampering with equipment, research methods, or materials”.¹² Thus, any type of tampering with data, equipment, material, etc. to dilute their authenticity is termed as falsification.

Now a days, lot of computer applications are available by which any material/images can be manipulated with so much of clarity that it becomes extremely difficult to detect the manipulation. These are extreme examples of gross academic misconduct and also a fraud on the society. The readers feel cheated and betrayed by the researcher when they get to know that the research was manipulated to get the desired results.

It is also seen in many cases that researchers quote data from various sources without applying their mind, though they cite references. They do not take the trouble of finding out whether the data is reliable or not. A good researcher is one who is alert in quoting the data and where he is of the opinion that the data may be incorrect, he verifies it first and then takes a decision whether to quote it or not. By referring to any data, which may be incorrect, the researcher may not escape the responsibility by stating that he has acknowledged the source, and therefore, he is not liable for its incorrectness.

Similarly, when we quote some great personality after reading an article, we need to cross check, whether that

¹¹ See Elsevier, *Ethics in Research and Publication* (June, 2017), p. 13.

¹² See Enago Academy, *Research & Publications Ethics*, p. 29, available at chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.enago.co.kr/academy/wp-content/uploads/2018/05/Research_Ethics.pub_V2.pdf, last visited on 07 October 2023.

quotation is correct or not. This can be explained with the help of an illustration. The author has come across an interesting incident. While writing a Book on “Krishna and Mediation”, the author found an article on internet, in which the author of that article gave following quotation of Buddha:

“**Mediation** brings wisdom; lack of **mediation** leaves ignorance. Know well what leads you forward and what hold you back, and choose the path that leads to wisdom.”

After reading the quote, the author thought for a minute as to whether the quote was correct? On cross checking, it was found that the word ‘**meditation**’ was replaced by the word ‘**mediation**’ twice in the quote which was used in the article. It is really shocking that author of that article did not pay attention to read the quote carefully and used that in his article. The article is available on the internet. Anyone, who will read that article will consider that quotation of Buddha to be correct, which, in fact, is wrong. Now, any person quoting Buddha from this article will make the same mistake which the author of that article made. Therefore, one has to be careful before quoting something. It is extremely important that the authors should quote from authentic sources. Where there is a doubt, it is advisable not to quote that data, or quote it after cross verifying from other independent sources. However, where author feels that unverified data is required to be quoted, it should be quoted carefully indicating that the data could not be verified.

One should never quote something from other sources as one’s own. Borrowing from other sources without due acknowledgment is academic dishonesty. It is known as plagiarism, which has been discussed later in detail. It may also result in copyright infringement, which may lead to civil and

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criminal liabilities. Further, if borrowed material is factually or legally incorrect, the mistake will be attributed to the borrower of that data or content because the borrower has shown himself/herself as the author of that content.

Academic misconduct may also be done with respect to authorship of the work. Generally speaking, author is a person who produces some original research work using his intellect. It may not be a new work altogether; and may be based on existing works. The author, however, should acknowledge the various sources in his work, which he referred.

It has been seen in several cases that researcher/student prepares the research work and gets it published with his supervisor/teacher. The researcher feels that his work will be published easily, if uses the name of his teacher. The teacher also feels that the number of his publications will increase without doing anything. This is an unethical and unacceptable practice. Both the teacher and the researcher/ student are responsible for such practice.

It has also been seen that a project submitted by a student has been published by his teacher in his/her name. There was another case where a professor filed a patent application on the basis of Ph.D. thesis of his student. These are cases of academic misconduct. One needs to remember that teachers are bound to guide the students and researchers as it is a part of their duties. Merely by guiding, they do not become the owner of such work. The authorship as well as ownership of those works always remain with the students or researchers, as the case may be.

There is nothing wrong for the teachers to have publications with scholars/students. Both of them may work

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together under a pre-conceived plan and go for joint publication. However, it is not ethical where scholar/student does the research and the teacher allows his/her name to be added as co-author. The most unfortunate part is that in most of the cases, out of respect, the scholar/student puts teacher's name on the top. This act is highly unethical and amounts to misappropriation of student's work by the teacher.

It is also noteworthy that where a research is conducted by a group of people, it should be published in the name of all of them. At the time of publication of that research, omitting the names of those who conducted the research or adding the names of those who were not a part of that research is also considered as unethical. This kind of practice may give rise to legal disputes and must be avoided in all probabilities. Commercial sponsors should also acknowledge the professional writers writing for them or doing research for them.

The researcher or any other person associated with the research is required to be impartial. Such persons should not have any competing interest. Competing interest may exist in terms of financial relationships, such as stock ownership, employment, grants, patents, consultancies, etc. or personal relationships, such as the interest of any relative of the researcher, etc.¹³

Western Sydney University highlights the need to conduct research in ethical manner as it involves “*trust*” at various level. According to University, “the research enterprise is a deeply social activity and is embedded in trust – trust among researchers and the emerging researchers they supervise; trust between researchers and those who support their endeavour by

¹³ See Elsevier, *Ethics in Research and Publication* (June, 2017), pp. 7-8.

participating in research, and trust between researchers and the community which values their creation of new knowledge and hopes that there will be benefits for all arising from the research effort”.¹⁴

III. Use of Artificial Intelligence in Research

Artificial intelligence is playing extremely important role in all walks of life, be it medical, transportation, aviation, defence, space, entertainment, education, research and development, communication, or any other thing. About the potential of artificial intelligence, Prof. Stephen Hawking once said that “the development of full artificial intelligence could spell the end of the human race”. Further, “it would take off on its own, and re-design itself at an ever increasing rate” and “humans, who are limited by slow biological evolution, couldn’t compete, and would be superseded”.¹⁵

The term “Artificial Intelligence” is not a new one. It was coined way back in 1956 by John McCarthy.¹⁶ “Artificial intelligence” in general terms may be stated to be “the ability of machines to do things that people would say require intelligence”.¹⁷ It normally refers to the “ability of machines to

¹⁴ See https://www.westernsydney.edu.au/research/research_ethics_and_integrity

¹⁵ Rory Cellan-Jones, “Stephen Hawking warns artificial intelligence could end mankind”, *BBC News*, December 2, 2014, available at: <https://www.bbc.com/news/technology-30290540> (last visited on October 07, 2023).

¹⁶ *Fredy Sánchez Merino*, “Artificial Intelligence and a New Cornerstone for Authorship”, *WIPO-WTO Colloquium Papers*, 2018, p. 28.

¹⁷ Philip C. Jackson, *Introduction to Artificial Intelligence* 1 (Dover Publications, Inc., 1985).

perform cognitive tasks like thinking, perceiving, learning, problem-solving, and decision-making”.¹⁸

As already stated, artificial intelligence has also made its presence felt in the field of research. For example, Chat GPT is capable of writing letters, poetry, story, reports on a given topic, etc. It can write assignments and projects for students. It can also assist scholars in their research works. There are two ways of using artificial intelligence in research: firstly, you can take assistance from artificial intelligence in doing your research, where you use AI as a tool; and secondly, you get your research done by artificial intelligence, where your own contribution is nil or negligible. In the first case, there is not much issues, as you have only taken assistance from AI, whereas your own contribution is significant. Using AI as a tool may be all right, as we use computer programs as tools. However, in the second situation, it is unethical where researcher uses AI to produce the work and thereafter publishes that work in his/her name.¹⁹ If this practice continues, it will be a death knell for the real research.

In addition to above, the AI produced research may be bad for some more reasons. For example, AI system may not be fair as the data fed to it may be toxic and biased. Further, the AI system might have been developed in such a manner as to produce desired result, ignoring the social realities. Justice D.Y. Chandrachud, Chief Justice of India was also critical of the AI on certain aspects. Justice Chandrachud expressed his serious concerns about the artificial intelligence in the following manner:

¹⁸ Sanjivini Raina, “Artificial Intelligence through the Prism of Intellectual Property Laws” in V.K. Ahuja and Archa Vashishtha, *Intellectual Property Rights: Contemporary Developments* 133-41 (Thomson Reuters, 2020).

¹⁹ For more details on artificial intelligence, see V. K. Ahuja, “Artificial Intelligence and Copyright: Issues and Challenges” *ILI Law Review* (Winter 2020).

“A significant impact of AI is its potential to amplify discrimination and undermine the right to fair treatment. Many AI systems have been shown to exhibit biased decision making based on data inputs that reflect societal prejudices. For example, AI recruitment tools deployed by firms favoured men over women because the tools were trained on profile of successful employees who, for gendered reasons, happened to be predominantly male. In this, data driven systems can perpetuate biases and marginalise the social control mechanisms that govern human behaviour.”²⁰

In such a scenario, if the research is conducted through AI, without any human intervention, it may be biased, which will do more harm than good to the society. It is also possible for the AI system to automatically produce a work which is similar in nature to the original work which was provided to it for training purposes. This may also result in copyright infringement and dent the image of researcher making him to face the consequences at the institution and outside. Therefore, it is highly desirable and ethical that the researcher should collect data himself rather than relying on the AI system. The institutions are also required to adopt stringent rules to prohibit the use of AI like Chat GPT by the researchers in conducting research works.

20 Sheryl Sebastian, “CJI DY Chandrachud Cautions About Artificial Intelligence; Says It Can Make Biased Decisions Based On Societal Prejudices” 23 July 2023, available at <https://www.livelaw.in/top-stories/cji-dy-chandrachud-cautions-about-artificial-intelligence-says-it-can-make-biased-decisions-based-on-societal-prejudices-233417>

IV. Duplicate Publication

It is also seen in some of the cases that the researcher publishes his/her work in more than one journal. This practice of duplicate publication is unethical as it is deemed to be a "breach of publishing ethics".²¹ According to International Committee of Medical Journal Editors, one of the major reasons of calling duplicate publication as unethical is that it may result into "inadvertent double-counting or inappropriate weighting of the results of a single study, which distorts the available evidence".²² It is, therefore, highly desirable that the researcher should not submit his work for publication at multiple places.

In case of translation, however, it is ethical for the author of the original work to make it public that it is a translation of his earlier published work. Under Copyright Act, 1957, the right to translation lies with the author/ owner of the work. Therefore, there is nothing wrong in translating one's own work in different languages. But, if it is a work of joint authorship, translation should be done only when all the co-authors agree to it, as all of them would be the authors/copyright owners of that work.

V. Prevention of Plagiarism

Plagiarism happens to be one of the biggest evils in the research and publications. It is one of the most common forms of the academic misconduct. Plagiarism means using the work of another person without acknowledging his work or giving him any credit. Plagiarism does not mean copying verbatim from the work of another person. It may also happen when the work of others has been used by paraphrasing the same. Sometimes,

²¹ See also Elsevier, *Ethics in Research and Publication* (June, 2017), p. 11.

²² *Ibid.*

researchers paraphrase the work of others and use it in their own works without acknowledgement. The reason for doing so is that if they will acknowledge the work of others, the people may get to know that their works are completely based on the work of others, without any intellectual input from them. This is completely an unethical practice and amounts to academic misconduct. Plagiarism, therefore, includes not only literal copying and substantial copying, but also paraphrasing and text-recycling, as discussed later.²³

In order to prevent plagiarism and promote academic integrity, the University Grants Commission brought out Regulations in 2018.

A. UGC Regulations on Prevention of Plagiarism, 2018

University Grants Commission (Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutions) Regulations, 2018 were notified on 23 July 2018. The Regulations were strongly required to raise the standard of research and publication in India. These Regulations should have come much before. Nevertheless, “better late than never”.²⁴

The term “Research Integrity” has not been defined in the Regulations. It, however, defines the term “Academic Integrity” to mean “the intellectual honesty in proposing, performing and reporting any activity, which leads to the creation of intellectual property”. Again, the term “intellectual property” has not been defined under the Regulations. Intellectual property, however, includes copyright, industrial design, trade mark, geographical

²³ See also Elsevier, *Ethics in Research and Publication* (June, 2017), p. 10.

²⁴ For more information, see V.K. Ahuja, “*Academic Integrity, Plagiarism and Copyright Issues*”, published in 5(1), *Contemporary Law Review*, 2021, pp. 23-35.

indication, patent, plant varieties, semiconductor integrated circuits layout-design, and confidential information. Research integrity is to be read into academic integrity only.

The Regulations define the term *plagiarism* as “the practice of taking someone else’s work or idea and passing them as one’s own”.²⁵ Plagiarism has been explained later in this article. The Regulations are applicable to “the students, faculty, researchers and staff of all Higher Educational Institutions” who claim(s) to be “the creator of the work under consideration”.

The term “faculty” includes regular, ad-hoc, temporary, contractual, visiting, guest, etc. It refers to a person who, in any capacity as explained above, is teaching and/or guiding students who are enrolled in HEIs. The Regulations, therefore, applies to all faculties irrespective of the nature of their engagements. Similarly, “staff” means non-teaching staff whether s/he is employed on regular, temporary, contractual, outsourced or on any other basis.

“Student” means a person pursuing a programme “*in any mode of study (full time or part time or distance mode)*”. It is interesting to note that Regulations did not include online mode. Many HEIs are offering programmes in online mode. The online programmes of many HEIs including the B.Sc. (Data Science) of IIT Madras are very popular, and a good number of students are enrolled for such programmes. Not only that, many students are enrolled with foreign educational institutions which are offering online programmes. Though it was desirable to include online programmes also, the Regulations remain applicable to them, as full time or part time programmes.

²⁵ Rule 2(l), UGC Regulations of 2018.

The 2018 Regulations were adopted with three objectives: (i) to create awareness about conducting responsible research; promote academic integrity; and prevent misconduct; (ii) to establish institutional mechanism to promote academic integrity and deterrence from plagiarism; and (iii) “to develop systems to detect plagiarism and to set up mechanisms to prevent plagiarism” and punish author for committing the act of plagiarism.

The Regulations expect HEIs to establish the mechanism “to enhance awareness about responsible conduct of research and academic activities, to promote academic integrity and to prevent plagiarism”.²⁶

HEIs are obligated to instruct its author that while producing their works, they have to make proper attribution, seek permission of the author of work, wherever required, and acknowledge the sources. HEIs are also obligated to conduct sensitization and awareness programs for its authors on responsible conduct of research works, academic integrity and ethics. The authors of the HEIs are to be trained for using plagiarism detection tools.²⁷

Rule 6 of the Regulations obligates HEIs to curb plagiarism; and for that purpose, it lays down certain obligations for them to perform. Technology based mechanism involving appropriate software is to be used and made available by the HEIs to its authors. The students are to give undertaking that their works are free from plagiarism and the supervisors are also required to submit a certificate in this regard.

²⁶ Rule 4.

²⁷ Rule 5.

While making similarity checks for plagiarism, the Regulations provide for certain exclusions. These are – (i) “all quoted work reproduced with all necessary permission and/or attribution”; (ii) “all references, bibliography, table of content, preface and acknowledgment”; (iii) “all generic terms, laws, standard symbols and standard equations”.²⁸

All quoted works are excluded from plagiarism, provided they have been reproduced with permission or attribution. This raises a pertinent question. If a research work is full of quoted work where the author has used them with permission or attribution, will such work pass the test of originality or quality. In strict sense, it cannot be termed as an act of academic dishonesty, as the author used those works with permission and/or attribution. The Regulations do not prescribe any limit for the quoted works to be used in author’s research work. On the contrary, in copyright law, *fair dealing* with an existing work is allowed for the purpose of research. Even though the Copyright Act, 1957 also does not lay down any word limit, it uses the expression *fair dealing*.

The Regulations further provides that the research work of the author is required to be based on *original ideas*, which has to include “*abstract, summary, hypothesis, observations, results, conclusions and recommendations* only and shall not have any similarities”. It is noteworthy that not all research works have abstract to recommendations as required by Regulations. This format is not being followed by all researchers. Though the term “research work” has nowhere been defined in the Regulations, it is not confined only to thesis and dissertations. Further, there is a contradiction between rule 7 and rule 8. Rule 7 as quoted aforesaid provides that research work “*shall not have any*

²⁸ Rule 7.

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similarity". In rule 8, however, it permits similarity upto 10%, which have been stated to be minor similarities.

In addition, rule 7 requires research work to be based on original ideas, as aforesaid. It is important to mention the law of copyright in this regard. The Copyright Act, 1957 does not require the work to be based on original ideas. In order to make copyright subsist in a work, the ideas may be old but the expression should be original, i.e. should not have been copied from others. By excluding 14 consecutive words, which are common knowledge or coincidental terms, rule 7 provides a great relief to the authors of a research work.

Rule 8 lays down levels of plagiarism and rule 12 lays down the penalties for such plagiarism. Plagiarism has been quantified into four levels:

- (i) "Level 0: Similarities upto 10%
- (ii) Level 1: Similarities above 10% to 40%
- (iii) Level 2: Similarities above 40% to 60%
- (iv) Level 3: Similarities above 60%".

Level 0 is termed as minor similarities, which is allowed in a research work for all without attracting any penalty. This is quite logical. For Level 1 (10% to 40% similarities), the student is required to submit a revised script of thesis/ dissertation within 6 months; and others are required to withdraw the manuscript of academic and research publication.

For Level 2 (40% to 60% similarities), the student is to be debarred from submitting the revised thesis/ dissertation for a period of one year; and others – (i) shall be asked to withdraw manuscript of academic and research publication, (ii) shall be

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denied a right to one annual increment, and (iii) shall not be allowed to supervise any new student/scholar of Master's, M.Phil., and Ph.D. Programme for 2 years.

For Level 3 (similarities above 60%), the registration of such student for that programme is to be cancelled. Other authors shall not only be asked to withdraw manuscript of academic and research publication, but also be denied a right to 2 successive annual increments. In addition, the supervisorship of new student or scholar for Master's, M.Phil., and Ph.D. Programme is to be denied for 3 years.

For repeated plagiarism, there is provision for higher penalty including putting degree or credit of student in abeyance. For other authors, there are provisions for disciplinary action including suspension/termination in the Regulations. These penalties may be imposed by Institutional Academic Integrity Panel (IAIP) on the recommendations of Departmental Academic Integrity Panel (DAIP).

The DAIP is to be constituted at Department level. It will consist of (i) Head of the Department as Chairperson; (ii) one senior academician from outside the department; and (iii) one person who is well versed with anti-plagiarism tools. The mandate of DAIP is to assess plagiarism and recommend penalties to IAIP, if applicable.²⁹

The IAIP shall consist of (i) PVC/Dean/Senior Academician of the HEI as Chairperson, (ii) one senior academician, (iii) one member form outside the HEI, and (iv) one person who is well versed with anti-plagiarism tools.³⁰

²⁹ Rule 10.

³⁰ Rule 11.

The DAIP and IAIP shall follow “the principles of natural justice while deciding about the allegation of plagiarism” against the author of the script. It is mandatory to follow the principles of natural justice in all such cases where penalty is imposed on someone. The principles of natural justice are - (i) both parties to the case should be given an opportunity of being heard; (ii) there should be no bias in favour of any party; and (iii) a reasoned decision should be given. Thus, an audience is to be given to the author of a script in an impartial manner which will be followed by a reasoned order.

B. UGC Notification on Self-Plagiarism, 2020

Self-plagiarism was also an important issue to be addressed. The authors were recycling their works and claiming them to be new works. Not only that, some of them were found to be publishing two articles in the same issue of a volume of a particular journal. There was a flood of predatory journals which were claimed as international peer-reviewed journals. These journals were charging fee somewhere between Rs. 500/- to Rs. 3000/- depending upon the circumstances. Shockingly, they were also publishing the works in back date. Many faculty members who did not have adequate number of publications during their assessment period for promotion purposes, were getting their old works published after minor modifications in these journals. This became a flourishing business for the people who were publishing these journals. The authors got a new and easy platform on which they could publish their old works with just a title change or with some addition, deletion, modification, paraphrasing, etc. The students were also publishing their old articles in these journals for fulfilling the requirement of publications before submission of Ph.D. thesis. The act of self-

plagiarism was being seen as an act of academic dishonesty. Since there was no rule to prevent this practice, the universities were taking their own decisions as to whether to accept or reject those publications. Unfortunately, even the UGC Regulations of 2018 did not address the issue of self-plagiarism.

To address the issue of self-plagiarism, the UGC brought out a public notice in this regard on 20 April 2020. This notification is basically complementing the 2018 Regulations.

The 2020 notification states that if someone reproduces his/her own work which was previously published, either in whole or in part, without proper citations and acknowledgement and claims that work as new work or original work for any academic advantage, his/her claim will not be accepted, as that work shall be considered as self-plagiarised (text-recycled). No academic advantage will be provided for such work.

The notification explains self-plagiarism/ Text-recycling in an inclusive manner. It includes;

1. republication of an earlier published paper;
2. publication of a smaller or excerpted work from a previously published longer work. The purpose here is to show more number of publications;
3. reusing data which has already been used in a previously published work;
4. publishing new works by breaking longer study;
5. publishing one's own earlier published work by paraphrasing the same.

The aforesaid works will be considered as self-plagiarised works only when the same are produced “*without due and full*

citation” of the original works. In other words, it is not prohibited to refer one’s own previously published work in the new work provided due and full citation is provided. One’s own previously published work is considered as existing work like the work of any other person and the same can be used in new works in the same manner as the other existing work is used. This means that sources of the earlier published works which have been used in new work, are to be duly acknowledged.

It was a general practice that students, scholars, and faculty members were converting their large study into several pieces and claiming them to be new works. This was being done to increase their number of publications; for example, converting Ph.D. thesis into several articles by making small variations here and there. This is popularly known as “slicing of research work”. This practice is now being seen as an act of self-plagiarism. It is no more allowed to slice your research work into several papers.

The notification further makes it clear that “Self-citations” will not add any “new number/s to the individual's citation index or h-index in global academia”. Therefore, it is prohibited to increase citation index/h-index by producing more self-plagiarised works.

The notification also advises the Vice Chancellors of the universities, Screening Committees, Selection Committees, IQACs and other experts to ensure that in the case of selections, promotions, award of research degrees, credit allotment, the works submitted by the applicants for evaluation are not self-plagiarised.

VI. Plagiarism vis-a-vis Copyright Infringement

In academic parlance, the term “plagiarism” is used. However, there is no reference of plagiarism in the Copyright Act, 1957. The Act rather uses the expression “infringement” of copyright. It is noteworthy that plagiarism and infringement of copyright are not the one and the same thing. They have different connotations.

Infringement of copyright takes place in those works only in which copyright subsists. Infringement happens when someone uses the copyrighted work of others without permission. Fair dealing with copyrighted work for private use is allowed provided the sources have been acknowledged. Copyright infringement does not take place in those works which have fallen into public domain. Once a work falls into public domain, anyone can use it freely. However, such person cannot claim that work to be his/her own work. If such person does so, it will amount to infringement of author’s moral rights as provided in section 57 of the Copyright Act.

If a person uses the work which has fallen into public domain without acknowledging the source, such person shall be said to have plagiarized the work. It can be explained with the example of the work of Guru Rabindranath Tagore, in which copyright has expired. Tagore’s work is in public domain now. If someone reproduces the work of Tagore in his work without acknowledgement, then it will amount to an act of plagiarism. Further reproduction of Tagore’s work in the name of some other person shall violate Tagore’s moral rights under the Copyright Act. There will be no copyright infringement in such case as the copyright term in the work has come to an end.

It is therefore, important that one should acknowledge the sources while using the works of others irrespective of the fact whether copyright subsists in those works or not.

As already discussed, the Regulations define the term *plagiarism* to mean “the practice of taking someone else’s work or idea and passing them as one’s own”.³¹ The term *plagiarism* is defined in a broader context under the UGC Regulations. It refers to taking by some person the work or idea of some other person and then to pass its own as his/her work or *idea*.

It is important to discuss the role of anti-plagiarism software in this regard. Such software have their own limitations. These software may detect plagiarism in the copied work but may not be able to detect plagiarism in those works which are based on the ideas of other person(s). It is therefore important that the research work produced by the author should be distinct from those of others in the sense that the work /ideas of others are not copied.

It is noteworthy that Copyright Act, 1957 prohibits reproduction of the copyrighted work of others in one’s own work. Reproduction does not mean copy but taking substantial portion of the work of others and claiming that to be his/her own work. The term “*reproduction*” was explained in *British Northrop v. Texteam Blackburn*,³² in the following words:

“there must be a high degree of similarity before one thing can be said to be *reproduction* of another; but minor or trivial differences will not prevent one work from being a reproduction of another. It may be that reproduction has

³¹ Rule 2(l), UGC Regulations of 2018.

³² (1974) RPC 57.

much the same meaning as copy, and that it suffices for a reproduction if it makes a substantial use of the features of the original work in which copyright subsists”.³³

In order to decide whether a person has taken a substantial portion of the work of others or not, emphasis is to be made on the “quality than the quantity of what he has taken”.³⁴ In other words, *substantial* does not refer to the “bulk or the length of the extracts” as a “short extract may be a vital part of the work”.³⁵ The court, in *FE Engineering & Consultancy Pvt. & Another v. LG Cable Ltd. & Another*,³⁶ stated that the “quality and substantiality are the two touchstones on the basis of which such allegations are to be tested”.³⁷

It is also noteworthy that Copyright Act, 1957 protects only expressions not *ideas*. In *Donoghue v. Allied Newspaper Ltd.*,³⁸ Farwell J. stated that “[I]f the idea, however brilliant and however clever it may be, is nothing more than an idea, and is not put into any form of words, or any form of expression ..., then there is no such thing as copyright at all. It is not, until it is reduced into writing, ... that you get any right to copyright at all, and the copyright exists in the particular form of language in which ... the information or the idea is conveyed to those who are intended to read it or to look at it”.³⁹

³³ *Id.*, p. 72.

³⁴ See the observations of Lord Reid in *Ladbroke v. William Hill* (1964) 1 WLR 273 at p. 276.

³⁵ *Johnstone v. Bernard Jones Publications Ltd. Beauehamp* (1938) 1 Ch. 599.

³⁶ 2002 (25) PTC 577 (Del).

³⁷ *Id.*, p. 582.

³⁸ (1937) 3 Ch. D. 503.

³⁹ In *Cherian P. Joseph v. Prabhakaran*, AIR 1967 Ker 234, the court stated that there was no copyright infringement if someone developed his/her work by taking essential idea from some other person's work. See also *Harnam Pictures N.V. v. Osborn* (1967) 1 WLR 723; (1967) 2 All ER 324, in which the court stated that there was “no copyright in ideas, schemes or systems or method and the copyright was confined only to the subject”.

It is allowed to develop the ideas of others in one's own work, provided the work has been developed independently without copying from the work of others. The Delhi High Court stated that the copyright vested in "original expression of idea and not in idea itself". What is protected under the copyright law is the way or manner of presentation of an idea, not the idea *per se*.⁴⁰

It is important to note that similarity may occur between two works, not because of plagiarism or infringement of copyright, but because of the fact that two persons while working independently have used common source of materials and in the process of doing so they arrived at the similar results. In such a situation, despite the fact that the two works were found to be similar, strictly speaking, it cannot be said that they were plagiarized or that one author infringed the work of another.

Fair dealing with a work for the purpose of research is allowed under the Copyright Act, 1957.⁴¹ There is no definition of the term "*fair dealing*" in the Copyright Act. In absence of any word limit under the fair dealing provision, the author should not think that he/she is free to quote as much as is possible with acknowledgement. Lord Denning made some important observations in this regard in *Hubbard v. Vosper*.⁴² The judge stated that "you must consider first the number and extent of the quotations and extracts. Are they altogether too many and too long to be fair? Then you must consider the use made of them. ... If they are used to convey the same information as the author, for a rival purpose, they may be unfair. Next, you must

⁴⁰ Institute for Inner Studies & Others v. Charlotte Anderson & Others, 2014 (57) PTC 228 (Del), p. 285.

⁴¹ Section 52(1)(a), Copyright Act, 1957.

⁴² (1972) 2 Q.B. 84 (C.A.).

consider the proportions. To take long extracts and attach short comments may be unfair. But short extracts and long comments may be fair. Other consideration may come to mind. But, after all is said and done, it must be a matter of impression”.⁴³

The UGC Regulations as well as the Copyright Act, 1957 is silent on the quantum of the material which can be used by one in his/her research work. It is against the research ethics to quote heavily from other sources. Excessive and unreasonably long quotations must be avoided by the researcher. It is a matter of concern that a work with excessive quotations may not be detected by anti-plagiarism software as the quotations are put in the inverted coma. It is to be noted that such a practice is not only against the research ethics but may also result in copyright infringement. It is therefore, strongly recommended that the author of a work should be sensitive towards ethics and honesty while producing his work.

VII. Conclusion

The UGC Regulations of 2018 and the Public Notice of 2020 on Self-plagiarism are just a beginning towards the conduct of responsible research. Research without ethics had become a menace for the higher education before these regulations. The standard of our research deteriorated in absence of these regulations. The predatory journals were making their fortune by publishing all sorts of trash without caring for plagiarism. They were publishing online/offline journals in the back dates depending upon the requirement of scholars or teachers.

⁴³ *Id.*, at 94. For more details and case laws on fair dealing and infringement of copyright, see V.K. Ahuja, *Intellectual Property Rights in India* (LexisNexis Butterworths, 2015).

These Regulations will definitely make an impact on the research in India. There must be laws and policies to prevent all types of research fraud, irrespective of the fact whether the research is conducted for academic, social or commercial purposes. Many universities and organizations abroad have adopted their research codes or guidelines to conduct research.⁴⁴ In India, the important thing is to have a positive mindset for conducting research with honesty and integrity. We need to develop an environment where research is seen as a serious affair. It is not just copy-paste or compilation from various sources without any mental application. It is also not about paraphrasing or playing with the words to avoid plagiarism. It is the one which is conducted seriously and in the most ethical manner, giving credits to the persons whose works have been referred to by the author in his/her work.

The qualitative research will not only improve the profile of the author, but also that of the institution to which the author belongs. It is advisable to have lesser number of publications which are qualitative, rather than having bulk publications which are sub-standard. One should remember that the quality of the publications of the author has a direct impact on his/her image as a scholar. If an author publishes sub-standard works, nobody will take his works seriously and his image will be that of producing sub-standard works only. On the other hand, qualitative works of the author will be recognized by others and the author will get recognition in the academic circle.

Though term papers, course work, assignments, essays, and project reports have been excluded from the definition of

⁴⁴ See Enago Academy, *Research & Publications Ethics*, p. 10, available at chrome extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.enago.co.kr/academy/wp-content/uploads/2018/05/Research_Ethics.pub_V2.pdf, last visited on 07 October 2023.

script in the Regulation, it does not mean that author should produce plagiarised work. The culture to produce ethical academic work should start from UG courses. Not only that, in schools, the students should be sensitized about the ill effects of plagiarism. They should be encouraged about plagiarism free writings. Even at the primary schools also, the students should be taught that it is wrong and unethical to produce the work of someone in one's own name in the school magazine, etc. For children, it is good to write small piece which may not be so qualitative rather than copying the work of others.

Sensitization is the need of hour and it should begin from school level rather than at HEI's level. The focus should be shifted from bulk sub-standard writings to qualitative writings which may comparatively be less in number. Academic theft should be a matter of past and all efforts should be made to improve academic honesty. If we are serious about making India a developed country, we need to improve our teaching, learning and research. At present, only few HEIs are doing well and known for their academics and research globally. This is not encouraging. We need to improve the image of our country with respect to performance of our academic institutions, and this can be done only when we indulge in qualitative research along with good teaching-learning techniques.

Chapter - 2

**RESEARCH AND PUBLICATION ETHICS: A
PHILOSOPHICAL PERSPECTIVE**

*R. N. Sharma**

With the dawn of civilization, the human being has been very conscious about loving the wisdom and their popularity among fellow persons. Whatever work he has undertaken, he wants that my work should be duly recognized by the society as it is the product of his wisdom, so that he can get name and fame. With the pace of development human being has started following the pursuit of their elder's actions or their preachings. Though their intention was not to popularize their forefathers but to keep them remembered by the society and recognize their literary work. This craziness increased with passage of time in the form of Sruties and later on Smrities. This is evident from the fact that we have number of Smrities in the name of Manu and Others. If we analyse ancient Indian Jurisprudence, we can safely say that our fore-fathers were aware of the fact that literary work undertaken by someone should get due recognition and should always be used after due recognition. This has got the status of morality that time. Later on this became practice and become ethical norms of that time

With the advent of right oriented western jurisprudence, persons became more conscious about their right. With change in attitude the term "due recognition" was substituted by the word "violation of ethical norms". Later on the word violation of ethical norms was further substituted by the term violation of right and ultimately substituted by the term violation of copy right for which

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one can approach the competent authority for initiating action against the violator.

If we go through God ordained Vedas, they talk about the action or behaviour of human being should be according to Dharma. According to Vedas the dharma preaches us how one should lead his life and the way of life which one should follow. The actions/behaviour of persons should be for the betterment of human being and society as a whole, which is possible only when one leads the life accordingly to Dharma.

The concept of dharma preaches us to act in righteous manner. During those days people were expected to perform their duties towards themselves and towards society. The norms set for observation by every person were based on ethics, that is do not do that which you do not expect from others. Slowly and gradually these social norms were codified by the sages and learned persons like, Manu, and has been kept as record in the name of Smrities. The Smrities codified by Manu deals with every aspect of life and are being followed today with some changes as per present day requirement.

According to Indian Philosophy and Traditions the basic nature of man is religious and spiritual, goodness and welfare, universality and fraternity, spiritual integrity, moral uprightness, benevolence, unselfishness under all circumstances.

Four Mahāvākyas of the Vedas which expresses the spiritual character of man are:

Prajñānām Brahman. (The intelligence is Divine),
Ayamātmā Brahman (The soul is Divine),
Aham Brahmāsmi (I am Divine) and
Tattvamṣi.

During those days following the principles of Dharma was considered as moral value

Vaiseshika Sutra claims that: “*Yato-bhyudayanisreyasa-siddhihsa harmah*” that which leads to the attainment of *Abhyudaya* (prosperity in this world) and *Nisreyasa* (total cessation of pain and attainment of eternal bliss hereafter) is *Dharma*.

Dharma was not for developing intelligence; it was for developing character. When compared with all knowledge, good conduct was considered to be superior; because *Dharma* was based on *acharas*. During those days it was a saying that when man abides by *acharadharmā*, his life is prolonged.

According to Vyasa: “With my arms raised, I am lamenting, yet no one listens to me. (O human beings) *Dharma* accomplishes both, earning of wealth and fulfilling of desires. Then, why do you not abide by *Dharma*”.

To understand true nature of ancient Indian culture & way of life we have to understand the philosophical aspect of India.

The Indian concept of philosophy: Indian philosophies share many concepts in it, such as dharma, karma, samsara, dukkha, renunciation, meditation, with almost all of them focusing on the ultimate goal of liberation of the individual from dukkha and samsara through diverse range of spiritual practices (moksha, nirvana).

Samkhya: Kapila is the oldest of the orthodox philosophical systems. It postulates that everything in reality stems from purusha (self, soul or mind) and prakriti (matter, creative agency, energy). Purusha cannot be modified or changed while prakriti brings change in all objects.

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The concept of justice and justice delivery system during those days was also founded on righteousness. The norms of morality to be followed by everyone were also reduced in to writing. During those days the writings of any person were used in their name and that way due recognition was given to the author. Honesty is the best policy was followed in letter and spirit during those days.

We can observe that all the ancient Indian codes are popular by the name of the giver. Giver is respected as an author. The principle behind giving recognition was to acknowledge their work and to perpetuate their name and fame.

Western philosophers developed their own philosophy. According to them the word philosophy literally means love of wisdom; it is derived from two Greek words i.e. 'phileo' (love) and 'Sophia' (wisdom). The eternal quest for truth 'lends the origin of philosophy. A love of wisdom is the essence for any philosophical investigation.

Etymologically, the term "philosophy" means, "love of wisdom." In a broad sense, philosophy is an activity people undertake when they seek to understand fundamental truths about themselves, the world in which they live, and their relationships to the world and to each other.

Pythagoras was said to have been the first man to call himself a philosopher. According to him Philosophy is concerned with views about how the world works and, as an academic subject focuses primarily on reality, knowledge and existence. It also enables to gain knowledge of the subject undertaken for the study.

I. Philosophy as A Subject Has Been Given Meaning and Content by Various Philosophers

According to **Dr. Radha Krishan** an Indian philosopher “Philosophy is the science of knowledge and is a logical enquiry into the Nature of Reality.”

According to **Plato** “Philosophy aims at a knowledge of the eternal nature of things.”

Alfred Weber defines it as “Philosophy is a search for comprehensive view of nature, an attempt at universal explanation of the nature of things.”

Yet another philosopher **Raymont** describes it as “an increasing effort to discover the general truth that lies behind the particular facts to discern also the reality that lie behind appearance.”

Philosophy is the study of general and fundamental problems, such as those connected with existence, knowledge, values, reason, mind, and language. Philosophy is the rational attempt to formulate, understand, and answer fundamental questions.

After discussing various definitions given by the philosophers we will dwell upon the **nature of philosophy**: Philosophy is a set of views or beliefs about life and the universe, which are often held uncritically. Philosophy is a rational attempt to look at the world as a whole.

Philosophy is the logical analysis of language and the clarification of the meaning of words and concepts.

Philosophy is a process of reflecting on and criticizing our most deeply held conceptions and beliefs. These two senses of philosophy- “having” and “doing”- cannot be treated entirely independent of each other, for if we did not have a philosophy in the formal, personal sense, then we could not do a philosophy in the critical, reflective sense. Having a philosophy, however, is not sufficient for doing philosophy.

Philosophy is a group of problems that philosophers always try to find out answers. Philosophy presses its inquiry into the deepest problems of human existence. “What is truth?” “What is the distinction between right and wrong?” “What is life and why am I here? Why is there anything at all?”

The study of Philosophy enables us to think carefully and clearly about important issues.

The major branches of philosophy are epistemology (knowledge & truth), metaphysics (reality & being), logic (argumentation & reason), axiology (aesthetics & ethics), and political philosophy (the state & government). Ethics investigates moral principles and what constitutes right conduct.

In studying Philosophy, we learn to take a step towards thinking and to explore the deeper, bigger question which underpins our thought. Philosophy sharpens our analytical abilities, enabling us to evaluate the strengths and weaknesses in any position. It hones your ability to construct and articulate cogent arguments of our own. It prompts us to work across disciplinary boundaries and to think flexibly and creatively about problems which do not present immediate solutions. Philosophy also develops our ability to think and work independently.

To understand the philosophical perspective of any subject one has to understand the basis of that subject. Historically we

can say that Philosophy is based on 1. Logic, 2. Metaphysics, 3. Epistemology, 4. Value theory

1. Logic: Logic is the systematic study of the rules for the correct use of these with supporting reasons. The rules can be used to distinguish good arguments from bad ones. Most of the great philosophers from Aristotle to the present have been convinced that logic permeates all other branches of philosophy.

2. Metaphysics: It is the traditional branch of Philosophy. Aristotle call it as “first philosophy”, as it relates to universal principles based on “comprehensive thinking about the nature of things” the study or theory of reality. Metaphysics is the branch of philosophy that offer a comprehensive view of all that exists. It is concerned with such problems as the relation of mind to matter, the nature of change, the meaning of “freedom,” the existence of God, and the belief in personal immortality.

3. Epistemology: It is the branch of philosophy that studies the sources, nature, and validity of knowledge, the sources of knowledge and the question of origins. What is the nature of knowledge? How do we distinguish truth from error? This is the question of the tests of truth, of verification.

4. Value Theory: It is the branch of philosophy that studies values into ethics, aesthetics, and social and political philosophy. In terms ethics concerns itself with the question of morality. What is right and what is wrong in human relations?

Aesthetics concerns the theory of art and beauty. Questions of art and beauty are considered to be part of the realm of values because many philosophical problems in aesthetics involve critical judgments. Therefore, if we cannot perceive beauty in objects that others find beautiful, it may be wise to withhold

judgment until we are capable ourselves of making a competent analysis of the aesthetic experience.

Social and political philosophy investigates value judgments concerning society, the state, and the individual's relation to these institutions. The following questions reflect the concerns of social and political philosophy: Why should individuals live in society? What social ideals of liberty, rights, justice, equality and responsibility are desirable? Why should anyone obey any government?

Before we discuss the principle of ethics, we have to understand that ethics is generally considered as practical aspect of principles of morality. Therefore, we will first discuss what we mean by the term morality.

Morality refers to a code of conduct that deals with humans in relation to others to promote what is good and right. Morality in terms of religion is determined by the relation between human being and supernatural being. Morality in terms of nature is determined by the relation between human being and nature. Morality in terms of individuality is determined by the relation the individual has to him or herself. Morality in terms of society is determined by the relation between human being and society. It is said that the morality has its origin in objectivities as it is given by a supernatural being, and is part of the nature independently of human beings. It has its origin in the theory of 'natural law' and 'objectivism'. Morality is based on religion, but it is not always true. Sometimes we see that non-religious people also follow the principles of morality.

A moral theory is nothing but a set of moral principles specifying the conditions which makes an action morally right or wrong, or which in turn is based on moral reasoning. The moral

rules guide the person that his actions will decide what consequences you are going to face.

A person can be said to be morally good when his actions reflect courageousness. An action is right or wrong can be gauged by the motive, character, or intention of the actor. The barometer for gauging action of a man can be called as moral theories. These are Consequence-based theories propounded by Mill and Bentham, Deontological theories propounded by Kant and Virtue-based theories advocated by Anscombe the British philosopher.

We usually think, preach, talk and act according to principles of morality because we feel good and are hopeful that we will find the truth and ultimately, we are likely to get success in terms of social good. Since a good will always remain good therefore, everything else should trace its justification to this. The good will is the source of value, and without it, nothing would have any real worth.

Now we will discuss what we mean by the term ethics.

Ethics: The word ethics has been derived from the Greek word “ethos”, which means “way of living”, ethics is a branch of philosophy that is concerned with human conduct, more specifically the behaviour of individuals in society.

Descriptive ethics consider the conduct of individuals, or personal morality; the conduct of groups, or social morality; (what ought to be). “We ought to keep our promises” and “you ought to be honorable” It is also centered on the analysis and meaning of the terms and language used in ethical discourse and the kind of reasoning used to justify ethical statements. It does not propound any moral principle or goal but consists entirely of philosophical analysis. What is the meaning of “good?” and can ethical judgments be justified? are typical problems for meta ethics.

The principles which guide us to make a positive impact through our actions, play an important role in our lives is ethics.

Funk and Wagnalls Standard Comprehensive International Dictionary, defines ethics as: “The study and philosophy of human conduct, with emphasis on the determination of right and wrong: one of the normative sciences.”

Virtue can be denoted by high moral standards whereas ethics is a guiding force to go for positive oriented actions.

Therefore, we can say that virtue is genera and ethics is its species. Virtue is a trait or quality that is considered morally good. It encompasses parts of ethics and morals as it is an assessment of a person's morals.

II. The Importance of Ethics

Ethics is the study of moral principles that guide human behavior, its critical aspect of personal and professional lives. Following ethical standards ensures that individuals act in a responsible and accountable manner, promoting trust, respect, and fairness. It has become more important to prioritise ethics in this fast changing world: as it promotes trust and credibility which is the foundation of successful relationship and paves the way for building long-term partnerships. Ethical behavior promotes credibility, as individuals and organizations that act in accordance with moral principles can be perceived as reliable, honest, and dependable. Ethics also promote respect and fairness. Which entails respect for others' rights and dignity and treat everyone with fairness and impartiality, regardless of their race, gender, religion, or socio-economic status. Ethical behavior also promotes transparency and accountability, as individuals and organizations are held responsible for their actions and

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decisions. Ethical behavior promotes feelings of social responsibility as it benefits the community and the environment, minimize harm and maximize benefits, thus promotes sustainable practices, and social causes.

In conclusion, the importance of ethics cannot be overstated. Upholding ethical principles promotes trust, respect, fairness, and social responsibility, which are essential for building strong relationships, achieving success, and creating a better world. As individuals and organizations navigate the challenges of today's world, it is crucial to prioritize ethics and make decisions that align with moral principles.

We should also understand the philosophical aspect of ethics to get better knowledge & intricacies of principles of ethics. The philosophy of ethics "involves systematizing, defending, and endorsing conceptions of good and bad action." Ethics, like aesthetics, is concerned with considerations of worth in the area of natural science.

Ethics and morals are both used to describe what people understand to be "right" or "wrong" to do/believe (or not); they help people live with one another in relative peace so long as these unspoken rules are obeyed. For example, most people around the world agree that intentionally killing another person (i.e., murder) is wrong, regardless of whether or not they have a specific law against it: it is against people's morals to murder. For centuries, ethical and moral philosophers have tried to determine what exactly is right or wrong. Some of the major names in moral philosophy are:

William Paley (1743-1805) was a priest and British philosopher. He worked throughout his life to prove the existence of God. He can be said to be the founder of the ethical theory of Utilitarianism. According to him what makes something "good" is

how much its outcome (end) is able to maximize positive things (happiness, well-being, etc.).

Thomas Aquinas (1224 - 1274) was a priest of the Roman Catholic Church whose combined theology (religious systems of thought) with virtue ethics. He wrote that "evil consists in discordance from their rule or measure... either by their exceeding the measure or by their falling short of it... moral virtue observes the mean." Aquinas also believed that the true ideas of what is "good" and what is "bad" stem from knowledge of God. While human laws exist and can be justified through reason, there are eternal, divine laws that govern the universe and ethics. Human ideas of ethics are only valid as we are products of God's work and can know God.

Immanuel Kant (1724 - 1804) was a contemporary of William Paley. Kant argued that the means and end both must be good. In Kantian philosophy, there are definitive rules that can be applied to all, regardless of religious or cultural beliefs.

Aristotle (384 B.C. - 322 B.C.) believed in what is known as virtue ethics. In virtue ethics, characteristics are labeled in terms of deficiencies, excesses, and a "golden mean" between the two where virtue lies. The virtuous golden mean is between the vices of excess and vices of deficiency.

Virtue: Virtue refers to having high moral standards. For Aristotle, however, it is more specifically about fulfilling one's purpose in life by being of use in the right ways at the right times. In Aristotle's view, there was no set of books to read or lectures to attend to learn to become a good person and learn to respond in ways that are virtuous. Eventually, one who emulates the virtuous person in all situations will develop habits of virtue. With these habits, one can more or less ensure that they will respond correctly and as a virtuous person in any new situation also.

Virtue ethics are a branch of philosophy called teleology, which is different from deontology. Teleology concerns itself with the intrinsic purpose or aim (Greek: telos). Deontology is focused on the means and mindset of the person who is doing the action, specifically with the relationship between a person and their duties/obligations. In virtue ethics, one understands and becomes virtuous by finding the golden mean between vices of excess and deficiency. This is, in Aristotle's view, the purpose of human beings. Virtue ethics is the oldest ethical theory in the world, with origins in Ancient Greece. It defines good actions as ones that display embody virtuous character traits, like courage, loyalty, or wisdom. Virtue ethics focuses on the importance of developing the habits of mind and character to engage and resolve ethical dilemmas while embracing, not forsaking, ethical principles.

The Golden Mean

Aristotle believed that to become virtuous, one must find the Golden Mean, or the virtue. This can be done through direct experience and through emulating moral exemplars. Over time, acting in virtuous ways becomes a habit and one is more likely to align with the Golden Mean. Ethics makes an act morally right or wrong based on conduct, makes a person good or bad based on value. We can draw correct conclusion about what we ought to do or what kind of person we ought to be. It is based on theoretical/conceptual questions and practical question about moral reasoning.

Characteristics of Ethical Issues: Moral issues are generally controversial and remains open-ended. It is very difficult to arrive at some consensus on such issues. Sometimes this disagreement may be radical and fundamental and sometimes it may be difference of degree only.

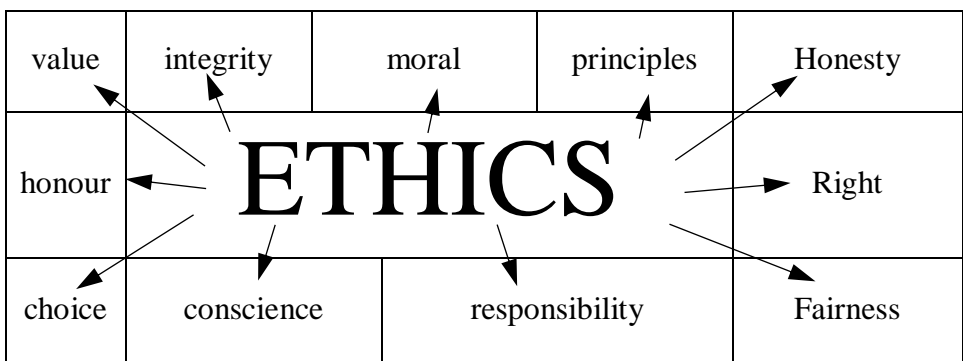
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Ethics in philosophy refers to those standards that impose reasonable obligations to refrain individual from offenses including fraud. Ethical standards also include those that enjoin virtues of honesty, compassion, and loyalty.

Philosophical ethical theories are attempts to provide a clear, unified account of what our ethical obligations are. The four fundamental principles of ethics are autonomy, non-maleficence, beneficence, and justice.

Ethical principles are the foundation of the guidelines which helps to clarify the issues involved in the situation. These are autonomy, justice, beneficence, non- maleficence, and fidelity.

Therefore, a good researcher has to follow ethical principles, like beneficence, non-maleficence, autonomy, and justice, informed consent, truth-telling, and confidentiality, ethical culture by adopting the principles of honesty, trustworthiness, and a commitment to do the right thing, even when difficult or unpopular, work with full integrity, honesty, fairness, leadership, integrity, compassion, respect, responsibility, loyalty, law-abiding, transparency, and environmental concerns.



The ethical principles in research and publication enables to protect the dignity, rights and welfare of researchers. Therefore,

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it is necessary to ensure that the appropriate ethical standards are followed. It can be possible only when the researcher is of good character, is competent enough and works in collaboration by following the principles of logicity, reasonableness and pragmatism.

Keeping in view the above principles of ethics we can have following kinds/dimensions of ethics.

Normative or Prescriptive Ethics.

Descriptive Ethics.

Meta-ethics.

Applied Ethics.

If any researchers come across any kind of difficulty and feels uncomfortable may be because of a conflict of interest he/she has to recheck the facts, prepare a list of options available and test these options on the yardsticks stated above & finally adopt the choice which is more conducive and near to the principles of ethics.

Sources of ethics

The principles of ethics can be traced by looking into the following factors:

Religion which can be said to be the ethical inspiration, Culture, Law and legal system Corresponds to Basic Human Needs, Credibility in the Public, Credibility with the Employees, Better Decision Making and Economic system including Profitability.

Theories of Ethics

There are three ethical main theories—deontological, consequentialist and virtue ethics—and propose a mixed approach for developing a framework in the design and development of research evaluation.

The theories of ethics play a leading role in ascribing & describing the nature of ethics. While adjudging the ethical norms for professionals the guiding factor for determining the ethical standards may be principles of Mission, Truth, Lawfulness, Integrity, Stewardship, Excellence and Diversity.

Any unethical behaviour relating to publication is called publication misconduct. Misconduct makes all the efforts, time and money spent on research in vain and leads to detrimental effects with a high possibility of not repairable damages in the research world.

Instead of asking what is the right action here and now, virtue ethics asks what kind of person should one be in order to get it right all the time. Whereas deontology and consequentialism are based on rules that try to give us the right action, virtue ethics makes central use of the concept of character.

Deontology is focused on the means and mindset of the person who is doing the action, specifically with the relationship between a person and their duties/obligations. In virtue ethics, one understands and becomes virtuous by finding the golden mean between vices of excess and deficiency.

Consequentialism and virtue ethics: Consequentialist theories posit that consequences of action should be the primary focus of our thinking about ethics, virtue ethics insists that it is the

character rather than the consequences of actions that should be the focal point.

Deontology is usually contrasted with consequentialism. Consequentialists maintain that the right action is determined solely by its consequences, deontologists deny this and hold that the right action is not determined solely by its consequences. One has to assess which will be better: deontology or consequentialism. Deontology allows individuals to act on a broader scale than a more demanding theory such as consequentialism (e.g. there is always something “better” that one could be doing).

Publication ethics

Publication ethics are the guidelines that are developed to ensure world-class scientific publications, public's faith in research, and proper credit for authors' original ideas and work.

Publication is the most common contemporary form of research outcome dissemination. Researcher remains owner of published work. Researcher publishes his work in form of Article, book or book chapters, conference proceeding.

Research findings are made known to public at large by means of Publication. Therefore, the publishers have to follow the publication ethics (the code of conduct & regulatory mechanism) to establish and maintain higher standards and academic integrity. Therefore, if the code of conduct for publication ethics are violated it threatens the integrity of the research publication process.

Publication ethics encompass the rules of conduct which are agreed upon while publishing results of research or other scholarly work so that intellectual property is protected and forbids the re-publication of other's work without proper credit.

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Accordingly, the publication ethics covers all those norms which entail such protection. E.g. informed Consent, Data Confidentiality, Data Manipulation and Research Fraud, Self-Citation, ghost, authors dispute, fake affiliations, conflicts of interest, dual submissions, duplicate publication, plagiarism, salami slicing, fabrication and falsification. It also affects the academic community, journal editors, peer reviewers along with the authors.

The present-day norms for publication have their genesis from ancient Indian literature. We can safely say that legal garb has been put on moral and ethical norms which were in vogue in ancient India.

The philosophical aspect of publication ethics can be visualised by understanding the old norms and the present-day social norms.

The norms which were previously a model code has taken shape of legal duty with the advent of right oriented jurisprudence. This can be attributed because of the fact that we have followed the principles of justice based on the positive laws codified /enacted by the state or its instrumentality. This legal duty in this materialistic world has become so crucial that if any one violates these norms, he can be taken to task in the form of punishment.

Ethically published work becomes a sound base of knowledge. It helps in adequate rationalization, accelerate scientific progress, 'Show ethical path to followers', help in image building of researcher, adds value to the work, helps in conferring mutual respect & in ensuring public trust in research.

At the same time the publication of research in peer-reviewed journal not only validates the research and boosts confidence of the

authors but also gives national and international recognition to an author it also helps in grant for research, for career advancement in the department, university, and institution where researcher work.

Therefore, it is expected that all associated individuals and organisations, including editors, reviewers, authors, editorial officials, and publisher, should adhere to rigorous ethical guidelines throughout the publishing process.

The roots of scholarly, scientific publishing can be traced to 1665, when Henry Oldenburg of the British Royal Society established the journal *Philosophical Transactions of the Royal Society*. The aim of the journal was to create a public record of original contribution to knowledge and also to encourage scientists to “speak” directly to others.

III. Ethics-Related Organizations and Their Role

A good research starts from hypothesis, selection of appropriate study design, study execution, data collection, analysis, and publication. Therefore, the conduct of the research study requires that ethical norms are required to be adhered to in the process of publication.

Therefore, any publication which is based on the conclusion drawn from the data which has been manipulated is considered a research fraud or scientific misconduct.

The organizations involved with publication ethics are:

- i) International Committee of Medical Journals Editors (ICMJE): The ICMJE was established in 1978, in Vancouver, British Columbia, Canada, by a group of medical journal editors. ICMJE developed recommendations which are primarily for authors who want to submit their work in

ICMJE member journals. These recommendations discuss the role and responsibilities of the authors, contributors, reviewers, and editors. Steps of manuscript preparation, submission, and editorial issues related to publication in medical journals are also discussed and drafted. The uniform requirements for manuscript submitted to biomedical journals, which most of the journals are following were drafted by ICMJE.

- ii) World Association of Medical Editors (WAME): The WAME is a nonprofit voluntary association, which was established in 1995 by a group of members of the ICMJE. The goal was to improve editorial standards, promote professionalism in medical editing, and encourage research on the principals and practice of medical editing. The role of WAME is to facilitate worldwide cooperation and communication among editors of peer-reviewed medical journal. Membership in WAME is free and all decision-making editors of peer-reviewed journals are eligible to join.

- iii) Committee on Publication Ethics (COPE): COPE a registered charity organisation for journal editors and publishers. History of COPE Began in 1997 as an informal forum for editors in the UK to discuss ethical issues related to research and publication in biomedical journal publishing in established as a limited company and a UK-registered charity. Currently more than 8000 members, from 75 countries from all academic disciplines are covered. It provides advice (not regulation) on all aspects of publication ethics, Provides support and resources for good publication practice (guidance documents, flowcharts), Advises on how to handle cases of research and publication misconduct (forums), Educates editors on identifying research and publication misconduct and their responsibilities (seminars, talks, e-learning modules) Also

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associate members: Individuals or companies who are not eligible to be Full Members (i.e. are not journal editors or publishers) but who are interested in publication ethics and are working in or associated with the publication of peer-reviewed scholarly journals.

The purpose of COPE is to find the practical ways to deal with the misconduct cases also and to develop codes of conduct for good publication practice. It also generates the funding for the research based on the issues related to publication misconduct.

COPE Guidance documents cover Code of conduct and best practice guidelines for journal editors, Code of conduct for journal publishers, Guidelines for the board of directors of learned society journals, Ethical guidance for peer reviewers, Guidance on co-operation between research institutions and journals Guidelines for retracting articles Sample letters for handling common problems Discussion documents (eg, anonymous whistle blowing) A series of flowcharts etc.

Most common forms of misconduct for which COPE has formulated policy are:

- i) “Authorship disputes Plagiarism Redundant (duplicate) publication Reviewer misconduct Ghosts and guests Conflicts of interest Fabricated/falsified data General suspected ethical concerns.
- ii) Regarding Authorship disputes: COPE advises that have a written policy on what constitutes authorship Request signed statements of contribution from all named authors, Request signed agreement from those named under acknowledgments.

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- iii) Regarding Plagiarism: COPE advises that include a definition of plagiarism and your policy on it in information for authors Consider obliging authors to read your policy and tick a box to confirm that prior to submission Consider judicial use of plagiarism-detection software.
- iv) Regarding Redundant (duplicate) publication, text recycling the COPE advises that include a statement in information for authors that material should not have been published elsewhere plagiarism of the text has been checked by the use of plagiarism-detection software.
- v) Regarding Reviewer misconduct COPE advises that issue clear advice to reviewers on what is expected of them. Refer to COPE ethical guidelines for peer reviewers.
- vi) Regarding Conflicts of interest COPE advises that have a clear policy on conflicts of interest (for editors, authors, and reviewers) Ask all authors to declare potential conflicts of interest, and consider publishing them
- vii) Regarding Fabricated/falsified data COPE advises that have a clear policy on the enhancement, cutting/pasting, or obscuring of images if likely to be a particular problem in your field Image manipulation detection software may help.
- viii) Accordingly, the Copyright Breach can also be considered as part of ethics: When copyright material is reproduced without permission Data Fabrication Making up research findings Data Manipulation/Fabrication Data Manipulation/Falsification Manipulating research data with the intention of giving a false impression. This includes manipulating images, removing outliers or ‘inconvenient’ results, changing data points, etc...”

Misconduct in relation to Authorship: It is unethical like ‘gift’ or ‘ghost’ authorship. Gift authorship: When research or administrative hierarchy comes in to the picture or because of a colleague with whom we have a personal relationship like son/daughter or husband/wife/relatives. Senior researchers or

administrative boss who have substantial contribution on the subject, at any point like writing manuscript. Editing manuscript, reviewing manuscript, providing additional knowledge with high intellectual input on writing science are not considered as 'gifted'.

Ghost authors are the researchers who writes the research article without acknowledgement. This is very common for many cases where researcher drafts an article at the behest of pharmaceutical company. The real author's name never comes in domain of publication. Problem of the ghost author is that whatever they write may not always be correct interpretation and may be biased; hence, it badly affects the researcher community.

To tackle this publication misconduct COPE, ICMJE provides certain guidelines: Journals must have clear authorship criteria. Authors should disclose all contributors, regardless of author status and their specific individual contributions and affiliations. Authors must sign about their contribution's details. Authors should disclose any of his/her conflict of interest and a statement whether they have received any support from medical writers.

Authorship Disputes and Ethical Misconducts

International Committee of Medical Journal Editors (ICMJE) guidelines states authors Anyone who has made a substantial contribution to the conception Design or acquisition of data or analysis and interpretation of data Drafting or revising the article for intellectual contents Participated in the final approval of the version to be published Disputes: 'Question of interpretation' like whether Contribution' by the authors was substantial? Whether authorship criteria were discussed when research was planned? It was decided before submission of manuscript?

Therefore, accordingly to ICMJE norms those who are just occupying the departmental chair, provided funds, had general

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supervision helped in collection of data, provided technical support and helped writing assistant are not entitled for conferring authorship.

Conflict of Interest It May be financial or others like personal interest like employment interest, promotion or career advancement interest, patents, personal believes, grant providing, relationship, academic competition or intellectual passion.

Each author should declare to the editor any interest that could constitute a real, potential or apparent conflict of interest with respect to his/her involvement in the publication, between them and Commercial entities and administrative unit, employment relationship. Sources of funding for the study, review, or other item should be declared in the final publication.

Fabrication and Falsification of Data Fabrication means cooking up data or results (fictitious by nature) as per the hypothesis of research and publishes it in a journal whereas falsification is simply manipulating data or result. Fabrication also covers selective reporting authors just report a small number of significant values of the study but hide large number of insignificant observations.

The authors should abide by the following responsibilities which are required to **maintain** the integrity and credibility of research and to nourish the trust of public in scientific endeavors, all authors must follow the rules of good publication practice and should stick to the following responsibilities:

- i) Do not fabricate or manipulate the data
- ii) Avoid plagiarism by giving proper acknowledgment
- iii) Declare whether research work has been published or presented before

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- iv) Declare COI
- v) Avoid ghost/gift/guest authorship
- vi) Do not submit the manuscript to more than one journal for simultaneous consideration
- vii) Last but not the least, take direct responsibility for appropriate portions of the content.

The institutes should conduct workshops to encourage researchers/authors to follow good publication practices. The institute provide to the scholars the copy of COPE or ICMJE recommendations for publications.

If a manuscript is submitted simultaneously to two or more journals it is called dual submission. It is very difficult for the editors to detect the dual submissions. The authors use these kinds of unethical tactics to get their manuscripts accepted by the journal. The authors when came to know that their manuscript has been accepted by one journal, they withdraw it from another journal.

Sometimes both the journals unknowingly published same article, it will result in research inflation without adding anything substantial to the existing knowledge. It will also have detrimental effects on funding and human resources. To avoid such misconduct in future the authors should be asked to give logical explanation when they request for withdrawal of their manuscripts to save valuable time, efforts and energy spent on these kinds of cases for peer review, correspondence and potential publication for the editors.

The other serious ethical issue is that of plagiarism. It is defined as the stealing or theft of another person's words, ideas or results and without citation of reference source. It is becoming more prevalent due to the "publish or perish" environment leading to increased publication demands. Self-plagiarism or salami

slicing is also not acceptable as it is considered manipulative. In this, one research article is broken into multiple different manuscripts but sharing the same methodology, hypotheses etc. It will lead to unfairly skewing of research database and enhanced citation record of authors. It is suggested that the authors cite their prior work with permission from journal and justify that new information is conveyed in the current paper.

By use of software applications (Turnitin and iThenticate), plagiarism can be identified easily. As a pre-requisite from higher education commission (HEC), we use Turnitin, a plagiarism detecting software, for all submitted manuscripts.

Sometimes the authors instead of paraphrasing use some hidden characters to escape from plagiarism. Sometimes authors by using sticks like insulting some hidden character like full stop after each word and replacing alphabet 'o' by zero and changes were made accordingly in the document. The authors should be instructed to avoid such practices and be honest in correcting their manuscripts. They should also be advised to go for properly paraphrase and cite the original source article in your paper.

Research Ethics:

Investigations concerns about processes for ethical review of research (e.g. lack of independent review body or inadequate procedures) Retractions Concerns arising from requests to retract published articles (i.e. for a journal to publish a notice of retraction), Editors' decisions to retract articles or the process of retraction Reviewer Misconduct: When reviewers: fail to treat submissions in confidence use information for their own benefit from a submission they have been asked to review (e.g. reporting data as if it were their own, plagiarising text, stealing data or ideas and using them in grant applications) try to delay publications from rivals/competitors submit a biased review or inappropriate

recommendations in the hope of preventing or delaying publication by a rival fail to declare competing interests.

Consequence of Research Misconduct

- i) **Society and humanity:** Wrong procedures, false and fabricated data bring out products, which may be considered unsafe for humanity.
- ii) **Fellow researchers:** Published data and knowledge derived from research misconduct in medical sciences will mislead fellow medical researchers and that will lead to huge loss of money, funds, times and reputations.
- iii) **Medical practitioners and students:** Medical practitioner also suffers a lot due to unethical research publications as many wrong diagnostic and therapeutic published guidelines lead to professional disaster for them.
- iv) **Public trust and Government policies:** It may destroy public trust on science. Such false information and data may misguide government and lead to implement some erroneous health policies and laws.

The Role of Publisher, Sponsor and Sanctions for Misconduct:

A journal publisher attempt to exert undue influence over editorial decisions Sponsor: When there is any question over the role of a funder in a publication, including when the involvement of a funder in any part of the research or publication (e.g. study design, data collection, analysis, reporting) is inadequately disclosed.

Sanctions for Misconduct: When journal editors, publishers or learned societies impose sanctions on authors who have committed publication or research misconduct (e.g. by banning individuals from publishing in their journals) Selective Reporting: When unfavourable or inconvenient end-points (e.g. outcomes

that fail to reach statistical significance or do not favour a particular product or hypothesis) are deliberately omitted from publications reporting research Self-Plagiarism

Undeclared Conflict of Interest (Authors) Undeclared Conflict of Interest (Editors)

When authors fail to declare all conflicts of interest relevant to their publication (i.e. relationships, both financial and personal, that might affect the conduct or interpretation of their work and about which editors or readers might wish to be made aware). Undeclared CoI (Editors): When editors (or other members of a journal's staff or editorial board) fail to declare conflicts of interest relevant to the editorial processes of their journal (i.e. relationships, both financial and personal, that might introduce bias or prevent objectivity) or When journals fail to adopt appropriate systems for ensuring that people with relevant competing interests (whether declared or not) are not involved in editorial decisions (e.g. systems to prevent editors from considering their own work or that of close colleagues or family members) Undeclared CoI (Reviewers): When reviewers fail to declare all conflicts of interest relevant to the submission being considered (i.e. relationships, both financial and personal, that might prevent an unbiased and objective evaluation of the work)

Undeclared Financial Support for Publication Unethical Research

When sources of support for a research project or publication are not declared (e.g. failing to disclose funding for research or for publication such as assistance from a professional writer or payment to an author) Unethical Research Experiments that contravene ethical norms, such as the protection of research participants.

IV. Process of Publication

If the researcher wants to publish the research findings and observations, he has to ensure that the manuscript is original, concise and has clarity in language.

Journals publish only those articles which are exhaustive and based on meaningful research and contribute towards the knowledge building and awareness of readers and conclusion drawn should also be comprehensive and should have list of up-to-date references.

Misconduct: misconduct is the violation of the standard codes of scholarly conduct and ethical behavior in the publication of research. It includes falsification or fabrication of data manipulation generating data, plagiarism or misappropriation of the ideas of others, improprieties of authorship, simultaneous publications, duplicate publications, salami slicing, and non-declaration of Conflict of Interest (COI). Conducting research without informed consent not maintaining data confidentiality.

V. Criteria of Authorship

As we all know that the publication adds to the credibility of the research and brings fame and recognition to the author. Therefore, it is expected that the authorship of articles must be honest, reliable, trustworthy, and transparent.

Plagiarism: The word plagiarism was first used in the English language in the year 1601 by the dramatist Ben Jonson to describe someone who was guilty of theft. Plagiarism is derived from the Latin word “plagiare” which means to “kidnap.” By definition, plagiarism is the use of previously published work by another author in one’s own manuscript without consent, credit, or acknowledgement.

“In an instructional setting, plagiarism occurs when a writer deliberately uses someone else’s language, ideas, or other original (not common-knowledge) material without acknowledging its source.”

Plagiarism means “when one author intentionally uses another’s work without permission, credit, or acknowledgment.” Plagiarism generally found in following forms: Data, Words and Phrases, Ideas and Concepts.”

Plagiarism can be intentional or unintentional. Unintentional plagiarism is usually seen in articles written by students or junior researchers. Lack of awareness and ignorance lead to unintentional plagiarism. Intentional plagiarism happens when an author deliberately copies documented or published work and presents it as his/her own. Both types of plagiarism are unethical and illegal, which can ruin the career and reputation of the writer.

Broadly speaking plagiarism can be of three types:

Plagiarism of idea occurs when a plagiarist copies or steals the idea or thought of someone else and presents it as his/her own. The example of plagiarism of idea is presenting or documenting an idea of someone else which is being discussed or presented in any conference or seminar without citing proper sources. Plagiarism is defined as ‘to copy ideas and passages of text from someone else’s work and use them as if they were one’s own’. –The word plagiarism may further extend to unreferenced use of the ideas of others submitted as a ‘new’ paper by a different author! –The most vulnerable part for plagiarism in any research publication is ‘methods.

Plagiarism of text or direct plagiarism, i.e. word to word writing, is when a researcher takes large section of an article from

another source and pastes it in his/her own research without providing proper citation.

Hybrid varieties of plagiarism is Mosaic plagiarism where the author steals the idea, opinion, words, and phrases from different sources and merges words without acknowledging the original author.

Self-plagiarism is the practice of an author using portions of their previous writings on the same topic in their subsequent publications, without specifically citing it formally in quotes. Another form of plagiarism is self-plagiarism where author copy and paste from his/her previous publications including results, tables and figures without providing copyright clearance certificate from publishers. There is no consensus as to whether this is a misconduct or not. To be on the safer side, authors should cite source or give reference of their previous publications.

Types of Plagiarism: Sources Not Cited "The Photocopy": The writer copies significant portions of text straight from a single source, without alteration. "The Potluck Paper": The writer tries to disguise plagiarism by copying from several different sources, tweaking the sentences to make them fit together while retaining most of the original phrasing. Also known as "patch writing." "The Poor Disguise": Although the writer has retained the essential content of the source, he or she has altered the paper's appearance slightly by changing key words and phrases.

The Labor of Laziness: The writer takes the time to paraphrase most of the paper from other sources and make it all fit together, instead of spending the same effort on original work. "The Self-Stealer": The writer "borrows" generously or "recycles" from his or her previous work, violating policies concerning the expectation of originality adopted by most academic institutions. "The Forgotten Footnote": The writer mentions an author's name

for a source, but neglects to include specific information on the location of the material referenced. This often masks other forms of plagiarism by obscuring source locations.

The Misinformer: The writer provides inaccurate information regarding the sources, making it impossible to find them. "The Too-Perfect Paraphrase": The writer properly cites a source, but neglects to put in quotation marks text that has been copied word-for-word, or close to it. Although attributing the basic ideas to the source, the writer is falsely claiming original presentation and interpretation of the information.

The Perfect Crime": We all know the perfect crime doesn't exist. In this case, the writer properly quotes and cites sources in some places, but goes on to paraphrase other arguments from those sources without citation. This way, the writer tries to pass off the paraphrased material as his or her own analysis of the cited material. "The Resourceful Citer": The writer properly cites all sources, paraphrasing and using quotations appropriately.

The researchers involve themselves in plagiarism because of the fact that they lack in confidence in write-up, lack in basic research skills, does not have time to complete the assignment, and because of laziness could not publish more papers for promotions. When plagiarists are contacted, the usual replies may be:

- i) although my name is included but I have not written or reviewed the article
- ii) my junior drafted the manuscript and I just made few corrections
- iii) there are limited number of medical terminologies and word combinations. How these can be replaced or paraphrased? and
- iv) honestly, I was unaware of plagiarism checking.

“Students plagiarise the research work/paper/article/project/chapter in four main ways:

1. Stealing material from another source and passing it off as their own, e.g.
 - a) buying a paper from a research service, essay bank or term paper mill (either pre-written or specially written),
 - b) copying a whole paper from a source text without proper acknowledgement,
 - c) submitting another student’s work, with or without that student’s knowledge (e.g. by copying a computer disk).
2. Submitting a paper written by someone else (e.g. a peer or relative) and passing it off as their own.
3. Copying sections of material from one or more source texts, supplying proper documentation (including the full reference) but leaving out quotation marks, thus giving the impression that the material has been paraphrased rather than directly quoted.
4. Paraphrasing material from one or more source texts without supplying appropriate documentation”.

Culture of publish or perish is one of the important causes of plagiarism. The researcher needs to publish a large number of papers in limited time period to get more opportunities in career and research. In addition, lack of knowledge, laziness, and fear of failure and desire of getting recognition also lead to plagiarism. The author should run their manuscript through software meant for detection of plagiarism before submitting it to the journal.

The plagiarism can be prevented by creating awareness about plagiarism. Authors can avoid plagiarism by acknowledging

the original source of the idea or word and enclosing them within quotation marks.

How to Avoid Plagiarism: The best way to avoid plagiarism is to cite other's work always in the research articles, put the cited words in quotation marks, seek permission from appropriate authorities for references to cite tables, figures, etc. In case of paraphrasing, where the writer writes the text in his own word, authors must properly cite the original source and should also obtain permission for use of published illustration.

Duplicate publication: Duplicate publication or redundant publication is a publication of a paper that substantially overlaps with one which is already published, without clear, visible reference to the previous publication. As per copyright law and publication ethics, whatever is available in the journal for reading would be original unless there is a clear statement that the author and editor are intentionally republishing an article. Hence, duplication of publication is the breach in the copy-right law and against the ethical conduct.

It is very serious issue pertaining to ethical publications. Many times, it happens without the knowledge of co-authors or the group of researchers who published it in previous journal. More damaging of all kind of misconducts. It is called “wasteful publication”. It is damaging because of its economic implications for publishers, readers, libraries, and indexes. It can also affect the results of meta-analyses.

Major redundancy is always considered with evidence of deliberate duplication such as changes of title and data sheet with identical findings. Minor redundancy is something ‘salami publication’ types with looks of extended follow-up of previously published article. It may be, editor must contact corresponding author and ask explanation, if satisfied, do not take any action.

The COPE classifies duplicate publication into major and minor offenses. The major offense is the one where duplicate publication is based on the same data set and findings which are already published. It is also considered if there is evidence that the author tried to hide duplication by changing the title or order of authorship or by not referring previous publication. Minor or salami slicing is considered segmental publication or part publication of results or reanalysis derived from a single study. Authors do it to increase the number of publications and citations. It is considered unethical and it is taken in a bad taste because for a reader it may cause distortion in the conclusions drawn.

VI. Predatory Publication

It is the publication of an article in the journal that lacks the usual feature of editorial oversight, transparent policies, and operating procedure of legitimate peer review journals. Predatory journals exploit the authors by charging the publication fee and deceiving them by providing the false claim about the journal's impact factor, indexing, and peer review.

Predatory publishing is harmful for both the author and the community. Predatory publishing may tarnish the image of the author. Articles published in predatory journals are usually not appreciated by the subject expert. It can misinform the readers and propagate wrong science because of poor quality control.

Predatory publishing can be avoided by educating researchers, supervisors, and administrators about fake journals. Authors should also learn how to identify trustworthy journals.

Data fabrication and falsification: "Data fabrication means the researcher did not actually do the study but made-up data. Data falsification means the researcher did the experiment, but then changed some of the data. Both of these practices make

people distrust scientists. If the public is mistrustful of science, then it will be less willing to provide funding support”

Multiple submissions of a paper: “It is unethical to submit the same manuscript to more than one journal at the same time. This is also a waste of time for editors and peer reviewers and can give rise to prejudices at the reputation of journals if published in more than one”

Redundant publications (or ‘salami’ publications): “This means converting one paper from one meaningful paper into several different papers from the same experiment or study. This can be avoided by inappropriately breaking up data from a single experiment/study.

Improper author contribution or attribution: “All listed authors must have made a significant scientific contribution to the research in the manuscript and approved all its claims. Don’t forget to list everyone who made a significant scientific contribution”

Best Practices: One of the most important things to promote ethical publication is to encourage research integrity among medical researchers. COPE advocated for a research integrity officer in each of the research institution to monitor and guide various issues pertaining to research ethics including publication ethics. Research Institutions bear the primary responsibility for promoting a culture of good scientific conduct among researchers and students and for the prevention, investigation and punishment of scientific misconduct in their midst.

Publishers, Editors and Peer Reviewers: Editors ensures that reviewer is adequately qualified and can keep confidentiality and also protects the whistle blower in case of reports on

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publication misconduct. Journal editors must provide a link to WAME or COPE or ICMJE for authors, readers or reviewers to get first-hand information on ethics in publication. –Ethical publication also includes timely peer reviewing and publication of the manuscript which is the responsibility of editor and publisher. Editors is to remain cultural and gender sensitive on any article.

Prevention: Institution must have clear and transparent functioning on not only ethical research policy but also on ethical publications. A Strong peer-reviewing system. Uses of latest technological support. Strong publication ethics policies. Active monitoring, protection of whistle blowers. Cooperation between journals and research institutions or universities possibly prevent publication misconduct effectively.

To Summarise: Better education on publication guidelines and ethics. Introduction of registers for planned and ongoing clinical trials. Change criteria from quantity to quality when papers are used for assessment of posts or grants. Punish the culprits but be careful that innocent is not victimized.

General Ethical Principles: The researcher should follow these ethical principles to claim themselves as good researcher. These are: Respect /Autonomy for persons Individuals should be treated as autonomous agents Persons with diminished autonomy are entitled to protection (Vulnerable population) Meaningful informed and voluntary consent. Beneficence Maximizing benefits by promoting the well-being of subjects and society. Justice Persons bearing burden of research should receive appropriate benefits: subjects should not be placed at risk merely because of convenient access, their compromised position, or ability to be manipulated. Non-maleficence Minimizing harm / No harm to the participant.

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To do away with problem of violations of publication ethics the editors should ensure that the matter is appropriately pursued in the ways laid down for promoting research integrity. It may include retraction of manuscript, notification of employer, placing the author on a “watch list” & publication ban for specified time.

Another solution to this problem can be possible through collective efforts by authors, reviewers and editors. Editors need to be vigilant. Expert reviewers need to carefully look for potential breach of publication ethics and bring it to the notice of journal editors. Authors need to be educated and made aware of the problem. It is of paramount importance that they understand the boundaries of publication ethics. They must be made clear that the research work represents not only you but your co-authors, the funding body and your institution. Don't stigmatize yourself so that your career is at stack. The “instructions to authors” section of a journal should be very clear about the ethics and publication. Authors should be made clear that authorship is not just about credit but also for responsibility too. And importantly, due credit should be given to those who actually did the work. Moreover, workshops or symposia can be arranged by the journal editors by taking proper guidance and advice from COPE. And finally, by changing the criteria from quantity to quality for promotions or for academic achievements.

If these ethical guidelines are religiously followed by authors, it will help in decreasing the instances of violation of publication ethics with resultant increase in the credibility of publications and in overall confidence in the integrity of research.

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Chapter - 3

**RESEARCH AND PUBLICATION MISCONDUCT:
MISJOINDERS AND NONJOINDERS**

*Debasis Poddar**

“We must, however, not only make this general statement, but also apply it to the individual facts. For among statements about conduct those which are general apply more widely, but those which are particular are more genuine, since conduct has to do with individual case, and our statements must harmonize with the facts in these cases.”

- *Aristotle*.¹

I. Academic Integrity: Misdemeanour to Misconduct

Postcolonial legacy vis-à-vis procedural discourse in the delivery of criminal justice apart, a naïve quest of Shri Abdul Kalam, the then President of India: “*Why prisoners sentenced to death are the poorest of the poor?*”² remains relevant, albeit, with rhetoric. If taken into context, those eventually get lost for research and publication misconduct are often than not subalterns; hardly connected to ‘who’s who’ in knowledge profession. Such analogy unfolds the class-character of an otherwise unproblematic regime vis-à-vis normativity of academic integrity. This clarion call for a level-playing field for all alike is meant to euphemise- not to eulogize- the regulatory regime in a classified community; complacent with a

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¹ W. D. Ross (tr.), Aristotle, *Nicomachean Ethics*, Chapter 7. Available at: <https://socialsciences.mcmaster.ca/econ/ugcm/3ll3/aristotle/Ethics.pdf>

² Rajindar Sachar, Death be not proud, The Times of India (online edition), October 25, 2005. Available at: <https://timesofindia.indiatimes.com/edit-page/death-be-not-proud/articleshow/1274583.cms>

contemporary catchphrase, namely, rule of law. The author caveats that the punitive governmentality vis-à-vis subalterns for research and publication misconduct in the higher education institutions amounts to the travesty for an otherwise axiomatic rule-of-law genre. More than proceeding against the subalterns, research foci of the author but lie in the institutionalized governmentality to “discipline and punish”³ the subalterns alone while such misconduct appears omnipresent; no less above rank-and-file research and faculty cadre in higher education institutions. This forthcoming effort is a narrative of the misjoinders and the nonjoinders respectively; commonplace in everyday lifeworld. The power relations in higher education institutions often than not plays critical qualifier; thereby engages realpolitik for skewed construction of misconduct and its agency behind.

After a minute miscellany about academic misconduct, the author hereby scribbles an inventory of erratic practitioners; followed by reasonable classification on the basis of misdeed, followed by harm to academia: first, misjoinders, less relevant yet included to this proceeding, and next, nonjoinders, more relevant yet excluded from the same; whether or how far inclusion or exclusion may be incidental (mistake) or intentional (mischief) is a point apart. Also, there are larger conundrums, e.g., default or no-fault liability, harm potential and/or prospect, etc., to name a few- too few- among them, are set to get deliberated in forthcoming paragraphs. The author hereby engages a minute inquiry into the epistemology of academic integrity and explores the genesis of research and publication misconduct well within the given institutional system; besides fallibility of morbid and mortal knowledge practitioners who fall prey to systemic fault by

³ Vide Alan Sheridan (tr.), Michel Foucault, *Discipline and Punish: The Birth of the Prison* (1977). Available at: https://monoskop.org/images/4/43/Foucault_Michel_Discipline_and_Punish_The_Birth_of_the_Prison_1977_1995.pdf

default. The author resorts to civil procedure buzzwords to iconize the former as misjoinder and the latter as nonjoinder in course of its activist discourse.⁴ In the knowledge profession, while cause of action arises on the contentious issues vis-à-vis research and publication misconduct, the author usurps judicious robe to plead for exit and entry of stakeholders- misjoinders and nonjoinders respectively- and get the given cause of action adjudicated.

So far as misjoinders and nonjoinders are concerned, the same persona- say editor- may fall prey to the vigilance net without contribution while s/he may get rid of the net with contribution. The same jeopardy is applicable to every sundry persona, whoever is relevant to the net; such as author, editor, etc. The same persona- either author or editor- may be put to advantage somewhere and to disadvantage elsewhere under the same net. Consequently, role reversal of the same role model between misjoinder and nonjoinder appears commonplace to leave readership confused. The author hereby keeps confusion clarified with a caveat to facilitate readership not to identify one with single role model alone. For instance, there are cases where the same role player in the same role model- as either author or editor- may be held misjoinder somewhere and nonjoinder elsewhere. The problematic is posited with the possibility of plurality- mutual coexistence of holy and unholy alike- within the same personality; irrespective of otherwise role models played out by these personae; something relevant to everyday experiences and reflected in antiheroic characters of the ancient

⁴ **Court may strike out or add parties.**-- The Court may at any stage of the proceedings, either upon or without the application of either party, and on such terms as may appear to the Court to be just, order that the name of any party improperly joined (*misjoinder*), whether as plaintiff or defendant, be struck out, and that the name of any person who ought to have been joined (*nonjoinder*), whether as plaintiff or defendant, or whose presence before the Court may be necessary in order to enable the Court effectually and completely to adjudicate upon and settle all the questions involved in the suit, be added.

The Code of Civil Procedure, 1908; First Schedule, Order I, Rule 10(2).

mythology: *Bhishma*, *Dhritarashtra*, of the Orient and *Achilles*, *Hector*, of the Occident alike; besides females, e.g., *Draupadi*, *Helen*, etc., to name few among them. Unlike opposition, i.e., either black or white, truth and untruth often than not remain greyed, in apposition of black and white; in morbid and moral soul. A few- too few- engaged in knowledge practice can transcend the collage characteristic in course of research and publication discourse.

A case of misdemeanour ought to get dissociated from that of misconduct. While the former deserves summary procedure, followed by counselling vis-à-vis consequence in case of repetition, the latter deserves procedural recourse. Even in a case of misconduct, the first-timer and the habituated ought to get dissociated. While the first-timer deserves admonition, the mis-conductor- with indulgence in repetition, deserves name-n-shame; followed by apology to the discredit of misconduct. The habituated, however, deserves deterrence; subject to civilizational principles, e.g., due process of law, natural justice, proportionality of deterrence with delinquency, etc., followed by penance. In final count, ideation behind institutional integrity governance lies in parenting, more than policing, upon those engaged in course of research and publication discourse.

II. Conduct v. Misconduct: A Miscellany

The term ‘misconduct’ necessarily refers to an act of mischief, done with presence of mind, and not an act of mistake, done without presence of mind. Therefore, similar to the legal fiction vis-à-vis lifting the corporate veil, lifting the systemic veil ought to get graduated (read elevated) to *sine qua non* in course of institutional misconduct discourse to get sinner into the net. Also, misconduct has had its genesis into the systemic fallacy in a way or other: “*O mischief, thou are swift to enter in the*

*thoughts of desperate men.*⁵ Therefore, understanding misconduct ought to get hyperlinked to understanding fallacy in the given system of higher education institutions; also, of the larger public lifeworld. With a cue from the literary classic mentioned above, therefore, inquiry may get initiated with a quest: Where lies the source of desperation in such an otherwise wise profession? The author hereby engages deconstruction of *mala fide* mind behind the act of mischief. After commonplace malpractice, original sin often than not lies in overarching ambition to carry forward a competitive career through research and publication (read production) in fast-forward mode; something frequent in the everyday materialist lifeworld nowadays. The quest for truth as teleological end of the knowledge practice thereby stands subverted by tryst with untruth in the name of knowledge pursuit for research and publication. Consequently, with inflation of information, scepticism about both institutional integrity of the academia and individual integrity of its stakeholders experiences a spiral upsurge,⁶ in consonance with the capitalist realpolitik toward maximum work-hours by labour force for maximum production of goods- also services nowadays- to serve industrial revolution agenda of greatest happiness for the greatest number, after the then utilitarian morals;⁷ something revived in recent times with the neoliberal robe.⁸ Since time

⁵ William Shakespeare, *The Tragedy of Romeo and Juliet* (1597), Act 5, Scene 1. Available at: <https://www.folger.edu/explore/shakespeares-works/romeo-and-juliet/read/>

⁶ Editor's notes, *Avalanche of published academic articles could erode tryst in science*, Autonomous University of Barcelona, November 6, 2023. Available at: <https://phys.org/news/2023-11-avalanche-published-academic-articles-erode.html>

⁷ *Vide* Jeremy Bentham, *An Introduction to the Principles of Morals and Legislation* (1780). Chapter 1. Available at: <https://www.earlymoderntexts.com/assets/pdfs/bentham1780.pdf>

⁸ Narayana Murthy, "Youngsters should want to work 70 hours/week", Brut India, 2023. Available at: https://www.google.com/search?q=narayana+murthy+70+worurs+full+video&rlz=1C1NHLX_enIN869IN869&oq=narayana+murthy+70+worurs+full+video&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIJCAEQIRgKKGKABMgkIAhAhGAoYoAEyCQgDECEYChigAdIBCTEzOTA3ajFqNKgCALACAA&sourceid=chrome&ie=UTF-8#fpstate=ive&vld=cid:e2a7b73e,vid:F6DYiSaxdf8,st:0

immemorial, until globalization of industrial production culture by means of colonization worldwide, public debate vis-à-vis quality versus quantity was non-existent. In Greece, for instance, Homer authored two epics: *The Iliad* and *The Odyssey*. In India, Vyasa and Valmiki did only one each: *The Mahabharata* and *The Ramayana* respectively; initially as orature and not as literature. All four pieces survived several millennia and retained relevance as literary classics. With the passage of time, industrial productivity is institutionalized as mainstream normativity. With a piece or two, none of them could find career prospect in recent times; irrespective of research potential in respective epics and notwithstanding the credit getting apparent on the face of record. Here lies a fallacy vis-à-vis normativity of otherwise wise institutionalized knowledge profession in the contemporary lifeworld.

The author hereby draws a miscellany of intellectual misconduct in its nitty-gritty; before taking stock of its individual stakeholders, e.g., the misjoinders, who are irrelevant yet included into the narrative, and the nonjoinders, who are relevant yet excluded from the narrative. The following statement may get cited to illustrate institutional integrity:⁹

“If made aware of a credible allegation of such misconduct in any of our books or journals, MSU (Michigan State University) Press will refer the matter to MSU’s research integrity officer. If subsequent investigation substantiates the alleged misconduct, MSU Press will promptly take the appropriate steps to correct or remove the problematic content from its stock.

“If you believe that plagiarized, fraudulent, or unethical research has been published in one of our books or journals,

⁹ Michigan State University Press, *Policy on Research Misconduct* (ethics statement). Available at: <https://msupress.org/about/ethics-statement/>

please detail the reasons for your belief in an email to the press director, (contact person detail).”

While the institutional policy regime mentioned above pledges curative principles in cases of minor misrepresentation, the same has had punitive principles to extend deterrence against the malpractitioners; consequential to the proof of major misconduct. The reasonable classification between minor and major cases appears appropriate here:¹⁰

“For minor misrepresentations, we will issue an errata sheet. For books, the corrections will be made promptly in the e-books and in any subsequent printings. For journals, the errata notice will appear in the next print issue, and a corrected digital version will be available in the Project MUSE and JSTOR databases along with a statement about what has been corrected.”

“For major misconduct such as plagiarism or fabrication, we will pulp print editions of the publications containing the offending material and reissue corrected print and digital versions. Journal articles available via Project MUSE will include redaction notices explaining what has happened. Journal articles available via JSTOR will be darkened or removed, depending on the judgment of JSTOR’s content management team. The costs of retracting, correcting, reissuing, and labelling the publications in question will be charged to the individual found to have committed the misconduct. Volume or journal editors who failed to identify the problem may also be billed.”

While a minor case receives remedy by means of reparation of the given situation, in a major case, there are provisions to place liability upon those within the institution and the same is

¹⁰ *Supra*, n. 9.

inclusive of absolute or no-fault liability. Consequently, even an error out of mistake- not a guilt out of mischief- deserves penalty, not punishment, for those to suffer by means of payment through nose for the loss of reputation institution suffers out of credible allegations proved on merit. So far as guilt out of mischief is concerned, those involved in misconduct deserve punishment in technical sense of the term. Indeed, usage of pecuniary means with higher amount is put to place as commonplace penology. There is but a technical difference. In cases of its punitive usage, to award punishment, the amount may and does transcend the principle of proportionality; something justified by the logic of penology to import innuendo of deterrence to the public as conveyance of institutional governmentality vis-à-vis zero-tolerance toward academic malpractices. However, even in the worst case of misconduct, punitive amount ought not to transcend the threshold of carrying capacity for the middle-class under the disguise of deterrence.

The following classification is derived on the basis of systematic literature review in the relevant knowledge domain. The variants of misconduct most known are available in literature published meanwhile. The author claims no credit for mention of the same, yet makes mention for awareness of those scheduled to undertake research coursework; a primary target population of his chapter. This disclaimer- mentioned above- is meant to acquit the author from the potential allegation vis-à-vis misconduct for duplication or replication of information already available in online search engines; just a click away. The variants of misconduct least known remain inaccessible with online search engines. At the least, several variants remain beyond reach of rank and file public free-of-cost since access remains subjected to subscription and often than not beyond the affordability of the global commons; more so to readership in the global south. The author deserves credit to get variants of

misconduct collated and classified for convenience of readership.

Without claim, the contribution of this re-search lies in collation and classification of two groups: those with less liability, if any, yet caught by the vigilance net; and those with more liability, yet remain beyond the net. Besides, so far as variants of misconduct least known are concerned, there lies contribution of this re-search; albeit, without claim.

A. Misconduct Most Known

The following variants of an otherwise inclusive inventory offend academic ethics; unwarranted yet commonplace in course of research and publication discourse nowadays:

- a) Acknowledgement failure
- b) Coercion: overt or covert
- c) Compromise with investigation
- d) Conflict of interests
- e) Copyright infringement
- f) Corrections and retractions
- g) Duplication or replication
- h) Editorial misconduct
- i) Fabrication
- j) Falsification
- k) Ghost authorship or editorship
- l) Ideologue research and publication
- m) Manipulation in citation
- n) Misrepresentation
- o) Network or nexus for publication
- p) Noncompliance to due process
- q) Nonsense research and publication
- r) Nuisance research and publication

- s) Overlapping works
- t) Predatory practices
- u) Plagiarist practices
- v) Redundant research
- w) Salami publication
- x) Sponsored research and publication

No variant needs ideation since every variant: (a) reigns the everyday experiences,¹¹ (b) remain omnipresent in relevant literature available with online search engines to leave little or no scope to re-search (c) is available in variant-specific re-search works present in digital library database; sometimes inaccessible since the accessibility often than not remains subjected to subscription. So far as major variants are concerned, a rudimentary inventory is provided by SAGE.¹² Besides, all residual variants are available with online search engines in a way or other. Thus, details on the variants mentioned above are left to beginners in this profession vis-à-vis knowledge practice as coursework assignments. In final count, this effort is meant to handhold capacity-building the technical knowhow vis-à-vis research through coursework under the tutelage of their respective professors.

B. Misconduct Least Known

More-known ones apart, there are several less-known variants of academic misconduct. A few least-known specimens are picked by the author to provoke academic imagination of the learned readership; thereby engage public discussion- if not

¹¹ Refer to John M. Braxton and Alan E. Bayer, *Perceptions of Research Misconduct and an Analysis of Their Correlates*, The Journal of Higher Education, Vol. 65, No. 3, (May-June, 1994). Available at: https://www.jstor.org/stable/pdf/2943972.pdf?casa_token=qfg5WAjuDsAAAAA:l918FDwz-Ke_FZNiUIKZVpNivLR2tp2dmSgL2o10FeXW5JP7QI-3UAuDC5dzKpT4HONTF3Tq1ZKI8DWVbtNWnxbMdKJacgmA5x5SrbJA-JrBtoo8rKIGIA

¹² Refer to the types of publication misconduct, SAGE. Available at: <https://in.sagepub.com/en-in/sas/types-of-publication-misconduct>

debate- in time ahead. Whether or how far the following may be held misconduct raises a conundrum of choice:

C. Re-production of ideation with paraphrase

The practice is known to knowledge profession across the board and commonplace in practice. With differentiated diction to its credit, re-production of already published ideation elsewhere prevails in knowledge market without cynicism against reproduction of ideation with dissimilar expression since these clandestine practices cannot be caught by software meant to detect plagiarism by similarity of expression. Whether or how far re-production of ideation with recourse to paraphrase contributes to plagiarism, therefore, appears a moot point since paraphrasing claims discursive innocence by its own merit.¹³ The borderline between paraphrasing and plagiarizing, however, appears porous enough for erratic practitioners to indulge in transgression from within its scope of penetration. Both potential and limitation of this distinction are apparent in the following illustration:

¹³ It (paraphrase) means taking the words of another source and restating them, using your own vocabulary. In this way, you keep the meaning of the original text, but do not copy its exact wording. Available at: <https://integrity.mit.edu/handbook/academic-writing/avoiding-plagiarism-paraphrasing>

Table: 1 Academic Integrity at MIT¹⁴⁻¹⁵

Original	Plagiarism	Paraphrasing
<p>Because of their unique perspective, Americans fear globalization less than anyone else, and as a consequence they think about it less than anyone else. When Americans do think about globalization, they think of the global economy as an enlarged version of the American economy. (Source: Thurow, L. (1993). <i>Fortune Favors the Bold</i> (p. 6). New York: Harper Collins.)</p>	<p>According to Lester Thurow (1993) Americans fear globalization less than people from other countries and as a consequence spend less time thinking about it. Indeed, Americans see globalization as an enlarged version of their own economy. Why is this plagiarism? The writer has used Thurow's exact words without enclosing them in quotation marks. S/he has only substituted synonyms here and there. Even though Thurow is credited with a citation, this would be considered plagiarism.</p>	<p>Lester Thurow (1993) maintains that because Americans see globalization simply as a bigger form of their own economy, they are less concerned about it than is the rest of the world.</p> <p>Why is this acceptable? The writer has kept the meaning of the original passage without copying words or structure. Words like <i>globalization</i> and <i>Americans</i> are generic terms (i.e., terms that are commonly used for the concept they illustrate - it is difficult to find synonyms for them). Thus, you may use these words without placing them in quotation marks. (Complete Thurow reference appears in bibliography)</p>

¹⁴ *Ibid.*

¹⁵ For details, read Anna Babbi Klein (ed.), Patricia Brennecke, *Academic Integrity at MIT: A Handbook for Students* (2005), 2020. Available at: <https://integrity.mit.edu/sites/default/files/images/AcademicIntegrityHandbook2020-color.pdf>

While plagiarism indulges in re-production of the prior publication, paraphrasing engages circuitous re-production of the prior publication by smart means and methods of jugglery with the phraseology applied in earlier work; something much less apparent than plagiarism. At bottom, degree of difference in the similarity of expression apart, both run the re-production business vis-à-vis similarity of ideation. Thus, paraphrasing resembles the state in larger public sphere; functional as a 'necessary evil' by default.¹⁶ Indeed, paraphrasing deserves due credit for sustainability of the knowledge profession since not too many possess the potential to convey original (read unadulterated) thought toward fundamental contribution to the knowledge domain. Notwithstanding its utility, let the truth prevail as acknowledgement to the apparent axiom that paraphrase is meant to supplement plagiarism. In final count, both extend disservice to pursuit for knowledge since none of them is pregnant with potential to carry originality of ideation in its text or context anyway. The usage of verbose in the name of paraphrasing original expression may and does leave the very basic purpose of knowledge pursuit for ideation worsened. The technical distinction between verbose and vocabulary is left to learned readership. While the former is held inimical, the latter is upheld as incremental to valorise the text and its context. There are but rival schools to rebut valuation of the vocabulary, though.

¹⁶ Society in every state is a blessing, but government even in its best state is but a necessary evil; in its worst state an intolerable one; for when we suffer, or are exposed to the same miseries *by a government*, which we might expect in a country *without government*, our calamity is heightened by reflecting that we furnish the means by which we suffer. Government, like dress, is the badge of lost innocence; the palaces of kings are built on the ruins of the bowers of paradise. For were the impulses of conscience clear, uniform, and irresistibly obeyed, man would need no other lawgiver; but that not being the case, he finds it necessary to surrender up a part of his property to furnish means for the protection of the rest; and this he is induced to do by the same prudence which in every other case advises him out of two evils to choose the least.

Thomas Paine, *Common Sense* (1776). Available at:

<https://www.gutenberg.org/cache/epub/147/pg147-images.html>

E. From searching engine to engineering search

The network neutrality, often than not known as net neutrality, of otherwise wise enough search engines is contested by prior works since long back and hereby reiterated for rebuttal to the apparently apolitical character of all sundry search engines employed in course of research and publication discourse. More than basic usage of commonplace search engines for public awareness, technical usage of the search engines for re-search may and does subvert quest for truth since the same is subjected to systemic realpolitik; something either incidental or intentional, yet consequential to the credibility of truth either way. Relevant literature, published in the millennial year, called a spade a spade:¹⁷

“... Search engines raise not merely technical issues but also political ones. Our study of search engines suggests that they systematically exclude (in some cases by design and in some, accidentally) certain sites and certain types of sites in favour of others. We argue that such biases, which could lead to a narrowing of the Web’s functioning in society, run counter to the basic architecture of the Web as well as to the values and ideals that have fuelled widespread support for its growth and development.”

Compared to generic search engines for commoners, subject-specific search engines for scholars ought to serve the purpose of knowledge pursuit; thereby access appropriate literature free-of-cost, generated by authors in relevant disciplines and intended to share the same with re-searchers for citation, collaboration, debate, discussion, exchange, etc. These academic

¹⁷ Lucas D. Introna and Helen Nissenbaum, *Shaping the Web: Why the Politics of Search Engines Matter?* The Information Society, Vol. 16, Issue 3, 2000, excerpts from abstract, p. 169. Available at: <https://nissenbaum.tech.cornell.edu/papers/Shaping%20the%20Web.pdf>

search engines are meant to float knowledge portal; thereby facilitate peer re-searchers to avail public access to information and insight alike with more ease. Few such academic search engines are already familiar enough to knowledge profession, e.g., BASE, CORE, Google Scholar, Semantic Scholar, etc., to name few among them.¹⁸ Even otherwise, through recourse to technical means and methods, e-scavengers access relevant information and insight for knowledge pursuit with the generic search engines. By courtesy, lived experiences, seasoned priests of the knowledge profession possess technical knowhow to Google with wise wordplay; thereby access the relevant resources otherwise beyond reach of rank-and-file cadre engaged in the knowledge pursuit anyway. Thus, otherwise open-access search engines keep information inaccessible to commoners by knowledge password; something accessible to scholars by disciplinary wisdom alone. While descriptive input delivers default output about official information, institution, instrumentation, etc., reflective input delivers avantgarde output about creative inquiry, insight, introspection, etc. Behind smokescreen, what matters is the correlativity between input to and output from search engines to connect these means and the ends respectively. More than political issues, technical ones often than not cause roadblock for the netizens in the ordeal to avail otherwise open access to information *en route* information freeway in effect.

A larger paradox of the knowledge market but lies elsewhere. The global network of publication entrepreneurs, those incorporated, maintain subscription wall to prevent public access to literature, books and journals alike, priced beyond reach of readership. Thus, colonization of information unfolds knowledge exclusion; something equivalent to monopolization of knowledge under the disguise of copyright mark © with consequent departure from freedom of information in an

¹⁸ Available at: <https://paperpile.com/g/academic-search-engines/#faq>

otherwise proclaimed knowledge economy. There are but *pro bono* enterprises to maintain people's database and let public access to referenced *e-books* free-of-cost; otherwise priced by original publication enterprises and umpteen in count.¹⁹ With their guerilla presence for empowerment of commoners, the social enterprises play Prometheus to bring in knowledge to the societal grassroots. The crusade for public access to pirated copies of otherwise priced books ought to get construed as misconduct after the law. The learned readership is but left to a conundrum of choice: Who's misconduct? Is it the commercial enterprise out of corporate caprice toward private gain or the social enterprise out of commitment to commoners toward public good? "*The answer is blowin' in the wind,*"²⁰ thus voiced a choice of conundrum.

F. AI-powered app-abled posthuman research

In contemporary times, a miscellany vis-à-vis misconduct cannot be ended without characterization of the generative artificial intelligence (hereafter AI) and its contribution in course of research and publication discourse. Rather than replication of prior works vis-à-vis generative AI,²¹ the author intends to generate public discussion on the usage of generative AI, followed by public debate, e.g., whether and how far such AI handholds re-searchers improve text and its context within the given limits of academic integrity, where such usage transcends the threshold of research and publication ethics to fall prey to pitfalls of misconduct, etc., albeit, with the touchstone of values after public morality of the given time and space. Since time immemorial, public morality always remains subjected to the subjectivity vis-à-vis time and space of the cause of action concerned and here lies rationale behind reference from

¹⁹ For instance, Z-Library project. Available at: <https://z-lib.is/>

²⁰ For details, read Bob Dylan, *How many roads must a man walk down before you call him a man?* Available at: <https://www.bobdylan.com/songs/blowin-wind/>

²¹ Available at: <https://ai.google/discover/generativeai/>

Aristotle by means of the prefatory quote with his policy advocacy to engage the inquiry for ethics on specific case-to-case basis.

The world has invented the AI and, notwithstanding default parochial resistance out of static inertia, the same will ought to reign the world until it is replaced by more sophisticated knowledge; something in the offing with the progress of neurotechnology shortly. “*An invasion of armies can be resisted; an invasion of ideas cannot be resisted,*” thus wrote Hugo.²² Almost two decades after the anti-computer vigilantism by Left Front to prevent entry of computer to Kolkata during early-1980s, Chief Minister of the same Left Front run Government of West Bengal criticized the call for vigilantism.²³ Likewise, blanket ban on the usage of AI in knowledge profession ought to prove eccentric enough; thereby get set aside in time ahead as another Quixotic whim and fancy- if not fanaticism- and by means of intellectual reasoning, voiced by dissidence even against the ‘Creator’:²⁴

*“One fatal tree there stands, of Knowledge called,
Forbidden them to taste. Knowledge forbidden!
Suspicious, reasonless. Why should their Lord
Envy them that? can it be sin to know?
Can it be death? and do they only stand
By Ignorance? is that their happy state,
The proof of their obedience and their faith?”*

²² T. H. Joyce and Arthur Locker (ed.), Victor Hugo, *The History of a Crime: The Testimony of an Eye-Witness* (1852), e-book (2003), Chapter X, Available at: <https://www.gutenberg.org/files/10381/10381-h/10381-h.htm>

²³ Sumali Moitra, *Bengal CM calls anti-computer protest “foolish”*, TNN, April 26, 2004, 19:17 IST. Available at: <https://timesofindia.indiatimes.com/city/kolkata/bengal-cm-calls-anti-computer-protest-foolish/articleshow/640340.cms>

²⁴ Robert Vaughan (ed.), John Milton’s *Paradise Lost* (1667), Collier, New York, Book IV, p. 94. Available at: <https://ia800904.us.archive.org/35/items/miltonsparadisel00miltuoft/miltonsparadisel00miltuoft.pdf>

A similar illustration is available in recent times: “At some point, even calculators which were introduced in the 1980s were considered a threat to academic integrity.”²⁵ Likewise, initial response with resistance to change is irresistible out of a static inertia; by the inanimate and the animate alike. In an everchanging universe, after cosmic law of the nature, what appears constant is change and nothing else. Earlier the academia acknowledges the normative order is better for itself. The institutions experiment to cope with the scope of AI in knowledge profession and formulate the following hypotheses:²⁶

- AI makes knowledge easier to access
- Students are aware of the risks
- AI is the key to their future careers
- Concerns about equity and ethics

If validated, AI-savvy academia ought to get a prognostic roadmap for preparedness about the challenges ahead. Meanwhile, the Australian Universities Accord discussion paper highlights AI as a significant opportunity and challenge with the following wisdom:²⁷

“This is something we cannot ignore. And students want universities to actively engage with AI for their benefit.

“They do so knowing this is a “difficult time” for their teachers.

²⁵ Stephen Wilhite, Academic integrity and AI- Universities in a dilemma, Khaleej Times, June 7, 2023. Available at: <https://www.zawya.com/en/opinion/business-insights/academic-integrity-and-ai-universities-in-a-dilemma-omdxxcse>

²⁶ THE CONVERSATION: ‘Please do not assume the worst of us’: Students know AI is here and want unis (universities) to teach them how to use it, posted May 15, 2023, 9:05 pm BST. Available at: <https://theconversation.com/please-do-not-assume-the-worst-of-us-students-know-ai-is-here-to-stay-and-want-unis-to-teach-them-how-to-use-it-203426>

²⁷ *Ibid.*

“But they are worried about their futures and they want their education to prepare them for life after study, in a world that is changing rapidly.

“We need to work with students, industries, communities, and governments to figure out how we can help our students engage productively and responsibly with AI. This is urgent work as the pace of AI development accelerates and has wide-ranging impacts across society perhaps beyond its developers’ understanding.”

The official text of the Australian Universities Accord Discussion Paper explained the emergence of AI as part of a larger project for the academia; something foreseeable in an age of transformative technology. To quote from relevant paragraph of the paper:²⁸

“... artificial intelligence and automated complex systems are developing rapidly and are increasingly integrated into activities across every part of the economy including higher education. Changing technologies create new demands and possibilities for research, innovation and entrepreneurship, as well as new ways to design and deliver learning experiences and educational services, all bringing fresh challenges and opportunities for higher education providers.”

The world witnessed similar wisdom in Gandhi while he scribbled the following:²⁹

²⁸ Available at: <https://www.education.gov.au/australian-universities-accord/resources/australian-universities-accord-panel-discussion-paper>

²⁹ Read M. K. Gandhi, *No Culture Isolation for Me* (Young India, 1-6-1921, p. 170). Available at: <https://www.mkgandhi.org/momgandhi/chap90.htm>

“I do not want my house to be walled in all sides and my windows to be stuffed. I want the cultures of all lands to be blown about my house as freely as possible. But I refuse to be blown off my feet by any.”

In the wake of information revolution, therefore, prudence lies in the preparedness to mutation vis-à-vis institutional education and research alike. However, newer entrant ought not to blow hitherto cult of the institutional pedagogy off. Therefore, due diligence ought to get deployed by sentinels before the entry of AI to their respective institutions: For instance, the following checklist may be placed to get newer technology testified:³⁰

- What kind of AI is it?
- Does the AI enable something that would be difficult or impossible to achieve without it?
- What are the potential risks or drawbacks of deploying this technology?
- How equitably are the anticipated benefits and risks distributed across different groups of students and families?
- If you could wave a magic wand and change anything about this technology, what would it be?

Those cynical to hitherto AI-powered misconduct ought to ascertain preparedness to witness more unholy since something more unconventional is just awaiting to leave research and publication redefined. The technology of tomorrow appears in the offing:³¹

³⁰ Nabeel Gillani *et al*, *Unpacking the “Black Box” of AI in Education*, Educational Technology and Society, Vol. 26, No. 1 (January, 2023), p. 107. Available at: <https://www.jstor.org/stable/pdf/48707970.pdf>

³¹ Rafael Yuste *et al*, *It’s Time for Neuro-Rights*, Horizons: Journal of International Relations and Sustainable Development, WINTER 2021, No. 18, p. 154-155. Available at: <https://www.jstor.org/stable/pdf/48614119.pdf>

“Technological advancements are redefining human life and are transforming the role of humans in society. In particular, neurotechnology—or methods to record, interpret, or alter brain activity— has the potential to profoundly alter what it means to be human. The brain is not just another organ, but the one that generates all of our mental and cognitive activity. All of our thoughts, perceptions, imagination, memories, decisions, and emotions are generated by the orchestrated firing of neural circuits in our brains. For the first time in history, we are facing the real possibility of human thoughts being decoded or manipulated using technology.”

The crude crust of somewhat similar technology was portrayed by Ray long back; something invented by the scientist and weaponized by the authoritarian ruler afterward to brainwash dissidence; thereby leave contrary voices silenced. Thus sound his lyrics:³²

Ruler : You mean wash the brain?
Researcher : Absolutely. It's something that will make governance child's play! With the help of this, even in the absence of governance, things will go on superbly. This invention charms the brain.
Ruler : What sort of charm?
Researcher : Whatever you want to do. Whatever is your will.
Ruler : Well done! How long does this charm work?
Researcher : Forever, Your Highness. It cleans up all that is contrary and cleans the brain.

³² Satyajit Ray (dr.), *Hirak Rajar Deshe*, i.e., *In the Kingdom of Diamonds* (1980), Part 3. Available at: <https://www.youtube.com/watch?v=wnob9ZUxOdM>

The derivative deserves deliberation. While the people possess public sovereignty, individuals deserve private sovereignty for themselves, so far as autonomy of thoughts, perceptions, imagination, memories, decisions, emotions, etc. are concerned; something basic to human being for being human, yet vulnerable, in the wake of newer technology. Back to the knowledge governance, next-generation netizens are more tech-savvy than relatively dated citizens by default; albeit, rarest exceptions apart. So far as researchers and their supervisors are concerned, also applicable to pupils and their pedagogues, who are more capable to help whom raises a moot point nowadays. The stereotypical wisdom vis-à-vis age as a comparative advantage with the hitherto axiomatic edge of knowledge ought to witness the sunset in time ahead. The wisdom resembles a writing on the walls.

The author hereby pleads for more progressive institutional policy advocacy toward sustainable pedagogy in time ahead. The supervisor-centric research and mentor-centric methods suffer twice. First, those in the next-generation and placed at the receiving end possess better ability and agility vis-à-vis access to information. Thus, with the passage of time, supervisors and mentors turn institutionalized; thereby turn slow- if not static- to appreciate gradual progression happening around round-the-clock. Second, researchers and learners cannot connect the wisdom of earlier generations without lived experiences of the time-space foreign to their generation. Thus, reciprocal pedagogy -a newer genre- appears a desideratum and the same ought to prove a more worthy praxis in time ahead. It is time for supervisors and mentors to set aside their given hierarchy of position, power and privilege; thereby re-search and learn with next-generation researchers and learners as co-citizens; something non-negotiable for progression of both generations with time.

Does the AI possess potential to replace supervisors and mentors in time ahead? The inquiry has had answer either way. With the dominant genre of knowledge practice, i.e., dissemination of information, institutions of supervisorship and mentorship ought to wither away since the AI-powered appenable search engines do the job with less time and more energy than the human agency. With the dormant genre vis-à-vis dissemination of wisdom, however, these institutions possess potential to survive by their own merits since the constituency of wisdom is a creative combination of intelligence and integrity, something deliverable by the performance of human agency alone, till date, at the least.

Last yet not least, omnipresent systemic cynicism on the free-for-all state of affairs for researchers and learners deserves rebuttal. Indeed, a few- quite a few- of them avail unfair advantage of libertarian approach in favour of fair usage of the generative AI, etc. However, they ought to fall prey to their own fallibility, something to cost them dear:³³

“... If these men have defeated the
Law and outrun native punishment, though they can
Outstrip men, they have no wings to fly from God.”

Even in so-called modern world, while next-generation has hardly had faith, ‘God’³⁴ but retains omnipresence; in

³³ Barbara A. Mowat and Paul Werstine (ed.), William Shakespeare, *The Life of King Henry V* (1600), Act 4, Scene 1. Folger Shakespeare Library. Available at: https://folger-main-site-assets.s3.amazonaws.com/uploads/2022/11/henry-v_PDF_FolgerShakespeare.pdf

³⁴ Whatsoever we imagine, is finite. Therefore, there is no Idea, or conception of anything we call infinite. No man can have in his mind an Image of infinite magnitude; nor conceive infinite swiftness, infinite time, or infinite force, or infinite power. When we say anything is infinite, we signify only, that we are not able to conceive the ends, and bounds oi the thing named; having no Conception of the thing, but of our own inability. And, therefore, the name of God is used, not to make us conceive him (for he is incomprehensible; and his greatness, and power are unconceivable); but that we may honour him.

disguise, though. The AI-powered app-enabled search engine usurps the onus of 'God' amidst pandemonium to keep vigil on eternal human fallibilities nowadays. Thus, gross misuse of the AI by sophomore, even if the same is left unattended by institution with impunity, ought to cost the alumnus later; too dear to bear with. Even archaic AI-misuse can be caught by the AI-powered re-search engine itself in time ahead.

G. Market dominance: A publication misconduct

So far as publication misconduct is concerned, several commonplace variants find mention meanwhile; in the inclusive inventory (Paragraph 2.1. Misconduct Most Known). For instance, conflict of interests, copyright infringement, ghost authorship or editorship, ideologue research and publication, network or nexus publication, nonsense or nuisance research and publication, plagiarist practices, predatory practices, salami publication, sponsored research and publication, etc., are most known as misconduct. In final count, respective stake of the misconduct in research and in publication cannot get dissociated with exactitude. The number of available resources on whatever stated above is umpteen, with no need of repetition; something sufficient to constitute a commonplace misconduct in itself. All variants of publication misconduct, accessible to public access free-of-cost, are hereby left to those engaged in the coursework to carry forward studies in the same; at the best, taking cursory cue from this easementary essay. The author hereby explores a hitherto least-known variant of publication misconduct with recourse to systemic fraud. Also, the same constitutes a clear publication misconduct in technical sense of the term. The gross misuse of presence in the publication market with dominance, increasingly indulged in by few giant players, run by premier academic Inc., may and does

Hobbes's *Leviathan* (1651), Clarendon Press, Oxford (1909), Part I, Chapter 4, p. 23. Available at: https://files.libertyfund.org/files/869/0161_Bk.pdf

resemble so-called cartelization to the travesty of fair play, a competition law buzzword; something subversive to rule-of-law genre in the publication market. Thus, arbitrariness constitutes aberration in the freedom of publication to silence myriad authorial voices; thereby leave free-speech genre incarcerated. With limited participation, therefore, publication market remains devoid of plurality; with its teleological end subverted from within the system.

The cartelization-like misconduct in the publication market leaves a lasting impact upon the academic integrity of knowledge profession twice: (i) prejudicial impact and (ii) perceptual impact. Indeed, such a misconduct cannot fit into the classical definition of cartel in technical sense of the term.³⁵ However, the misconduct shares a semblance with the cartel in its nature and features; so far as gross misuse of presence of enterprise in the market with dominance is concerned.

The prejudicial impact turns functional by means of the larger-than-life impression vis-à-vis prospective author profile; whether and how far the author and/or the text may fit into the framework agenda of its context; for instance, political, economic, societal, entrepreneurship policy context, and the like. Since giant enterprises are often than not adhered to their respective policy framework, authors fitting into the policy framework of none thereby get lost as outcast in an otherwise free market for publication of research. Indeed, the given construction of cartel-like misconduct looks like somewhat overthought. At bottom, parochialism leaves the lapse in good faith about whatever sounds unfamiliar to the institutions concerned; something contrary to the prospect of free-market economy.

³⁵ In this Act, unless the context otherwise requires,-
“cartel” includes an association of producers, sellers, distributors, traders or service providers who, by agreement amongst themselves, limit, control, or attempt to control the production, distribution, sale or price of, or trade in goods or provision in services.
The Competition Act, 2002, section 2(c).

The readership is thereby left with conventional literature, flooded by giant enterprises with market dominance; followed by absence of unconventional literature with plurality to the credit of discursive diversity in an otherwise free-market economy. Also, censor, contempt, defamation, etc., often than not get played out to silence voices of difference sans deference to the diversity a free-market knowledge economy is otherwise meant for. Misuse of dominance even in good faith, therefore, constitutes a publication misconduct.

The perceptual impact is often than not consequential to the prejudicial chronicles; with recurring effect on the authorial apathy vis-à-vis prospect for publication of research in time ahead. Thus, institutional parochialism of giant enterprises Inc. toward the text- unfit to their respective policy context- prompts gestation of cynicism amongst authors about corporate governmentality out of strong presence in the market with dominance. Consequently, next-generation authorial apathy indulges in negation out of anticipation about the publication of research in giant enterprises, known for inbuilt parochialism toward avantgarde literature; thereby excludes them from otherwise inclusive inventory of potential players available for publication of avantgarde literature. Such a perception is the culmination of a construction; carefully crafted by the corporate governmentality to avoid the void of prejudice against plurality and here lies the genesis of misconduct.

A disclaimer appears due to readership as proviso to the publication misconduct mentioned above. With the given average of publication standards across the board, lesser read the better and not read the best, misuse of dominance ought not to get cited with *mala fide* intent to misuse the misuse of dominance as publication misconduct; thereby guard mediocrity vis-à-vis research to publish sense. The unsustainable excuse vis-à-vis misuse of dominance with *mala fide* intent to guard omnipresent

mediocrity constitutes another misconduct; something commonplace nowadays. The cause of action vis-à-vis misuse of presence in the publication market with dominance, therefore, ought to possess proof of potential beyond reasonable doubt to credit the text to be published; without extraneous context, e.g., legacy, network, profile, etc., to name few among them. The research works, published by few giant enterprises, often than not belong to those with personal or professional connects to relevant enterprises where works are published; something elevated to newer normalcy with the passage of time. The author hereby pleads for non-discrimination as a public policy to entertain those without prior connects alike.

III. Joinders in the Institutional Misconduct Proceeding

Since time immemorial, law and morality share mutual overlap at regular intervals and cannot get dissociated at ease. The number-count, therefore, appears umpteen; since so-called trial of Jesus Christ. Also, by myriad means, morality reigns juridical studies with poles-apart variants around, e.g., customary morality,³⁶ constitutional morality,³⁷ political morality,³⁸ etc., to name few among them. Likewise, a misconduct proceeding to remedy the research and publication misconduct constitutes no exception to this end; thereby imports academic morality as a relatively newer genre in the study of axiology. In course of procedural discourse, however, some are joined by mistake, if not mischief, for liability vis-à-vis research and publication misconduct while they share lesser stake than others. There are occasions of overlap; so far as quantum of

³⁶ For details, read Benjamin N. Cardozo, *The Nature of the Judicial Process*, Yale University Press (1921), Lecture III.

³⁷ For details, read Z. H. Lari, *Constituent Assembly Debates*, Vol. VII, Monday, the 8th November, 1948.

³⁸ For details, read Ronald Dworkin, *Taking Rights Seriously*, Harvard University Press (1977), Chapter 3.

the stake is concerned. The following inventory, inclusive though, is meant to discover the defaulters in disguise:

A. Misjoinders least known

The initial glimpse upon misdemeanour apart, the forthcoming paragraphs are meant to grapple with misconduct. The authors and the editors frequent clandestine practices hardly worthy to suit either the knowledge profession or its practitioners. For instance, a timid contribution for the publication project getting hurried, with research potential of the author getting buried, is a classic case of research and publication misdemeanour; whether and how far this contribution has had relevancy for a cause of action as a case of misdemeanour to proceed with is but a point apart and left to the learned readership as final institution of arbitration in the knowledge world. Likewise, editorial enterprise to put undue pressure either on author or on co-editor to fast-forward publication project constitutes misdemeanour; if not misconduct; something inimical to academic integrity. The cliché of authorial and editorial misdeeds- both misdemeanour and misconduct taken together- reflects tip of the iceberg. The lions' share- accomplished and/or abetted by the following knowledge market players remains beyond the reach of public sight; even hindsight; thereby continues to cause systemic subversion to the knowledge world.

In course of the everyday lifeworld, as frontrunners in pursuit of newer knowledge, author and editor suffer worst brunt in the disciplinary proceedings against misconduct; to such extent that they are labelled by default as players who indulge in misconduct. The author intends not to pardon them from proceedings but to rebut public perception with addendum that there are other lesser-known players to prompt frontrunners indulge in misconduct yet remain beyond reach. The following two players deserve deliberation:

B. Publisher

With enterprising intent to achieve market success, publishers often than not tutor author and editor get manuscript prepared for publication the way entrepreneurs prefer to publish in pursuit of revenue; more than and/or even rather than reputation; something offensive to the cause of sustainable knowledge pursuit. Authors and/or editors fall prey to the pitfall; thereby learn the inhouse governmentality indulge in tailored production to comply with whim and fancy of the publishing household. Thus, claim for originality of ideation behind manuscript is thereby reduced to nought. The production, therefore, is devoid of intellectual property and propriety alike; thereby serves commercial cause of the enterprise alone. Even without persuasion, author and editor succumb to corporate whim and fancy on their own; thereby prepare manuscript to be published by the brand.

While getting shortlisted, the enterprise Inc. places priority on context of the text, e.g., legacy, network, profile, etc., of the authors. Consequently, otherwise wise authors and editors without favourite features, for instance, educational background in premier institutions of the global heavens, end the ordeal unpublished by the enterprise; though, rare exceptions apart. Also, ideation apart, contents stand subjected to ideology check. Besides, citation of the parochial academic oligarchy is believed instrumental to bring in better fortune; albeit arguably. All these are but research hypotheses; therefore, subject to corroboration by evidence, proof, etc.; with the ethnographic inquiries in time ahead.

So-called *jagaad* apart, academia is by and large informed of who-is-who around, those next to premier counterparts in the hierarchy are well-known to the public at large for lesser

mischievous and more fair-play; so far as intensity and frequency of malpractices in global knowledge economy are concerned. While the barefoot enterprises do fair-play, myriads are but ill-known for gross compromise with quality-check; so far as credibility of their manuscripts- shortlisted by otherwise wise barefoot enterprises- are concerned.

Few least-known routes are few clicks away to set aside gradual institutionalization of the newer knowledge. With prior informed consent, faculty research may be published online with ISBN/ISSN by higher education institutions for public access free-of-cost. Without financial implication on either side, upload of individual research by institution is meant to set newer knowledge free from encumbrances anyway. Those independent of institutional affiliation may self-publish research by means of upload with private blog. Publication does not necessarily mean one with presence in the brand citation database and/or one with international standard number but one with impact potential to its credit.

C. Sponsor

In cases of sponsored project, with prior provision for financial support vis-à-vis publication of the report by investigator(s), manuscript of the report appears often than not manufactured to earn pleasure of the sponsor. At the least, report is carefully drafted (read crafted) not to earn displeasure of the sponsor even if the same yields untruth. Thus, unscrupulous practices are employed to doctor the report by myriad means and methods to reach the result; as required by the sponsor to serve prescribed purpose. Thus, odious issues and challenges involved in research foci of the sponsored report with intent to find fault-lines with the given state of affairs remain proscribed by “the rules of the game”;³⁹ negotiated neither by

³⁹ By courtesy, Jean Renoir, *The Rules of the Game* (1939).

written nor by oral exchange, though. Thus, purpose of sponsorship for progressive development suffers subversion by misconduct from within the system. Since reciprocal appeasement- *quid pro quo*- continues to corrupt the public lifeworld, be the sponsor private or “the State”,⁴⁰ independent research report with documentation of systemic fault-lines ought to carry consequences, e.g., report getting lost to oblivion, non-approval of proposal for sponsored project to the same team getting new normal, etc. On the contrary, an all’s-well report ends well, with win-win for either team; followed by the fortune of further job prospect by getting proposals with higher budget approved in time ahead. While technical reasoning behind failure of natural science R&D project are plenty,⁴¹ reasoning behind failure of otherwise successful social science project lies in miscarriage of inquiry with *mala fide* intent to get its result manipulated by default. Accordingly, methodology is set to get research methods mutated with technical means to reach the result so required by the sponsor, by hook or by crook, at the cost of inquiry.

So far as research and publication is concerned, relevancy of the sponsor lies here that quest for truth is the teleological end of research; something ought to be published for enlightenment of the commons *en masse*, to serve larger public good in time ahead. The publication of report with lie, even if the lie is a white lie, constitutes public fraud and more so if the publication is

⁴⁰ *Vide* Article 12, read with Article 36, of the Constitution of India, 1950.

⁴¹ Projects are aimed at a successful outcome; however, in reality only few projects are successful. Why is it so? This question has been a cause of concern. Studies have been carried out and the reasons influencing the success or failure of a project have also been found to vary, as some are within the organization and others are external and many of these factors are also contextual.

D. S. Nagesh and Sam Thomas, Success factors of public funded R&D projects, *Current Science*, Vol. 108, No. 3 (10 February 2015), p. 357. Available at: https://www.jstor.org/stable/pdf/24216562.pdf?casa_token=46iIGpWZAWYAAAAA:cNjM0rnK5UWnf3YfpJUS3fLVGpIcLtncDZJXBxh1orqy28PXrUUJiwty9QOnQOpF78jQOIgQu8JeHapiZxupgXERMi5iVzscuQpc_rw26wDYb1Id4_

sponsored by public exchequer; something hard-earned by the public and collected by state institutions through the laws of taxation as revenue. In case of public fraud by corporate-sponsored research, consequences may culminate into larger public fraud since there is higher likelihood that the lie is a black lie; tailored to maximize private gain at the cost of public good; albeit, responsible corporates apart.

D. Nonjoinders least known

While the publisher and the sponsor remain least-known misjoinders, both are but most-known nonjoinders in proceedings vis-à-vis research and publication misconduct. The publisher and the sponsor are often than not appurtenant to most-known misjoinders, the author and the editor who suffer first and worst brunt on the charge of misconduct; thereby suffer afterwards. The following but remain least-known nonjoinders by default:

E. Employer

A juristic persona, the employer itself remains least-known joinder since the same has had safeguard behind so-called institutional veil; similar to so-called corporate veil, under the given jurisprudence of company law. The liability of employer in proceedings are but apparent on the face of record since, in circuitous routes, normative proposition for career prospect, set by the employer, causes abetment to indulge in the malpractices, yet remain beyond cognizance in disciplinary proceeding; more so since the employer itself brings in the cause of action and conducts the proceeding while its own liability remains beyond cognizance. Since the employer may be made a party to the proceeding by means of creative construction of the metanarrative, *A person (even juristic person) ought not to be judge in his own cause, because he cannot act both as judge and party;*

after the axiomatic natural justice rule.⁴² Inhouse proceedings for academic misconduct, therefore, ought to fall short of legitimacy; something consequential to natural justice.

Impunity of the employer on the count of its liability in quasi-judicial proceedings out of its apparent contribution to the misconduct, therefore, remains unsettled question of the law. If the law is meant to regulate the conduct of its subject as a social institution, liability arises while operation of such institutional law culminates into the misconduct. The core crisis lies in the blind adherence to the model of higher education institutions in the North-West where research and publication are upheld as non-negotiable criteria for exclusive means of career prospect; something irrelevant to the conventional model of higher education institutions in India.

The higher education institutions in India spearhead poles-apart agenda to educate the people *en masse*; thereby insist upon largescale empowerment by means of education. The authority houses a huge cohort to convert the higher education institution here into another place of public education; something contrary to the higher education philosophy of the Occident. After universal rights regime, access to school education alone is upheld as a human right. Since right to education is extended to higher education, institutions ought to do away with the cliché of research and publication model for career prospect in the academia; otherwise, commonplace abroad. The higher education institutions here deserve diversified standards for career prospect. For instance, let the pedagogue grow the way s/he delivers to classrooms. Likewise, let the proctor grow the way s/he delivers to halls of

⁴² *Aliquis non debet esse iudex in propria causa, quia non potest esse iudex et pars.*

Black's Law Dictionary (8th ed. 2004), APPENDIX B, p. 5260.

Available at: <https://lawyersofpakistan.com/wp-content/uploads/Black's-Law-Dictionary-8th-Edition.pdf>

residence. Let all others grow the way they deliver to institutional lifeworld: by means of consultancy, project, database management, human resource management, public relations network, etc., to name few among them. The sacrosanctity of research and publication for progression is meant for enlightenment model followed abroad and not for employment model followed here. The parallel standards ought to motivate all deliver their respective tributaries toward merger of individual and institutional interests. Thus, rush for research and publication by all ought to get reduced; followed by the fall in the number of cases vis-à-vis misconduct by those unable to progress career otherwise.

In final count, institution is meant to serve public interest and parallel standards for progression of all members of the faculty alike is meant to serve institutional interest; consequential to larger public interest for universal peace. After ancient Indian wisdom:⁴³

*“om sarve bhavantu sukhinah
sarve santu niramayah
sarve bhadrani pasyantu
ma kascid duhkha bhagbhaver
om santih santih santih”*

[Let all be happy, let all be free from debilitation, let all see goodness, let there be no victims of sorrow]

The given proposition for parallel standards for progression appears in consonance with present position of the regulatory regime in higher education governance vis-à-vis Professor of Practice; thereby engage seasoned professional in the academic lifeworld:⁴⁴

⁴³ This shanti mantra is from *Brihadaranyaka Upanishad*. Available at: <https://shlokam.org/sarvebhavantusukhinah/>

⁴⁴ (UGC) Guidelines for Engaging Professor of Practice in Universities and Colleges. Available at: https://www.ugc.gov.in/pdfnews/3659158_Guideline-for-engaging-Professor-of-Practice-in-Universities-and-Colleges.pdf

... the UGC has taken a new initiative to bring the industry and other professional expertise into the academic institutions through a new category of positions called “Professor of Practice”.

If professionals with graduate degrees are eligible to join as Professors of Practice, then the members of faculty with higher degrees have had reasonable expectations to get incentivized by parallel standards; something *sine qua non* toward social justice. As it is elsewhere, inclusivity in career prospect appears imperative for workspace justice. Thus, in the absence of desperation by members of faculty, abled with diversified deliverables, institutions ought to witness research and publication misconduct with lesser intensity and frequency in time ahead. Also, this policy advocacy is meant to plead for plurality. Thus, all diversified deliverables taken together, let the institutions bloom into fruition.

F. Regulator

The regulatory regimes in higher education of India by the respective agencies are meant to ascertain functional uniformity in good governance practices across the board and statutory purposes are by and large served by all these agencies for several decades. At the same time, run by bureaucracy, agencies struggle with academic and professional malpractices since they are devoid of insight upon academic best practices worldwide. Consequently, parables of good conduct- meant for all sundry institutions- ought to suffer setback since institutions are poles-apart with respective institutional realpolitik behind. What works in one region may not work elsewhere. Even, what works in one institution may not work elsewhere in the same region since every sundry institution is endowed with features of its own. Here lies a roadblock for higher education governance in India; so far as research and publication misconduct is

concerned. With their given ingenuity, knowledge practitioners (read malpractitioners) always run miles ahead of the regulator to comparative advantage; something often than not relevant to criminals and sentinels. The jurisdiction, therefore, may be left to wisdom of the higher education institutions; so far as misconduct is concerned. The institutional proceedings vis-à-vis misconduct ought to be inclusive enough; with the presence of external members and observers. Also, presence of outsiders with prior connect to insiders placed in high offices needs check since the same shakes the very integrity of such proceeding vis-à-vis academic integrity. “Justice should not only be done, but should manifestly and undoubtedly be seen to be done”,⁴⁵⁻⁴⁶ centenarian pronouncement is elevated to aphorism for the rule against bias nowadays. Also, regulatory intervention is required to conduct such proceedings as public proceedings and get the same subjected to all natural justice principles with the presence of independent experts not otherwise employed in or engaged with the institution anyway.

The regulatory agency for higher education- more so for general education- ought to act like parents; rather than police. The regulatory regime here, however, plays both; with space for improvement in parenting and in policing alike. First, with its parentage, the regulatory agency ought to keep track of major variants of misconduct; something hardly visible in its official literature so far.⁴⁷ A valid defence of the regulator, however, lies in timely intervention with standard regulations on promotion of academic integrity⁴⁸ followed by inclusion of a two-credit course, named “Research and Publication Ethics”, for awareness about publication ethics and publication

⁴⁵ Lord Hewart, in *R. v. Sussex Justices, Ex parte McCarthy* [1924], King’s Bench Division, UK.

⁴⁶ The Bangalore Principles of Judicial Conduct, 2006; paragraph 3.2.

⁴⁷ Refer to the inventory of misconduct most known, mentioned above; paragraph 2.1.

⁴⁸ Read University Grants Commission (Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutions) Regulations, 2018; paragraph 5. Available at: https://www.ugc.gov.in/pdfnews/7771545_academic-integrity-Regulation2018.pdf

misconduct for the coursework, a one-semester course for beginners in the Ph.D. programme.⁴⁹ In the relevant module, few-too few- major variants apart, e.g., falsification-fabrication-plagiarism (FFP) etc., ghost/inappropriate authorship/editorship, conflict of interest, etc., the lion's share is left unattended by the recommended syllabus.⁵⁰ While there are enterprises to carry forward this modest academic integrity movement, like this effort scribbled with such agendum, the same remains rare exception- rather than routine- and here lies failure of the regime since this parental enterprise is yet to make institutions matured; thereby carry forward this movement on their own. Next, in its policing spirit for prevention of plagiarism;⁵¹ regulations are vitiated by few avoidable voids: (i) provisions for curbing plagiarism are prepared by an otherwise unwise assumption that plagiarism constitutes the only major variant of commonplace publication misconduct. (ii) Plagiarism can be detected by means of quantification of apparent similarity, traceable by means of software. (iii) Plagiarism can be prevented by means of policing the academia. The following are meant to extend responses to all these premises: (i) Plagiarism is one and not the only variant of major publication misconduct. There are but others; mentioned in paragraph 2.1 of this effort. (ii) Software is meant to detect similarity of expression and not similarity of ideation. More than similarity of expression, similarity of ideation but leaves larger adverse impact upon academic integrity; thereby reduces academic impact to *de minimis*; if not nought. (iii) While prevention is the expression in the title of the regulations, intention behind text in the regulations is not preventive but curative.⁵² Also, in the absence of provision vis-à-vis opportunity to be heard, something fundamental to procedural

⁴⁹ University Grants Commission D.O.No.F.1-1/2018(Journal/CARE), December 2019. Available at: <https://geography.du.ac.in/userfiles/downloads/Research-and-Publication-Ethics-UGC-2020.pdf>

⁵⁰ *Ibid.*, RPE05: Publication Misconduct.

⁵¹ *Supra*, n. 48, paragraph 6.

⁵² *Id.*

due process,⁵³ unconstitutionality of the impugned delegated legislation is apparent. Another persistent caveat on legitimacy of the law against plagiarism- a moral compromise- lies in immorality behind moral policing; something endorsed by Apex Court;⁵⁴ in poles-apart context, though.

Last yet not least, in the regulations, there is no scope for reasonable classification between the incidental first-timer, with absence of mind, and the habitual offender, with presence of mind. Thus, penal process treats these two otherwise class-apart personae and their cases alike; with corollary consequences not appreciable by penology anyway. Also, the regulator leaves vacuum to the institutions; something inimical to uniformity in the delivery of justice by all institutions across the board. The quasi-judicial character of inhouse proceedings requires natural justice rules to be followed without miscarriage of procedural justice; thereby reserves the same beyond judicial discourse. The cynicism vis-à-vis miscarriage of substantive justice but reigns its omnipresence upon a likelihood of the inquiry by inhouse tribunal getting reduced to the proceeding by kangaroo court.

IV. Desideratum: Re-search on the Recovery of Research

In lieu of conclusion, desideratum deserves deliberation with the spirit of research on the epistemology of intellectual technology toward scientific inquiry; named research. After preceding paragraphs, policing- if any- ought not to be

⁵³ Opportunity to be heard. The chance to appear in a court or other tribunal and present evidence and argument before being deprived of a right by governmental authority. The opportunity to be heard is a fundamental requirement of procedural due process. *Supra*, n. 42, p. 3469.

⁵⁴ "Even police officers are not required to do moral policing". *CISF and Others v. Santosh Kumar Pandey*, Civil Appeal No. 8671 of 2015, December 16, 2022, paragraph 18. Available at: https://main.sci.gov.in/supremecourt/2015/18980/18980_2015_8_1501_40636_Judgment_16-Dec-2022.pdf

engaged with default intent to “discipline and punish”⁵⁵ researchers for publication misconduct since a moot point- who should discipline whom- pops up a conundrum of choice before learned readership. While individual players- author, coauthor, editor, co-editor, etc.- are named misjoinders, institutional players- publisher, sponsor, employer, regulator, etc.- are but nonjoinders yet no less liable for the malpractices- known as research and publication misconduct. The paradox lies here that nonjoinders usurp judicious robe to “discipline and punish” misjoinders while the former (read institutions) indulge in construction of the ecosystem where the latter (read individuals) fall prey to careerist caprice; thereby resort to research and publication misconduct as subaltern cadre in the research and publication market; thereby pay the price of their ignorance dear; with ignominy. While both individuals and institutions severally share their respective contribution to misconduct, no party has had *locus standi* to preach the parable of good conduct, “*papa don’t preach*”,⁵⁶ but to get introspection initiated and correct their respective course; thereby recover good faith- followed by good conduct- for better market. Even with its parental role, the regulator ought not to usurp moral police; thereby regulate the freedom of research and publication.

In recent times, with its adherence to the best practices in research and publication worldwide, the regulator brings in a paradigm shift: from misconduct to good conduct;⁵⁷ something constructive to transcend the spiral effect of research and publication evils; thereby focus upon the epistemology of inquiry in quest of truth as a teleological end:⁵⁸

⁵⁵ By courtesy, Alan Sheridan (tr.), Michel Foucault, *Discipline and Punish: The Birth of the Prison* (1977).

⁵⁶ Madonna, “*Papa don’t preach*”, in True Blue (1986). Available at: <https://genius.com/Madonna-papa-dont-preach-lyrics>

⁵⁷ Patwardhan B. *et al*, Guidance Report: Good Academic Research Practices, University Grants Commission, New Delhi, 2020. Available at: https://www.ugc.gov.in/e-book/UGC_GARP_2020_Good%20Academic%20Research%20Practices.pdf

⁵⁸ *Ibid*, p. 8.

“Public trust in research and its output is essential for a healthy modern society. Although the research enterprise is self-correcting, this self-regulation occasionally needs help. Over the years, research institutions, professional societies, and governments have established several protocols, codes of conduct, norms, and principles to enhance that trust in research institutions, funders, producers, publishers, and products.”

Also, the credibility due to institutional research and institution of research alike, the regulator hereby acknowledges few axiomatic values of axiology involved therein:⁵⁹

- Ethics
- Rigour
- Relevance
- Transparency
- Respect
- Impartiality
- Independence
- Accountability

The omnipresence of research integrity is reiterated by resolution of the regulator: “*Integrity in research implies that these values permeate every aspect and are upheld by all involved in the research enterprise*”.⁶⁰ Therefore, misjoinders and nonjoinders alike, both are building blocks of research and publication in the inclusive knowledge market:⁶¹

⁵⁹ *Ibid*, p. 14.

⁶⁰ *Id.*

⁶¹ Committee on Publication Ethics (COPE), *Guidelines on Good Publication Practice*, p. 43. Available at: <https://publicationethics.org/files/u7141/1999pdf13.pdf>

“We thought it essential to attempt to define best practice in the ethics of scientific publishing. These guidelines should be useful for authors, editors, editorial board members, readers, owners of journals, and publishers.”

Without apparent stake by means of contribution to knowledge, learned readership constitutes a nonjoinder by means of consumption of knowledge; whether and how far the readership may be construed as consumer of knowledge is a point apart and subject to altogether different discourse. Since learned readership constitutes target population, informed public choice by reception or rejection *en masse* has had potential to incentivize good practices; thereby influence the research and publication market in a way or other. The loss of credibility to learned readership out of misconduct in knowledge profession ought to leave vacuum- if not void- followed by corollary consequences, for instance, research may remain unread by disillusionment of the readership; something sufficient to exile individual misjoinders from the publication market on the assumption of fraud to their discredit. While individual frontrunners are caught, backgrounder institutions ought to be caught as corollary consequence since the former function in the ecosystem run by the latter. Thus, nonjoinder institutions cannot plead innocence for misconduct *prima facie* played out by misjoinder individuals. Since all players- taken together- run the publication market, all are jointly and severally liable for the market distortion done.

While both the misjoinders and the nonjoinders are liable in a way or other, less or more is a point apart, nonjoinder institutions run quasi-judicial proceedings to ascertain whether and how far individual misjoinders fall prey to the systemic fallibility; followed by the verdict of nonjoinders to voice oracle vis-à-vis liability and penalty of misjoinders caught by

the systemic fault. While nonjoinder institutions also possess liability, who has had locus standi to judge whom, remains a moot point to debate. In the given state of affairs, more than getting judgmental to other, self-introspection appears desideratum for all sundry players toward revival of their credibility to learned readership; followed by restoration of the credibility of knowledge profession and productivity to the market. The void of nonjoinder institutions vis-à-vis seat of adjudication as *personae non grata* but cannot be construed as the passport in favour of individual misjoinders to indulge in free-for-all in the disguise of knowledge production; something commonplace nowadays. After lived experience in the everyday lifeworld, not all individuals are misjoinders. Few, quite-a-few, deserve proceedings for misconduct apparent on the face of record and done with the presence of guilty mind and with intensity and frequency beyond the threshold of academic integrity. Despite respective stake behind the given ecosystem, the employer and the regulator cannot afford to allow cases of gross misconduct occur with impunity. The cases of misconduct, however, deserves judicious cognizance on case-to-case basis; after the Aristotelian policy advocacy; something cited at the beginning of this chapter.⁶² Besides adjudication of gross misconduct on case-to-case basis, however, the author is in pursuit of policy advocacy vis-à-vis academic integrity to plead nonjoinder institutions continue introspection for more prudent research and publication ethics in time ahead.

At the same time, however, nonjoinder institutions ought to learn policy jurisprudence toward good governance in knowledge practice; thereby avoid the void of misconduct. Instead, better governance lies in prevention of misconduct on one side and promotion of good conduct on the other. The adherence to global best practices appears a takeaway to bring in progressive development for the institutional lifeworld. All institutions owe

⁶² *Supra*, n. 1.

non-negotiable integrity to evoke academic integrity for all individuals across the board.

A metanarrative behind research and publication misconduct lies elsewhere. Since s/he is placed in frontline of the knowledge market, individual fallibility is omnipresent on the face of record. The systemic fallacy out of institutional fallibility but constitutes the grassroots of academic misconduct while the same has hardly had presence; if at all, in public sphere. A clarion call for prophecy; more than policing and parentage anyway, appears another desideratum toward improvement of academic conduct in time ahead. The usage of relevant 'wh'-questions appears appropriate to unfold the metanarrative. The academic misconduct appears accomplished; yet: *How? When? Where? Who? Why?* "And the answer is blowing in the wind", after Bob Dylan, to the detriment of integrity.

Last yet not least, demerger of research and revenue constitutes final desideratum with research foci upon knowledge profession. With the given teleological end vis-à-vis employment, research institutions apart, what the higher education institutions in India need are diversified deliverables; more than cutting-edge research. The present policy of incentives by means of revenue generation, including promotion, prompts goldrush for research *en masse* while the same may not be meant for all alike. Here lies the genesis of desperate compromise with the quality in research and publication. Instead, the policy of incentives by means of reputation generation, including nonpecuniary incentives, e.g., award of academic degrees, formal recognition of excellence in research performance, long vacation of a year or two- with continuity of the seniority in designation- for quality research, etc., to name few among them, serve the pursuit for research and publication without compromise with quality; thereby meet demand-supply ratio with the readership.

Rather than revenue generation by means of research, reputation has had incentive to discipline the knowledge profession and its practitioners. In final count, the same brings in sense of responsibility to maintain hard-earned reputation; followed by sense of responsibility not to indulge in something evil; thereby contribute to the repudiation of hard-earned reputation anyway. Last yet not least, reputation contributes to generation of academic social responsibility, something similar to propriety, rather than property; thereby cast the onerous duty upon these wise knowledge practitioners reserve hitherto intellectual integrity, at the least, not to renegade intellectual integrity of the academia.

Chapter - 4

ACADEMIC MISCONDUCT AND THE SOCIETAL ROLE

*Tamal Kumar Guha**

I. Introduction

Over the centuries, it has been considered that the primary duty of librarians is to provide services like collecting books, journals, cartographic materials and many such objects, as well as to provide services to the users by circulating such materials for academic, education and entertainment. Notably, today's libraries, especially those associated with academic, research and specialized services, provide much more extensive facilities than the mere circulation of books, journals and alike. In the present knowledge-driven society, the concept of libraries has evolved beyond the collection of books and similar artefacts. To serve human causes, today, libraries are open to collect, collate and disseminate knowledge accumulated from and for every sphere of human activities. Libraries have embraced sources of knowledge converged from publications in traditional channels, small write-ups (digitally or otherwise), oral history and even mass contributions through crowd-sourcing to serve humanity for perpetuity. Libraries have embraced the responsibility to archive content cutting across all segments of intellectual strata. The responsibility of the present-day libraries is now to provide services like providing tools for authoring, editing, and reference management, as well as enhance the capacity to retrieve resources throughout the globe, assist the users in avoiding

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unsolicited similarity of their research outputs by using antiplagiarism software and many such other services.

It has also remained a primary objective of librarians to ensure that authentic contents, irrespective of their physical format, are available to the users. Since the evolution of library systems, the entire ecosystem has so developed that librarians are bound to adopt and apply several means and techniques to ensure that only excellent, authentic and reputed quality content is available to their users. Implementing such a proposition, however, takes due diligence. For librarians, the mainstay of rigorous quality control is the source from which they are to be acquired. In alternative terms, librarians typically depend on the publishers, whom they consider the significant quality controllers of content. The reason for such dependency is just because of the editorial and peer-review process through which publishers of repute usually follow. The challenge of librarians, however, continues. In fact, with the advent of new techniques and technologies (including artificially intelligent systems), the publishing industry and authorship are becoming complex and complicated. Moreover, identifying the exegetical errors, whether in scientific or literary works, has become so critical that even the subject domain experts find it challenging to monitor and intervene.

For several reasons, the academic community has been driven to embrace means to produce content that may lack the interpretive quality of academic research or is occasionally fabricated to the effect that it causes severe consequences. This circumstantial perturbation has created another layer of complexity for librarians, who historically depended on the authenticity of the contents produced and published by reputed entities. In simpler terms, today, librarians depend on specific tools and measures to ascertain the quality and integrity of the contents, like using tools to identify reputed publishers, whom

they presume have rigorous peer-reviewing and editorial processes, using software tools to determine plagiarised contents, etc. However, the present notion of academic productivity has driven the situation in an altogether different direction, where assessing the quality and validity of content has made it difficult for all across the academic community.

II. Why Do People Adopt Unethical Means

Though it might sound generalistic, close observation of the existing trends of adoption of unscrupulous practices to achieve academic goals might reveal the underlying ethical issue: a profound lack of professional integrity that crept in due to the commodification of academia. In their critical analyses of academic activities of the modern-day education system, Brennan & Magness (2019) have highlighted that the widespread perception amongst the academic community, including the administrators, is "the more and better you publish, the more you make". While in this statement, 'more' indicates a quantity, the word 'better' can be explained by the "better venue" (Brennan & Jaworski, 2015), where the authors mean to indicate reputed publications of renowned publishers.

Morally speaking, however, this particular view has several far-flung repercussions. Superficially, this may be observed as a catalyst for encouragement for more active research participation and, eventually, the betterment of the authors. However, such an opinion has indirectly driven to perverse publishing practices. Hence, it becomes imperative to introspect the overall concept of ethics and ethical practices in academic research.

As we would all agree, the pivotal background of all research related to libraries is centred around the framework of Social Sciences and "[i]n the social sciences, it is important to acknowledge that the subjects of research are humans who have the right to be protected from harmful conduct. It may be argued

that the main intention of research ethics is the protection of its research participants"...(Weinhardt, 2020). Hence, a predetermined set of ethical rules would be desirable while conducting research, irrespective of the subject domain. Peters and Peters (2006) have highlighted three useful principles and practices, namely "Avoid blind trust", "Retain independent professional judgement", and "Be proactive". Further, while analyzing why many researchers get misguided, they brought out one significant issue, mainly because "[m]ost people believe they know a great deal about human behavior gained during a lifetime of living in a complex human society, but usually this is confounded guessing". While researching and remaining ethically sound, following predecided codes of practices, like 'The Nuremberg Code', may be more appropriate while conducting research.

At this juncture, bringing in the perspective of morality and legality is crucial, as these concepts often intermingle and overlap, creating false premises for responsible academic pursuit. For example, adopting a particular path for publishing an article could be permissible within the legal ambit; however, it may not be morally sound at the same time. Though it might sound awkward, such instances have been observed many times throughout the history of humankind. As Shaw (1999) has illustrated, the 'Right to Die' controversy about Karen Ann Quinlan about "[t]he question of whether it is morally permissible to do something (for example, withdraw life support from someone in Quinlan's situation) is distinct from the question of whether it is legal or illegal to do so." He went on to demonstrate how an action that could be morally right can be illegal, such as "helping a Jewish family to hide from the Nazis was against German law in 1939, but it would have been a morally admirable thing to have done." At the same time, an entirely legal action could be morally wrong. For example, laying off thousands of employees for a company's profitability could be legally sound but highly

debatable from a moral angle. Thus, it remains the responsibility of academicians to balance ethical, moral, and legal boundaries within their academic activities.

III. Unprofessional Acts in Which the Academicians Get Involved

The large-scale and rampant proliferation of unethical practices in the academic arena has yielded a considerable amount of literature addressing the issues concerning unprofessional acts in which academicians are involved. Three pieces of literature published in the last two decades were considered for this discourse (Comstock, 2013; Bos, 2020; Taylor, 2022). These authors have succinctly narrated the multiple layers of unethical misconduct in which academicians and researchers are getting involved. Some of such concerns have been highlighted below,

A. Plagiarism: The basic idea of research is to produce novel content which will someday help humanity to prosper and progress. Hence, camouflaging the works of others or not referring or not quoting or paraphrasing does not help to create new content which might help the society for which researches are conducted. Though adopting such means might help the individual researcher gain popularity, position and publish in 'better venue', eventually, such practice in layman's term can be coined as stealing another person's intellectual property. Though many tend to reason with the metaphor of "standing on the shoulders of giants", this argument does not validate the use of the intellectual property of others without acknowledging it; instead, it indicates only following the path the great thinkers have already laid down.

Fortunately, with the advancement of technology, librarians and academicians today have tools (which encompass

global ethical norms) to identify plagiarised content, which helps the community refrain from adopting such unethical practices.

B. Forging and fabrication: Despite plagiarism being found to be one of the most rampant malpractices in the academic community, the adoption of fabricated data and, even to a large extent, forged data is of more serious concern amongst scientists. Such practices can be considered more severe malpractice and involve expertise in a specific subject domain. Unfortunately, no tool exists except the skills of experts to locate and prove sins. Experts often need to go deep into the data level of fabricated research and redo an experiment from the initial stage to arrive at conclusive results to prove these sins. A survey by Fanelli (2009) revealed that "[a] pooled weighted average of 1.97% (N=7, 95% CI: 0.86–4.45) of scientists admitted to have fabricated, falsified or modified data or results at least once –a serious form of misconduct by any standard– and up to 33.7% admitted other questionable research practices." To the surprise of the entire orthopaedics society and the general public, Kupferschmidt (2018) brought to notice the malpractices adopted by Dr. Yoshihiro Sato just to get more than 200 publications.

For society's betterment and the greater good, refraining from forging and fabrication must be emphasized in academic courses, especially in the early stage of research courses, where the students must be appropriately educated to refrain from such misdoings.

C. Falsifying: Though it may sound like 'falsifying' is identical to 'forging'/'fabrication', one can distinguish between these two practices in minute observation. While in 'fabrication', one deliberately uses erroneous data, in the case of 'falsifying', the researchers use a genuine dataset in a truncated manner so that the research outcome supports their targeted goal. Bos (2020) has described this as "'trimming' (leaving out certain findings) and 'massaging' (slightly changing) data, as well as altering images,

misrepresenting results, and simply not reporting findings". This misconduct might eventually help the researchers get their desired awards; however, this practice (as the reader would understand) is not beyond the perimeter of any ethical practice.

IV. Closing Statement

Though this small discourse wanted to highlight the entire gamut of morality and ethical issues of the academic practices within the knowledge society, it remains sketchy to address several layers of malpractices which have been adopted over centuries and the complexities are growing with the increase challenges of the academic and professional ecosystem. While the regulatory bodies play a vital role in trimming academic misconduct and framing suitable rules and guidelines, at the end of the day, the academic community holds collective responsibility for proper and better research work, which will ultimately help the nation prosper. It remains a challenge for the institutes of higher learning to educate and train young generations for proper course correction so that they refrain from adopting unprofessional academic activities.

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Chapter - 5

**ETHICAL AND PUBLICATION NORMS FOR
PROTECTION OF INTELLECTUAL RESEARCH:
CHANGING DIMENSIONS AND CHALLENGES**

*G. S. Rajpurohit **

*N. L. Gurjar ***

I. Introduction

In the age of copyright law, understanding the prologue of ethical and publication norms in intellectual research, is essential. At its core, ethics delves into the concepts of good and bad, guiding moral duty and obligation. To put it simply, ethics are the moral principles that shape our behavior while engaged in any activity. They encompass two key aspects: i) Prescriptive Standards: these standards often consider rights, obligations, societal benefits, fairness, and specific virtues like honesty, compassion, and loyalty; ii) Self-reflection and Development: The continuous study and refinement of our own ethical compass. For social scientists, research ethics involve adhering to established codes and principles. As David B. Resnik summarized, these principles include honesty, objectivity, integrity, carefulness, openness, respect for intellectual property, confidentiality, responsible publication and mentoring, professional colleague respect,

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non-discrimination, competence, legal compliance, transparent discussions about intellectual property, awareness of diverse roles, informed consent procedures, and utilization of ethics resources.

Researchers face the dual responsibility of upholding these principles. They must navigate their work within the rules and exemptions set by legislation, while also aligning their conduct with the guidance of their supervisor, research literature, and a consideration of ethical complexities. Similarly, authors and co-authors have a moral obligation to comply with the provisions of the Book and Publication Registration Act and the Indian Copyright Act when publishing any work.

II. Meaning of “Research”

The word Research is derived from the French word “recherche”, which means ‘search or seek again’. “Research is composed of the two words ‘re’ and ‘search’, which means to search again or search for new facts or to modify older ones in any branch of knowledge. It involves the treatment of materials, concepts symbols for the purpose of generalizing to an extent, correct, or varsity knowledge”¹

The concept of research can be well understood with the help of definition of the Webster's International Dictionary as “a careful critical inquiry or examination in seeking facts or principles, diligent investigation in order to ascertain something.”

¹ Arvind Kumar, Research Methodology in Social Science 1-3 (Sarup & Sons, New Delhi 2002).

Therefore, the primary purpose of research is discovering, interpreting and developing human knowledge for the advancement of treasure of education.

III. Objectives and Purposes of Research

- i) To familiarise with phenomenon or to acquire new insights into an existing fact (exploratory research),
- ii) To determine the occurrence and association of something (diagnostic research),
- iii) To portray accurately the characteristics of a particular object, situation or group (Descriptive research)",
- iv) To test a hypothesis of a causal relationship between two objects (hypotheses testing research) and
- v) To separate fact from speculation (distinguishing research).

IV. Elements of a Research Proposal

According to Earl Babbie, essential elements of a research proposal are:

- i) Introduction: Defines the research topic, provides background information, and establishes the significance of the study.
- ii) Literature review: Identifies and critically analyzes existing research related to the topic, highlighting gaps and justifying your proposed investigation.
- iii) Research questions or hypotheses: Clearly formulates the specific questions or hypotheses your research aims to answer or test.
- iv) Methodology: Describes the research design, data collection methods (surveys, interviews,

- observations, etc.), sampling strategy, and data analysis plan.
- v) **Timeline and budget:** Specifies the estimated timeframe for completing the research and the resources required (funding, equipment, etc.).
 - vi) **Ethical considerations:** Addresses potential ethical issues related to research conduct, participant safety, and data privacy.
 - vii) **References:** Provides a list of all cited sources used in the proposal.

Horton and Hunt have pointed out eight steps in scientific research or scientific methods of investigation, (i) define the problem; (ii) review of literature; (iii) formulate the hypothesis; (iv) plan the research design; (v) collect the data; (vi) analyse the data; (vii) draw conclusion & (viii) replicate the study.

V. Various Types of Research

The main purposes of social research are to explore, to describe and to explain. On the basis of which social research can be classified into three types, (i) exploratory research; (ii) descriptive research; (iii) explanatory or causal research, the other types of research are (iv) pure research; (v) applied research (vi) quantitative research; (vii) qualitative research; (viii) comparative research; (ix) longitudinal research; (x) experimental research; (xi) evaluation research; (xii) analytical research; (xiii) critical research; (xiv) historical research; (xv) basic research; (xvi) pilot cross-sectional and predictive.

Empirical phenomena in social sciences are crucial in scientific work. Broadly speaking there are several methods of conducting scientific research in sociology. These are: i)

field study method; ii) experimental methods; iii) survey method; iv) case study method; v) statistical method; vi) historical methods; vii) evolutionary method and viii) basic research.

In legal studies, various types of research are (i) doctrinal or traditional research; (ii) non-doctrinal or empirical research; (iii) comparative research; (iv) statistical research; (v) critical research; (vi) exploratory research; (vii) explanatory research; (viii) analytical and critical research; (ix) historical research; (x) comparative research; (xi) applied and fundamental research; (xii) sociological research; (xiii) action research; (xiv) scientific legal research (xv) ethical or approach research.²

The following steps in the formulation of a research are required, (i) identify a broad field or subject area of interest to you; (ii) specify the broad area into subareas; (iii) select what is of most interest to you; (iv) raise research questions; (v) formulate objectives and (vi) assess your objectives.

VI. Research Hypotheses, Types and Components

A hypothesis is an assumption about relations between variables; it is a tentative explanation of the research problem or a guess about the research outcome. Before starting the research, the researcher has a rather unclear notion of the problem, which may be due to their limited prior knowledge in the area. Hence an adequate statement about the research problem is very important. Following are a few examples of hypothesis, i) lower-class men commit more crimes than middle class men a year; ii) suicide rates vary inversely with social integration; iii) aggression is caused due

² Anwarul Yaqin, *Legal Research and Writing Methods* 7-9, 11-14 (1st ed. 2008).

to frustration; iv) unemployment decreases juvenile delinquency; v) educated women have more adjustment problems after marriage than illiterate women.

While formulating a hypothesis following aspects should be kept in mind, i) it should be empirically testable whether it is right or wrong; ii) it should be specific and precise; iii) the statement in the hypothesis is not contradictory; iv) it should specify the variable between which the relationship is to be established and v) it should describe one issue only; vi) it must consider the experience of other researchers; vi) it must accurately reflect the relevant sociological and legal facts.

The various types of hypotheses are: i) working hypothesis; ii) scientific hypothesis; iii) alternative hypothesis; iv) research hypothesis; v) statistical hypothesis and vi) null hypotheses.

VII. Meaning of Research Design

Research design is, planning a strategy for conducting research. The following important functions/ goals of research design have been given by Black and Champion 1976:16-17) are:

it provides a blueprint,
it limits (dictates) boundaries of research activity, and
it enables investigation to anticipate potential problems.³

In doctrinal research, the following aspects are ordinarily included in a design: title of the research

³ Ram Ahuja, Research Methods: Procs 180-85 (2018).

project/dissertation/thesis; introduction nature of problem or research question; hypothesis of researchable question; literature of review; objectives of research study; methodology; nature of information needed; scopes of the study: delimitation; significance and contribution; contents/ chapterization arrangement; tables and bibliography and title of statutes.

VIII. Writing a Ph.D. Proposal to be submitted in the University/Organization/ Institution

These days the importance of pursuing Ph.D., has grown manifold as its mandatory for teaching posts. It has become a very competitive exercise to get admission into a good Ph.D. programme. Students find it very challenging and confusing as how to go about applying for a Ph.D. course. A Ph.D. proposal is a prospective document, while approaching an institution to get admission into their Ph.D. program. There are various formats but it is usually best to craft a basic proposal in about ten pages. The most widely accepted-framework of a proposal for a Ph.D. has the following sections:

- i) Title of topic cover page
- ii) Certificate of the supervisor
- iii) Declaration by the student law
- iv) List of Abbreviations
- v) Introduction
- vi) Literature Review
- vii) The background
- viii) Rationale/conceptual framework
- ix) Statement of research problem
- x) Objectives and Hypothesis
- xi) Methodology
- xii) Data Analysis

- xiii) Arrangement of characterization
- xiv) Conclusion
- xv) Bibliography
- xvi) Table of the cases and Statues
- xvii) Appendix (if any required)

Here are some of the questions for review of literature are, what do you already know in the immediate area concerned, what are the characteristics of the key concepts or the main factors or variables, what are the relationship between these key concepts, factors or variables, what are the existing theories, where are the inconsistencies or other shortcomings in our knowledge and understanding, what views need to be further tested? what evidence is lacking, inconclusive contradictory or too limited, why is to need study (further) the research problem? what contribution can the present research study be expected to make and what research design/hypothesis of methods seems unsatisfactory and what is the real contribution for help to shot out the problem.

IX. Ethics in Legal Research, Plagiarism and Copyright Infringement

Researcher has to adopt an appropriate academic style in his writing. He has to understand good research practices and bad research practices, proper references and citations play a crucial role to make the research works authentic and credible. The researcher should learn how to cite correctly and completely. Researcher must train himself to take careful and accurate notes when doing research. The rules of citation differ from institution to institution or publication to publication, but the central aim is to credit and acknowledge the work of authors.

In legal research when the researcher is referring to sections from Bare Acts, Constitution or extracts from committee reports or any statutory or legal documents, he has a duty to cite the source properly. Mere reproduction of case laws and sections from statute do not constitute legal research. No copyright subsists with respect to works which are in the common or public domain. Hence, the researchers are free to use them, while using such materials.

The researcher still has a duty to respect the moral rights of authors. One should not claim credit for something if it is not created by him. He has to disown what belongs to others and what he has taken from the public domain by giving due credit to the original creators, both research scholars and supervisor(s). In particular, ethical considerations may need to be addressed in experiments involving human subjects.

X. The relation of Ethics and Law

“Ethic means the system of moral principles and rules of Conduct.” It is also a science of moral study, ‘Ethics’ deals with rules not as they are or have been, but as they ought to be. Roman thinker Ulpian says that law is a science of just and unjust. His concept of real to live honestly to injure no one and to give every man his duty.⁴ Law was originally initiated as a method of controlling human conduct with the help of ideal laws or norms. Plato never looked at law in isolation from religion and ethics. If the researcher takes up a subject of law and religion, the moral concepts of religion should be compared with the existing law and he has to prove whether the religion has its own effect on law or not. The study of relationship of ethics accepted by the society and

⁴ Myneni S.R., Legal Research methodology, Allahabad Law Agency Faridabad 2014 P-190-31

legal laws of the present day can be taken by the researcher and the reform can be suggested to make the society better. There are some laws which are contrary to the morals accepted by the society. The researcher can study the effect of those legal provisions and give suggestions for improvement of those laws.

XI. Some Ethical Principles and Codes in Social Science Research

There are many other activities that the government does not define as misconduct but which are still regarded by most researchers as unethical, they are called “other deviations from acceptable research practices. These include: i) making unauthorized copies of data, papers or computer programs; ii) rigging an experiment; iii) stealing data; iv) sabotaging someone’s work; v) rejecting a manuscript for publication without even reading it; vi) publishing the same paper in the different text in journals without informing the editors; vii) submitting the same paper to different journals; 8. not informing a collaborator of your intent to file a patent in order to make sure that you are the sole inventor; viii) including a colleague as an author on a paper in return for a favour even though the colleague did not make a serious contribution to the research paper; ix) discussing with your colleague’s confidential data from a paper that you are reviewing for a journal; x) favours using a racist epithet in laboratory; xi) promoting a student, a better grade for sexual favours; xii) making derogatory comments and personal attacks in your review of the author’s submission; xiii) failing to maintain research data for a reasonable period of time; xiiii) failing to keep good research records; xiv) exploiting graduate or post-doctoral” students; xv) giving the same research project to two graduate students in order to see who can it the fastest; xvi) false representation of the research work to

grant an application in order to convince reviewers that your project will make a significant contribution to the field; xvii) by passing the peer review process and announcing your results through a press conference without giving peers adequate information to review your work; xviii) conducting a review of the literature that fails to acknowledge the contributions of other people in the field or relevant prior work.⁵ xix) overworking, neglecting or exploiting graduate or post-doctoral research fellow/scholars.⁶

Formulated guidelines

Research Ethics Guidance (2021) outlines general principles and specific recommendations for ethical research conduct. It covers topics like:

- i) Informed consent: Transparency and respect for research participants' autonomy.
- ii) Confidentiality and anonymity: Protecting participants' privacy and data.
- iii) Vulnerable groups: Special considerations for research involving children, disabled individuals, or other vulnerable populations.
- iv) Data storage and security: Proper handling and safeguarding of research data.
- v) Conflict of interest: Avoiding bias and ensuring research integrity.
- vi) Misconduct and plagiarism: Responsibilities and ethical standards for researchers.

⁵ Booth Wayne and Colomegregory G., *The craft research*, the university of Chicago Press 4.5.2005 p.09

⁶ Simons. H. and Usher, K. *research*. Falmer Press London 8000 P119-20

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The following are some of the recommendations given by the Authors & publishers Association (CAPA) science directorate to help researchers to adopt ethical quandaries,

1. Informed Consent:

- Researchers must clearly explain research details like purpose, duration, and procedures.
- Participants have the right to decline or withdraw anytime, with explanation of potential consequences.
- Researchers must discuss foreseeable risks, benefits, confidentiality limitations, incentives, and contact information.

2. Authorship Discussions:

- The competitive research atmosphere can complicate authorship credit.
- To avoid confusion, discuss authorship expectations and order explicitly at the start of collaborations, even if it feels uncomfortable.

3. Clear Communication:

- Experts advise informing participants about the likelihood, severity, and duration of potential harm or benefit.
- Emphasize their voluntary involvement and discuss alternative treatment options (if relevant).

4. Data Usage and Consent:

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- Researchers must inform participants about how their data will be used, including materials like case notes, photos, and recordings.
- Secure their consent for data usage.

5. Sensitive Topics and Confidentiality:

- Protecting participant privacy and confidentiality is vital.
- Experts suggest offering graduated interview questions with increasing sensitivity, allowing participants to stop if uncomfortable.

6. Data Security:

- Ensure secure storage of confidential records with limited access.
- Be mindful of situations where confidentiality may be unintentionally compromised.

7. Data Sharing Transparency:

- Consider data sharing before research begins and inform participants in the consent process.
- Specify how data will be shared (anonymously or not) and with whom.

8. Online Research Precautions:

- Researchers need technological awareness for online research, especially when handling confidential information.
- Seek help from tech-savvy individuals if needed to ensure adequate data protection.

9. Researcher Ethics:

- Researchers should acknowledge ethical considerations in their work.
- Principles like knowledge, respect, protection of autonomy, privacy, risk minimization, non-exploitation, transparency, and accountability are crucial.

XII. Ethical Issues and Principles in Research

The principles of research can be described as follows:

1. Responsibility for all procedures and ethical issues related to the project rests with the principal investigators;
2. The principal Investigators own ethical principles should be made clear to all those involved in the research to also informed collaboration with other researchers, and potential conflicts should be resolved before the research begins;
3. Potential participants should be protected against any and all those potentially harmful effects and should be informed of any potential consequences of their participation;
4. Participants should be offered access to research results, presented in a manner and language they can understand;
5. All research should be reported widely with objectivity and integrity;
6. Researchers should provide adequate information in all publications and to colleagues to permit their methods and findings to be properly assessed limits of reliability and applicability should be made clear;

7. Researchers are responsible for properly acknowledging the unpublished as well as published work of other research scholars; and
8. All research materials should be preserved in a manner that respects the agreement made with participants.

XIII. Codes and Policies for Intellectual Literary Research Ethics in the Copyright Era

It is pertinent to note that importance of ethics is very necessary for conduct of better and better legal research, social sciences and humanities. It should come as no surprise that many different professional associations, government agencies universities and Institutions have adopted specific codes rules and policies relating to research ethics.

The following⁷ summary of some ethical principles that also has been mentioned by Prof. Rattan Singh⁸ are-(i) do not fabricate, falsify, or misrepresent data, do not deceive colleagues granting agencies or the public; (ii) strive to avoid bias in experimental design data analyses, data interpretation, peer reviews personnel decisions grant writing expert testimony and other aspects of research where objectivity is expected or required, Avoid or minimize bias or self-deception disclose personal or financial interests that may affect research; (iii) keep your promise and Agreements, act with sincerity, strive for consistency of thought and action; (iv) Avoid careless errors and negligence carefully and critically examine your own work and the work of your peers,

⁷ Adil E. Shamoo & David B. Resnik, *Responsible Conduct of Research* 2d ed. 354 (Oxford Univ. Press 2009).

⁸ Rattan Singh, *Ethical Issues and Challenges in the Use of Emerging Techniques in Socio-Legal Research*.

and keep good records of research activities such as data collection, research design, and correspondence with agencies or Journals; (v) share data results, ideas, tools resources. Be open to criticism and Correspondence with new ideas; (vi) Honour patents, copyrights and other forms of intellectual property. Do not use unpublished data methods or results without permission, give credit where credit is due, give proper acknowledgement or credit for all contributions to research never plagiarize; (vii) confidentiality of data is one of the foundations of sound research and ethical behaviour. Researcher must explain to subjects the procedure that will be followed to ensure privacy during data collection and subsequent protection of confidentiality of data after collection. If any other person besides the researcher. will have to access to the data that person and their reasons for access must be specified to the subject ⁹confidentiality can include information with participant names attached but researcher holds it in confidence or keeps it secret from public disclosure¹⁰; (viii) publish in order to advance research and scholarship, not to advance just your own career, Avoid wasteful and duplicative publication¹¹; (ix) Help to educate, mentor and advise students promote their welfare and allow them to make their own decisions; (x) Respect your colleagues and treat him fairly; (xi) strive to promote social good and prevent or mitigate social harms through research, public education, and advocacy; (xii) Avoid discrimination against colleagues or students on the basis of sex, race, ethnicity or other factors that are not related to them, to their scientific competence and Integrity; (xiii) maintaining and improve own professional competence and expertise through lifelong

⁹ O. Campbell, *Research on Reproductive Health*, WHO/RHR/HRP/SOC/99, at 80 (World Health Org. 1999).

¹⁰ Neuman, W. Lawrence, *Business of Research: Qualitative and Quantitative Approaches* (Pearson 2004)

¹¹ Adil Shamoo & David B. Resnik, *Responsible Conduct of Research* 354–355 (2d ed. Oxford Univ. Press 2009).

education and learning take step to promote competence in science as a whole; (xiv) know and obey relevant laws and Institutional and governmental policies and (xv) when conducting research on human subjects minimize harms, risks and maximize benefits, respect human dignity privacy, and autonomy, take special precautions with vulnerable populations and strive to distribute the benefits and burdens of research fairly.

XIV. Plagiarism as a Form of Academic Misconduct

A. Concept of Plagiarism

Plagiarism is often described under different names like misappropriation, faulty citation, copyright infringement, literary theft, imitation, cheating, cribbing and stealing, literary theft etc. Plagiarism derives from the Latin word **plagium**, which means "**kidnapping**". Plagiarism can be defined as stealing¹² (by copying) the words or Ideas of someone else and passing them of as one's own without crediting the source¹³. The New Websters Dictionary of the English language defines plagiarism as "the authorised used of the language or thoughts of another author and the representation of them as one's own". Centuries before, Roman poet martial complained that another poet had kidnapped his verses and the use of this word was first introduced into English in 1601 by dramatist Ben Johnson and he named it literary theft: Modern ideas of originality and wave against plagiarism appeared in the 18th century but it still exists even in 21st century in academies,

¹² Marsh, Gill, *Plagiarism Alchemy and Remedy in Higher Education* (State Univ. of New York Press 2007).

¹³ Chris Park, "In Other People's Words: Plagiarism by University Students—Literature and Lessons," in *Plagiarism Alchemy and Remedy in Higher Education* by Gary Marsh, 186–208 (State Univ. of N.Y. Press 2007).

formalism art and in other fields”¹⁴. Reviewing other’s work, no doubt helps the researcher but under the following circumstances, they might be accused of stealing other work:

- i) Stealing someone else’s work and place them into someone’s own writing without quoting or referencing them
- ii) Using another person’s ideas and information expressing without acknowledging that person’s work is intellectual theft.
- iii) Copying sections from one or more source texts.
- iv) Providing improper documentation (including the full reference but leaving out quotation marks thus giving the impression that the material has been paraphrased rather than impression than directly quoted).
- v) Paraphrasing someone else’s argument as your own.
- vi) Using other’s ideas into your own words without supplying adequate citations.

Plagiarism can further be defined as:¹⁵

- (i) Copying directly from a text word for word without acknowledging the original author and source.
- (ii) Using an attractive phrase or sentence found in another source without acknowledging the original number and source.

¹⁴ Atkins, Thomas, & Nelson, John, "Plagiarism and the Internet: Turning the Tables," 20 Eng. J. 101 (2020).

¹⁵ Park Chris in other people's) words: Marsh, G. (2007). Plagiarism alchemy and remedy in higher education. State University of New York Press.

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- (iii) Downloading text from the internet without acknowledging the original author and source.
- (vi) Giving incorrect information about the sources of a quotation/ para phrase.
- (v) Paraphrasing words of text closely by only changing some of the words or the sentence structure without acknowledging the original author and source.
- (vi) Using statistics from another source/person without acknowledging the original source or presenting false data.
- (vi) Copying a fellow researcher's work with acknowledging that researcher.
- (viii) Copying or paraphrasing the work that has already been published elsewhere without citation.
- (ix) Downloading or copying pictures, diagrams, tables, photographs, etc. without acknowledging the original author or source.
- (x) Copying so many words or ideas from a source that it makes up the majority or work without giving credit.
- (xi) Paying another person to write research findings.

Now-a-days plagiarism in academic environment has turned into a problem that challenges the scientific honesty. Unfortunately, the practice is found to be rampant and written or un-written is a global phenomenon. Recently editors of many journals have identified cases of overt plagiarism in works submitted to their journals, some of which even made their way through the entire review process to get published in respectable journals. The following are various types of plagiarism in intellectual property law; (i) direct plagiarism; (ii) mosaic plagiarism; (iii) accidental

plagiarism; (iv) partial plagiarism; (v) self-plagiarism; (vi) collusion plagiarism; (vii) ideal plagiarism; (viii) justice plagiarism there are some software and databases through which the cases of plagiarism can be easily detected.

B. The Main Reasons of Plagiarism

Generally, students think that anything on the internet is for public and can be copied due to the lack of awareness about plagiarism. (b) people prefer shortcuts as they are over loaded with their work. (c) poor time management and planning skills affect their writing skills and they are easily tempted to copy other's work when time is short (d) lack of confidence in their own writings and ideas also tempt people to plagiarise and (e) some like the thrill of stealing and they copied other's work for leisure etc. Four standard methods are commonly used to incorporate information from copyrighted source material into one's even written document e.g. quoting, paraphrasing, summarizing and acknowledgment. Plagiarism means to steal someone's work ideas, literature or anything that is developed or invented by someone and to use it one's own name to get fame glory and eminence.

C. Available Software and Data Bases to check plagiarism:

1. <http://www.turnitin.com>: This subscriber service helps educators and others to deter plagiarism in student work. It operates like a search engine that checks for matches with billions of pages' worth of material on the Internet. The service is available for a free trial, and the site also includes plagiarism. There are some software and databases through which the cases of plagiarism can be easily detected. Following are some important databases.
2. <http://www.plagiarism.com>: This website checks written work for potential plagiarism at no charge. The program

is intended to make writers aware of their own writing styles and identifies any text that they may have inadvertently plagiarized.

3. <http://www.plagiarismchecker.com>: This database checks the plagiarism aildun on the web at free of cost.
4. <http://www.virtualsalt.com/>: This website offers strategies for preventing plagiarism. It addresses how to be aware of cheating and includes information about plagiarism for students and teachers, tips on prevention, and links to other websites.
5. <http://www.academicplagiarism.com/>: This website offers innovative solutions for detecting plagiarism. It uses advanced algorithms to scan for gifs and categorize plagiarized content. There are other web-pages like, www.checkforplagiarism.net; www.ithenticate.com; www.plagiarismdetection.org; <http://www.plagiarismdetect.com/>; and
6. www.copyscape.com and certain others, through which cases of plagiarism can be easily detected. But unfortunately, in our society, there is lack of awareness regarding such databases.

D. Suggestions to Prevent Menace of Plagiarism

The authors put forth following suggestions to prevent plagiarism: (i) Never use other person's writings without proper, acknowledgment. (ii) Always use a single and uniform method of citation like MLA style, APA style etc. (iii) Never steal the other person's idea as it also leads to plagiarism. (iv) Need to develop creativity as it always leads to success and originality. Four key factors that impact plagiarism are the perceived urgency to meet deadlines (time pressure); internal justifications like "everyone does it" (moral obligation);

specific situations where copying seems minor, like taking a few lines (descriptive situations); the belief that plagiarism is widespread in academia (subjective norms). Ralph and Randle found the most common reasons for plagiarism by students were: i) Desire to achieve by any means/laziness: (ii) in lack of interest in the subject, (iii) lack of understanding about the offence, (iv) thinking they can get away with it, (v) students struggling to keep up, (vi) not too bothered about being caught or the punishment itself, (vii) English not the first language of many students and (viii) Other time pressures like having to work.¹⁶

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¹⁶ Relp Amanda and Randle kwith : using assessment on the front line in the battle against plagiarism 2006
Available at <http://uhra.herts.ac.uk/dspace/bitstream.pof.assessed> on 14 oct., 2023

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Chapter - 6

**THE RELATION BETWEEN INTELLECTUAL
HONESTY AND RESEARCH INTEGRITY AS THE
FUNDAMENTAL PRINCIPLES OF RESEARCH**

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I. Introduction

The contemporary world is facing ethical issues not only in basic business practices but also in the area of research and development. For this, intellectual honesty and research integrity must be maintained by the people who are engaged in the profession (Kretser et al., 2019). They are the ones who are supposed to carry the Legacy of Research and Development Forward in the future with tremendous success after adequate utilization of the artificial Intelligence and Technology transformation which can be seen in every area of life these days. Before moving forward, it is necessary to provide detail about what exactly is the meaning of intellectual honesty and Research integrity.

Intellectual and scholarly pursuits revolve around intellectual honesty where the commitment to truth, ethical principles, and transparency is highlighted as the pursuit of knowledge. At the center, intellectual Logistic is dedicated to achieving accuracy by ensuring that all the facts and ideas that are inculcated in the work get represented faithfully and honestly by giving due acknowledgment to the authors of the works that are referred to in any particular research. It is

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crucial here to note that not only the ethical principles but transparency is also a vital component in ensuring that the individuals are not applying personal biases in their work and are openly disclosing any technicalities regarding the work that they take up. It helps avoid conflicts of interest and the intellectual work is also free of intentional malfunctioning (Robishaw et al., 2020). When due regard is paid to the original authors or writers of the works that are referred to in the research the attribution creates a fundamental ethical basis and Plagiarism is avoided. It is often stated that plagiarism is a clear breach of intellectual honesty and it is to be avoided by every person who takes up the research. The research is objectified with the help of intellectual honesty which places Central rule in comparing The Scholars for impartially evaluating the evidence that they have in hand respective of any personal beliefs that they may possess at the time of conducting any resource. Open mindfulness is also faster by intellectual honesty which encourages individuals to put forward their ideas and distinct perspectives with more construction of words.

The term research integrity means the commitment to conducting research with honesty, transparency, and ethics. These underpant the academic divorce and scientific principles that form the basis of research over more moral standards that govern the activity of research. High standards are held for promoting intellectual honesty and the quest for truth and knowledge is also present. It is also based on avoiding any kind of manipulation of data with any form of deception and fabrication utilized in the conduction of research. Research Scholars and scientists adhere to research integrity so that credibility can be attached to the scientific community and trust can be built in the studies that they conduct which form cornerstones of progress and innovation in the knowledge-driven world.

The relationship and promotion of intellectual honesty along with research integrity are provided in detail in the present work for a better understanding of the concept and ethical basis of any research. The significance of the two concepts is also highlighted to provide a detailed overview of how important and applicable they are in the field of research (Schroeder et al., 2019). The challenges which are faced by the researcher are also provided in detail along with the ethical dilemmas to illustrate the issues which may be encountered while conducting any research. At last the conclusions and recommendations are provided in detail with future dimensions to provide a cohesive and conclusive view to the whole study.

II. Significance of Intellectual Honesty and Research Integrity

In the field of research, it is seen that intellectual honesty and Research integrity hold Paramount importance as it is useful for maintaining credibility. Findings of the Scholars and academic community must be implied property so that that trust is established and adequately preserved for research and development in the future (Taylor & Bicak, 2019). The principles of intellectual honesty and Research integrity are also upheld by the researchers who believe that their research must be a reliable source of Information and should be taken seriously in the future. Every field these days is dependent upon research and development to attain success and progress for which intellectual honesty and Research integrity formulate the fundamental principles. It also provides quality and ensures that validity is attached to the work appropriately. The accuracy of the research and that it is conducted rigorously is also known from the fact that it has intellectual honesty. The researchers are also

there to ethical and transparent practices that provide their work the status of high quality, validity, and reliability in the context of their results as well. The contribution of intellectual honesty and Research integrity is also towards the advancement of knowledge with high standards of quality where flawed findings or misleading facts are worked at length. Pure reviews are also based upon intellectual honesty and Research integrity as a prerequisite because they provide effective support to the review and the evaluation by experts also becomes free of complexity (Muthanna & Alduais, 2021). The Reliance is also placed on the assumption that the researcher who conducted the earlier study has utilized the principles of intellectual honesty and transparency in his work. Replication is also established as the cornerstone of the scientific method where the data which is collected is accurate in the form of reporting and this is made possible with the utilization of intellectual honesty and research integrity. Apart from maintaining credibility, quality, validity, and replicability intellectual honesty and Research integrity are also important for establishing ethical conduct in the field of research. Ethical research practices are a crucial part of research integrity and it protects the rights and will of all the subjects of the human race. When research integrity is taken into consideration conflicts of interest are avoided and all the ethical guidelines along with the institutional ones are adhered to by the researchers. Intellectual honesty and Research integrity when applied to any particular research it is believed that the research has ethical soundness along with the scientific validity attached to it (Tomić, Buljan & Marušić, 2022). When the principles of intellectual honesty and Research integrity are applied to any particular results the high-quality results that are produced of the ethically conducted research have an impact that exists for a longer time as compared to the other researchers who do not follow the ethical guidelines. The test of the time is stood by such

Research and it also contributes to the accumulation of knowledge for future research as well. Without testing the validity and reliability of the existing research future Scholars can make use of existing research in which intellectual honesty and Research integrity are followed as the fundamental principles.

The research has a far-reaching impact on society as a whole and also shows implications on public policy and public health for this reason the preservation of public trust must be done with the help of intellectual honesty and Research Integrity (Miller & West, 2020). People utilize the results of the researchers in many ways for which transparency and ethical practices must be adequately built with the help of intellectual honesty and Research integrity. Researchers are also made accountable for their findings and discussions based on the research whether it's qualitative or quantitative with the principles of intellectual honesty and Research integrity. The researchers who practice misconduct or breach the integrity of research are also liable to face serious consequences which may include damage to their reputation and imposition of academic and professional sanctions on them. Giving rise to their responsibility they even face legal consequences because of which the researchers must maintain ethical standards with the help of intellectual honesty and Research integrity. The research is not restricted to any particular field and it expands to fields like environmental Sciences and medicine which may directly have a crucial impact on the well-being and safety of people and the Planet altogether (Horn et al., 2022). For this reason, intellectual honesty and Research integrity become significant to avoid any harm that may result from the unethical practices being adopted by the researchers.

Cross-disciplinary collaboration is also made possible with the help of intellectual honesty and Research integrity as the fundamental principles of various disciplines may come together and give rise to interdisciplinary practice. The combination of Expertise can be adequately done with the help of intellectual honesty and integrity as people researching in various fields can trust each other's work and it makes their work comparatively easy. Data sharing is also made simple and the problems that may arise in interdisciplinary research can also be effectively sorted with the help of transparent practices being adopted by the researchers in various fields they Research into. Not only the research of the future is made easy with intellectual honesty and Research integrity adopted as current practice but it also aids future progress and innovation (Katsarov, Andorno, Krom & van den Hoven, 2022). A solid Foundation is laid for the developments in the future with the help of research integrity as the findings are credible and reliable for diversified research which serve as building blocks for research expanding the spread of knowledge. However, it is to be kept in mind that the principles of intellectual honesty and Research integrity cannot be present in every form of research without paying attention to the requirements of the researchers (Hastings et al., 2023). It has to be seen that only those things are made transparent and are not required to be confidential. Certain security standards are also to be followed by the researcher regarding the privacy concerns of the people who have been after participants in their research.

III. Nexus and Promotion of Intellectual Honesty and Research Integrity

The above part of the current study has also effectively highlighted that intellectual honesty and Research integrity

have to exist in any particular research together which means that the Nexus between intellectual honesty and Research integrity is crucial (Goddiksen et al., 2019). Considered the crucial aspect of the Nexus it is also important that it is promoted by every researcher in their work and transmitted to future generations to establish credibility, transparency, accountability, reliability, validity, etc. In the research. The interconnection of intellectual honesty and Research integrity can be supported with the following points regarding how mutual support can be seen between them-

Sharing of ethical Foundation- The ethical foundation exists for intellectual honesty and Research integrity as both are rooted in the pursuit of thrust for knowledge and building a research platform that provides transparent data not only to the researchers but also to the people who are open to utilization of the research findings and discussions (Pizzolato & Dierickx, 2021). The ethical basis of both are also identical in terms of upholding accuracy in their research activities. They also develop on maintenance of public trust in the field of scientific Institutions and Research as they provide recommendations that become significant for credible use by other researchers and are reliable as well.

Validation-Intellectual honesty and Research integrity provide validity to the research as these principles are followed only by those researchers who are true to their research which helps in building public trust as well. Collaborations are also made possible with the help of these principles as these are supported worldwide by various researchers and it allows researchers from different countries and organizations to join hands together for addressing Complex global issues. Paying due regard to the original works of researchers also helps in providing validity to the research in a crucial manner.

Honest reporting- Both intellectual honesty and Research integrity help in promoting honest reporting as citations and acknowledgments are provided for various works that have been cited in the work. References are also used to acknowledge the work of previous researchers which helps in building trust as to the original works which are utilized. By reference to the original works of other researchers, it means that the findings methodology, and interpretations which are utilized by the researchers do not suffer from any personal biases. Honest reporting also supports transparency which is an essential of Trustworthy research.

Ethical codes- Academicians have also established various ethical codes that are adequately followed under the principles of intellectual honesty and Research integrity. Several guidelines also encompass both. The guidance is provided to the researchers while conducting any particular research based on the ongoing topic regarding what ethical standards they have to be in and what practices are to be adopted by them while conducting the research (Bueno, 2020). These standards and guidelines which are provided in the form of ethical codes are also helpful as educational initiatives based upon the relation between intellectual honesty and Research integrity.

Misconduct prevented- As a proactive measure intellectual honesty is utilized in researchers for preventing misconduct in the form of ethical violations, data fabrication, falsification of facts, or plagiarism. When ethical behaviour and honesty are promoted in any research there is the likelihood that in research integrity the breaches will be reduced (Hosseini & Lewis, 2020). If any researcher gets involved in misconduct there are also measures present

which deal with the consequences for such beaches where they may suffer damage to their intellectual reputation and academic standing. When such consequences are faced by them, they serve as a deterrent to the bridges and help in enforcing the ethical codes in standards which are set for intellectual honesty and Research integrity.

Accountability and transparency- Intellectual honesty and Research integrity also work on emphasizing the principles of transparency and accountability as it is necessary to disclose what is included in the research to avoid the conflict of interest and they are also crucial in establishing the fact that the Reserve is free from any personal bias (Cooper et al., 2023). When any researcher himself is accountable for ethical conduct involved in his research it means that the culture of transparency in the research is promoted by him and this is considered to be effective for the promotion of fundamental principles of research.

According to Cooksey, McDonald, Cooksey & McDonald (2019), it is stated that Academic integrity is important for maintaining intellectual honesty as it is related to truthfulness which is considered to be the synonym of honesty. There is a crucial relationship between academic integrity and intellectual honesty as not only the configuration or gathering of data in any research is affected by the principles but also the contextualization of any research depends upon the fundamental principles that are followed by the researchers. There may be various issues faced by the researcher like maintenance of ethical treatments of participants and confidentiality or others which are associated with the storage and appropriate Analysis of data which are to be handled by the researcher while taking up any research. For this academic integrity becomes crucial

in determining the success of the research and helps in coping with various issues which may come during or after the conduction of any particular research.

According to Peels, de Ridder, Haven & Bouter (2019), it is stated that not only the researchers but also the scientists are concerned about the integrity of research and are developing various codes of conduct for researchers. Various ethical codes that are developed include substantial pluralism which is highly associated with intellectual Honesty. Various values, virtues, and norms are followed and metaphysical pluralism and axiological pluralism are combined in these codes of conduct for handling various situations which may be encountered by the researchers during research. It can be analyzed that the research should be focused on intellectual pluralism and Research integrity to produce accountable, valid, and reliable results. It can also be stated according to the above work that there has to be careful reasoning and judgment while dealing with the ethical codes that are available as the requirements of every researcher and researcher vary from subject to subject.

IV. Challenges and Ethical Dilemmas

There are certain challenges that are faced by the researchers while taking up any research that may be distinct for every researcher but there can be a particular set of challenges that are usually faced by every researcher. It has to be kept in mind that the people who take up studies are not always equally interested in taking up such studies and there may be various reasons by which they are persuaded to take up the study (Montgomery, 2022). Certain researchers are willingly interested in taking up research and do tremendous work in their fields. At the same time, certain researchers do research just for the sake of formality and do

not take complete interest in the research that day, which may have even worse consequences for themselves and the research that they take up. There are high-impact journals that are present for the publication of work by the researchers. They always stay in demand and the majority of the researchers find it appropriate for their reputation to get their work published in such journals. This is a crucial challenge as intense pressure is faced by the researchers to get their work published in those journals and to meet the requirements the event fabricates the data. The pressure that they face may also sometimes lead to engagement in questionable research practice which if such pressure was not there must not be entered by the research.

Another crucial challenge which is faced by researchers these days is the publish-or-perish culture in academia where intellectual honesty and Research integrity are getting undermined. The fact of getting their work published forces them to prefer quantity over quality and the potential that exists in the researcher gets compromised. When the work pressure is more and they have to publish more and more work they can't focus on quality and sometimes breach the ethical conduct as well (Mabou Tagne et al., 2020). Many researchers are working in any particular field and they focus on working on the recent issues that are going on which leads to replication of the work and they cannot reproduce the same that has already been published by some other research. Their research is very crucial and good but due to the replicability, they cannot reproduce their work which becomes a challenge for the researchers. The pressure is also increasing on the researchers to publish work which has significant positive results as the findings which are positive and natural are more likely to have a crucial impact on the people on whom the researchers developed. This is leading to the reduction in transparency of

the results which are negative and nature and reminding the research integrity and intellectual honesty as fundamental principles for research (Tennant & Ross-Hellauer, 2020). Other crucial challenges are lack of training and financial assistance which is provided to the researchers as not all the researchers who take up the task of research are well equipped with the tools utilized for research. They are also not getting adequate financial assistance for going with the elaborate research that is required to be taken up in their fields. Research funding is getting intensely competitive these days and it is becoming difficult for the researchers to secure grants which is leading to ethical dilemmas where the researchers exaggerate their findings to get better funds.

Apart from the above, it is also becoming very difficult for the researchers to carry the research and any particular field as the cross-cultural differences are becoming crucial and the researchers belonging to different backgrounds are finding it difficult to do it just with each other while conducting any particular research. not only this but the misunderstandings about authorship and intellectual properties are also increasing due to cross-cultural differences and they are unable to maintain a shared commitment to the research that they take up which is a challenge for research integrity (Hosseini, Rasmussen & Resnik, 2023). The concerns about privacy and confidentiality of the people who are engaged in the research as subjects have also been crucially challenging for the researchers as the big data is getting into a world in the research and it is becoming Complex due to the utilization of Technology.

The above challenges which are faced by the researchers are leading to ethical dilemmas which are creating other challenging circumstances for the

researchers and are preventing them from applying the principles of intellectual honesty and Research integrity in their works. The most crucial of the ethical dilemmas is the authorship dispute where the order of authorship which has to be included in the research Publication is becoming difficult to resolve between the authors (Seadle, 2022). Recognition is very important to be given to any person who has participated in the research but providing the status of the author to everybody is not possible and due to this reason, many researchers are facing conflicts among the people who work with them. Another crucial ethical dilemma which is faced by the researcher is sharing the data and avoiding the conflict of interest. There are various issues on which research is conducted by the researchers and when research is conducted on vulnerable or marginalized populations it becomes all the more difficult as ethical concerns are race to them. It has to be taken into account by the researchers that no potential harm costs to such a population or exploitation is not done to their limited resources. The issue and concerns for plagiarism, data privacy, peer review, and sharing of data along with retention of data after the research is complete have been crucial for the researchers. Honest feedback is to be provided along with maintenance of confidentiality whenever the peer review is done by the researcher and creates a stigma for personal biases. Certain researchers are carried on by humans or animals which also face a dilemma as it is difficult to handle them and the instances of scientific advancement have shown that the ethical concerns associated with their rights and violations are crucial affecting the autonomy of researchers and their freedom to deal with the subjects.

V. Future Directions and Recommendations

Considering the above work certain future directions must be stated along with the recommendations to overcome the challenges and ethical dilemmas faced by the researchers while implementing and promoting intellectual honesty and Research integrity. Following are the future directions-

Enhanced transparency, ethics, and privacy- It is seen that in the future greater Emphasis may be put on the adoption of transparent research practices which will require more comprehensive documentation of the methodology and procedures as will be adopted by the researchers. Data-driven resources are becoming more prevalent these days and ethics and privacy must be also given Central focus. Ethical practices for promoting data management after obtaining the consent of the people involved as subjects and safeguarding the data against any misuse that may happen with the data of those subjects by the adoption of either secure systems or secure databases.

Collaboration of Global Research- It is also seen that in future the cross-border collaboration will be increasing as interdisciplinary research is happening and people from various disciplines are entering into other disciplines. The restriction of Geography boundaries will be ending soon and a diverse perspective will be developed on ethical considerations beyond the geographical boundaries in the future as is analyzed from the work (Rennie & Gunsalus, 2019). The challenges which are encountered by the researchers are somewhere identical across the globe and to deal with such challenges international approaches are also required which will lead to the collaboration of Global Research.

Educational training program- As the importance of research and development is increasing It is seen that from an early stage, the educational programs will also include research training and the importance of research will increase as the normal curriculum subjects as taught to the students right now. The culture of ethical conduct will be created with the help of academic courses which will provide the basic knowledge of research to every person who will gain education and thereby it will depend upon them whether they want to pursue a career as a researcher or not. It is also important here to note that the skills which will be needed for navigating into the future of research will be present in every individual irrespective of the field that they are in.

Improvisation of whistle-blower protection- The whistle-blowers are the ones who are engaged in unethical practices and they do not abide by the ethical codes which are available regarding intellectual honesty and Research integrity today. In the future, it is analyzed that the ethical breaches and miss conduct will be addressed by strengthening the mechanism available for protection from Whistle-blowers and it will make it easy for the people who want to report the violations. The people who will report the violations will be able to do it without any fear of retaliation and they will have improved protection mechanisms available to address these issues.

Engagement of the public- It is also analyzed that in the future the educational institutions and other research institutions will also be engaging more public to spread awareness about ethical principles which are required to be taken into account while conducting any research as the researchers have society implications and the people who exist in society are very much affected by such implications.

Moving forward the following can be recommendations to deal with the challenges and ethical dilemmas that are faced by researchers while implementing the intellectual honesty and Research integrity issues-

1. Training and workshops should be provided to the researchers and in every academic curriculum there should be compulsory research subjects that are taught to the individuals so that they at least know the basics of research which is becoming very popular today and will continue to gain importance in the coming future. This will include the development of resources and guidelines for helping the researchers in navigating the challenges regarding ethics that may be faced by them and training them with the solutions to such challenges.

2. Accountability has to be increased on the part of the researcher as there are many software's that are coming up with artificial Intelligence and are used as tools for creating research reports by the researcher (Singh et al., 2020). They are considered to be unethical practices as they do not highlight the personal experience of research and therefore the Research report or finding is highly unreliable. If any researcher is using such practices or software they have to be barred from researching in the future and any of the legal consequences which they may face should be made known to them.

3. Incentives should be provided to Scholars or researchers who prioritize quality over unethical practices and who utilize their skills to progress in the field that they are in. It may include various recognitions and awards given to them for the work

that they do and they may also be given future benefits when they will conduct research by following improved ethical standards. It will boost their confidence and will also help in attracting other researchers to follow ethical practices.

4. The recognition of research integrity and intellectual honesty should also be given appropriately as the fundamental principles of research to support research on these principles in the future. Not all the people who do research know much about the value and significance of research integrity and intellectual honesty which necessitates the fact that the research on these principles should be conducted at length to make all the people who are unaware of these aware.

VI. Conclusion

It can be concluded from the above work that intellectual honesty and Research integrity are inseparable fundamentals of research which are to be considered adequately by every researcher while taking up their work. Intellectual honesty helps in building the strength of the work by establishing transparency and accountability in the work. There are certain established codes of conduct and ethical standards that are to be followed by researchers so that the work that they do gets adequate recognition and follows all the guidelines that are available for research. There is no doubt in the significance of research and development as we increase day by day in every aspect of business, it is also crucial to know that research itself is becoming an outstanding business these days. Research integrity helps in establishing the line of research that is adequately inclusive of all the recognitions and accumulations of original Work as required by the researcher. Significant changes also exist in

the contemporary world regarding the ethical issues that are considered by the researchers and it is believed that these researchers will be the torchbearers of future research and development for all the ethical codes which lead are adequately followed. Intellectual honesty must be required as it will show the commitment of research towards truth and ethical principles and will subjectively help in establishing the public trust in the field of research. The works that will be provided with intellectual honesty will have transparency which will mean that they are free from any buyers from the side of the researcher and the attribution that will be given will help in preventing malpractice as maybe existing. The academic and scientific principles are also considered to be pivotal for the promotion of research which will be free from any manipulation of data and fabrication leading to trust building and creating a knowledge-driven world. It can also be seen that there exists a Nexus between research integrity and intellectual honesty which shares common characteristics of establishing credibility, reliability, validity, accountability, and transparency and helps in maintaining the ethical code. There are many challenges and ethical dilemmas which are faced by the researchers while dealing with intellectual honesty and Research integrity as fundamental principles because not all the researchers are equally interested in carrying the research forward and some are doing it merely formally which is creating problems not only for them but are also generating on fruitful results for the general public.

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Chapter - 7

THE ROLE AND RELEVANCE OF PHILOSOPHY IN RESEARCH

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I. Introduction

‘Research’ is a term to represent a type of an academic activity where a zeal to know the unknown from the known is observed. (Kothari, 2010: 1) Thus, being an academic enterprise research involves different methods and procedures that are important to mark its characteristics. For example, collection of data, analysis of data, evaluating the data, deducing conclusions from the available data as well as reflecting on these deductions to reach a greater hypothesis are constituents of a research activity. This hypothesis is, therefore, based on some data analysis, criticism and deductions. Herein we may significantly note the role and relevance of Philosophy in a research. To speak elaborately, all the important steps of a research involve the philosopher’s attitude of looking at facts or concepts. Hence, bringing out an indigenous research outcome from an existing store of information for a further advancement in the field concerned Philosophy serves as the backbone of a research. Taken in this sense, all the important methods of a research like analysis, synthesis, evaluation, deduction, etc., are uniquely methods of Philosophy. So, to know, understand and execute any research in a successful manner the relevant knowledge of Philosophy and its distinctive methods, as are typically

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used in different fields of research, is a preliminary requirement. For, before we indulge in any research activity it is very significant to know the nature of this activity and the relevant procedures involving the activity of research. In this regard, a systematic understanding of philosophy and its nature, scope, methods etc., would significantly point out the indispensable role of philosophy in research. Let us see in details from the analysis and interpretation of what the meaning of a research is and how the indispensable relevance of philosophy in research may be systematically characterized as follows.

II. Meaning of Research

When we break the term Research into “re” and “search” we find the literal meaning of it as the ‘search’ (investigation) ‘after a search’ (re). The dictionary meaning of ‘re’ is used, here, as a prefix, while the meaning of ‘search’ in dictionaries stands as a verb to indicate some investigation. (Kumar, 2005:7) However, when the two words are conjoined they form a noun to signify a careful and a patient examination of some issues or concepts. The term, therefore, stands for the investigation of some issue which is based on some previous search. It is a kind of scrutiny of facts, events or concepts as available in the domain of knowledge in general and of a definite subject of discourse in particular. So, it implies a kind of study that follows a previous study. In fact, that is why it is called ‘re-search’.

III. Relevance of Research and Philosophy

In the process of investigating facts, events or concepts the methods of analysis, criticism, and deduction of conclusion with appropriate reasoning along with the relevance to the existing norms of the concerned academy are

very fundamental. These methods provide a researcher a systematic and fruitful structure to his way of enquiry. All these above mentioned important methods including the reasoning factor and the ethical norms are rooted at the heart of the area of study called Philosophy. In other words, research of any kind is genuinely based on these philosophical methods and is, therefore, immensely dependent on the activity called philosophizing. In other terms, understanding philosophy, its areas or branches, as well as the various methods of it, is not only preliminary to an issue of research but is a necessity to it. Hence, to understand what a research is or what the ethics behind any research can be we need to know what philosophy is and how it is pervasively associated with research. In the next section of this chapter we would focus on this particular relation of research and philosophy and would, in this regard, explore the concept, nature, scope, branches and methods of Philosophy. Here, we may start with the concept of philosophy first in the following way.

IV. Philosophy: the Concept & Its Derivation

The concept of Philosophy may be formulated from the root of its origin. It is, in this regard, derivative of two Greek words— “Philos” & “Sophia”. The meaning of Philos is “Love” and the meaning of Sophia is “Wisdom”. Philosophy, therefore, literally means “Love of Wisdom”. (Blackburn, 1996: 286) Therefore, broadly speaking, any and every range of study involves this “love of wisdom” to reach its desired goal of “Truth”. Consequently, it is clear from the literal meaning of Philosophy itself that any and every deal of enquiry involves Philosophy. To understand this point of interpretation we may note the following implications of the term Philosophy.

V. Some Implications of the Literal Meaning of Philosophy

- i. First of all, it is the *love*, i.e., a kind of fascination or inclination towards ‘something’. That ‘something’ is *wisdom*, i.e., knowledge in its deepest and widest sense. By this is meant that Philosophy does not imply simply the knowledge or information of a particular thing or existence with a mere particularity and is thus not concerned with any particular order of existences. Rather, it stands for the ‘generic perspective’ or a comprehensive understanding of the world of existences.
- ii. Now, by ‘generic’ perspective of the world is meant viewing the world from a ‘big platform’. This big platform is, again, built with a ‘common standard’ of understanding which in turn refers to the act of rationalization.
- iii. Rationalization is, on the other hand, an act of conscious systematization of the usual order of things and beings through appropriate use of language or argumentation. It, thus, represents a *logical structure* or what is called an argument structure to state the point of the systematic understanding of the facts and issues of the world.
- iv. This ‘structure’ of rationalization or argumentation, therefore, is not a particular structure of a thing or any being. Alternately, it is a *general or common logical structure* of representing the existing things and beings of the Nature or what constitutes the world. So, the structure with which Philosophy deals is an expansive structure of rationalizing information and experience and as such is applicable to any activity based on reasoning or argumentation.

- v. Philosophy is, thus, in a relevant sense, a way, a method, of rationalization. As a method Philosophy systematizes the order of our thinking or reasoning in different directions, in different fields, and in different apprehensions. Here, in approaching the systematization of thought and reasoning the uses of the philosophical methods of analysis, criticism, deduction, generalization and the like are of extensive use in different other disciplines. That is why any research programme in any discipline follows these methods of philosophy in approaching their individual areas of specification with relevant consistency.
- vi. Further, attaining Wisdom or knowledge of “Truth” is the wider objective of this method of rational (philosophical) systematization. Thus, when the literal meaning stands as “Love of Wisdom”, it covers such a vast range of knowledge and learning where the sky is the limit. In theoretical terms, therefore, Philosophy suggests the knowledge of the world phenomenon in its wider dimension. Taken in this sense, the bounds of philosophy are so rich to include every branch of knowledge and enquiry. For, any and every subject of enquiry is a journey towards reaching the goal of Truth or Wisdom.
- vii. Actually, the devotion to knowledge in its deepest sense (Wisdom), as stated above, forms the base of every enquiry related to every discipline. That is why in the field of research in any particular area involves the philosophical governance.

In a nutshell, Philosophy is that area of study which includes the genes of every area of study consisting of the method of rationalization or involving the thought process to

aspire after knowledge or to discover truth. Moreover, discovery of truth being a common goal to any and every field of enquiry Philosophy remains inherent and integral constituent to every field of study.

Again, the above analysis of Philosophy remains incomplete without understanding its relevant interpretation in the Indian domain. Let us briefly state the meaning of Philosophy in Indian context as follows.

VI. Indian Interpretation of ‘Philosophy’ as ‘Darsan’

In India, ‘Darsan’ is a term that is used to substitute the Western term ‘Philosophy’. By ‘Darsana’ is, literally, meant ‘seeing’. But, the etymology of ‘Darsan’ is not equivalent to physical vision or perception with physical eyes. Rather, it stands to imply a kind of inner vision or contemplative perception. (Ghatak, 2012: 9) In elaborate terms, we may say this vision is vision of reality from within which represents a kind of intuitive knowledge of reality which is greater than apparent knowledge (of reality) from perceptual experience.

Thus, either in Western sense of the term ‘Philosophy’ or in the Indian sense of the term ‘Darsan’ the subject aims at the discovery of truth and reality in its essence. So, knowing reality from being, i.e., from within, as in Indian sense, is nothing but to quench the thirst of learning and thereby reaching the stage of wisdom, the love towards which is implicit the literal meaning of the term in the Western sense. In other words, seeing the real from within (inner vision of truth and reality) fulfils the desire (love) of knowing it in being, resulting in highest knowledge (or what is wisdom).

With the above twofold interpretation of the concept of Philosophy in Western and Indian sense, the nature of it can be explored in the following way:

VII. Nature of Philosophy

So far, the nature of Philosophy is concerned there we may note a number of alternative interpretations. For instance, Philosophy is often considered to be a systematic study of the universe as a whole which includes the consideration of not merely the geographical 'earth' or the political 'world' but the entire 'universe'. (Sanyal, 2012: 2-3) Notably, this study is not about any particular section of the universe but about the 'general' order of the universe. Philosophy is, again, understood as an area of study comprising the exploration of "Reality" from the given "Appearances". (Chakraborti, 1992: 1)

It is also interpreted as an insightful study of the experience in its given order or often even as a reflective awareness of the reflection itself, i.e., a deal of consciousness in itself. Hence, not only the nature of reality as a fact of existence is discovered in the domain of Philosophy, but also the act of grasping (as notable in 'conscious' act of the mind) this reality is attempted here to interpret the real from a comprehensive standpoint.

Recent interpretations of Philosophy offer an analytic approach to it in its being an exposition of terms and concepts of language. The reason for considering philosophy in terms of language is that all discoveries and deductions of human enterprise are made explicit in and through language notably where justifications behind such deductions are stated as propositions or arguments. So, understanding the role and relevance of language in human knowledge the

contemporary designation of philosophy is shifted from an enquiry of the nature of ultimate reality beyond appearances to the enquiry of the nature of the available reality with appropriate analysis and systematization of language such that it can grasp the fundamental nature of the 'real'.

From the above it is evident that Philosophy is basically a theoretic enterprise which discerns the meaning, nature, and values of life and the universe from a common perspective, which may be ordinarily called the perspective of reason, or technically called cognitive consciousness. (Sanyal, op. cit.: 4-5) In fact, what the various interpretations suggest above is to mark the temperament of Philosophy as such a specific deal of intellectuals which is typically connected to all the other courses of enquiry while being significantly different from them in its being a standard form of rationalization as expressed in argumentations. This temperament of rationalization and argumentation summarily describes the nature of Philosophy as a unique subject of study in such that any and every subject of study submits to the philosophical policies or approaches. These approaches involve the use of systematic reasoning and formulations and are nothing but the methodical representations of generalizations of any kind. It is in this regard that philosophy is said to be the guide of all areas of investigation, or often as the mother of all study. Taken in this sense, as mother of all areas of study Philosophy remains foundational as the starting point of each investigation in a way that provide not only equal benefits to these investigations but also fulfils the basic need of all.

In short, therefore, so far, the nature of Philosophy is concerned it is, in a sense, multidimensional; while at another sense, it is the identical platform to search after truth leading to wisdom. Here, to know the various dimensions of

Philosophy we may proceed to discuss the scope of the subject following which a discussion of the branches of Philosophy may remain relevant.

VIII. Scope of Philosophy

By scope of any subject is ordinarily meant the area it covers or, simply speaking, the subject-matter of it. Hence, so far the scope of Philosophy is concerned what we have already learned is that it has a much extended scope to include every areas of study in context of its search after truth. However, being a distinctive study, it broadly includes the following areas or subject-matters. (Sinha, 2009: 6-8) These are: Ontology, b. Metaphysics, c. Epistemology, d. Axiology.

Of these areas Ontology deals with the issue of 'Being' or the questions of 'Existence' itself, while Metaphysics compares the appearance of the universe with the reality of the same and, thus, concerns itself with exploring the ultimate nature of reality of the universe. Epistemology, on the other hand, enquires after the nature, conditions, sources, kinds, limits, and the like of knowledge or as are related to the field of knowledge. Axiology, again, covers the concept of valuation by treating the questions of value, goodness and badness, right or wrong, desirable and undesirable etc.

Now, these different subject-matters comprising the scope of Philosophy are consistently connected with each other. For instance, the concern of Ontology as a deal of 'Being' or 'Existence' is related to the deal of Metaphysics as the study of the nature of ultimate reality in the sense that what actually 'exists' is the 'reality', or in other words, 'reality'

is something that must be 'existent'. For, without being an existent the talk of reality is pointless, or rather it is void. Taken in this sense, the relation between Ontology and Metaphysics is so intimate that the two are often treated as one and indistinguishable areas of philosophical enquiry.

Again, when Metaphysics studies the nature of reality it is closely connected to the questions of Epistemology which discusses about the sources, conditions, limits, etc., of 'knowing' the 'reality'. Similarly, the epistemological issues are directed to discover the possibility of 'knowing' the 'real'. So, existence of reality (the ontological or the metaphysical concern) is highly relevant to the knowledge of reality (the epistemological concern). Otherwise (if reality is not known), it remains non-evident. Hence, the way the inner relation between Ontology and Metaphysics are understood the firm relation between Metaphysics and Epistemology may also be pointed out.

On the other hand, Axiology, as another distinct area of Philosophy, studies the issues of beauty, goodness or value in the existing order of things. In a word, therefore, Axiology concerns with the matter of valuation. Since valuation extends to art, literature, or even patterns of the objective world, human life and corresponding choices axiological enterprise of philosophy comprises of all these aspects of valuation. It, in fact, determines the value of the 'knowing or knowable' 'reality', and therefore, related to all the above signified concerns of philosophical enquiry.

Thus, all the major concerns or what are called areas of Philosophy are complementary to one another and comprise the usual and broad scope of Philosophy.

Apart from these areas of concerns the scope of Philosophy, in comprehension, may involve the study of the following other branches within the extended scope of it.

IX. Branches of Philosophy

Before stating the branches of Philosophy, it is important here to note the difference between what is meant by scope and what is meant by branches and how the two are connected. Thus, as noted earlier, by scope of a subject is meant the 'general' concern or subject-matter of a subject. That means the concerning areas it covers to discover truth (in search of its love for wisdom) and know (in its inner vision) the real not as mere appearing but in its actual existence comprise the subject-matter or scope of Philosophy. By branches, however, is meant the 'individual' extension of the scope of the subject concerned. So, like the branches of a tree the branches of a subject, say Philosophy, are the 'extended' areas of specific study that the 'general' subject-matter (or scope) of the subject spreads through.

From this, it is clear that though the terms 'scope' and 'branches' have distinct meanings, they remain referential to the comprehensive understanding of the subject. Hence, the understanding of 'scope' suggests the range, boundary, or extent of studying the subject, when the understanding of 'branches' adds to the specification of this extent. With this understanding of branches and their difference to the meaning of scope let us explore the possible branches of Philosophy as follows,

- i) Logic: An important branch of Philosophy is Logic which may usually be defined as a science of thought or reasoning. Traditionally logic may be

classed as Deductive and Inductive Logic or reasoning. Here, the First is dealing with the basic principles of Thought or Reasoning, while the Second is with the Analysis of Hypothesis, of Causality, of Probability, etc.

- ii) **Ethics:** Another unique branch of Philosophy is Ethics. It is usually designated as the science of human conduct or action. (Sinha, 1994:1) These conducts or actions of human beings are, of course, to be volitional or willful. In dealing with human conduct, behavior or action Ethics sets an ideal or norm in order to evaluate the nature of the concerned action, and not to state the action or behavior as a mere event or fact. That is why it is different from any positive science which merely describes the facts of nature and is rightly called a normative science of human conduct that deals with actions as per the respective norms of action.
- iii) **Psychology:** The branch of Philosophy dealing with the empirical study of mind is known as Psychology. It gives explanation of mind in terms of observatory behavior. Unlike the normative science called 'Ethics' Psychology is a positive science that systematically presents the causality of mind and body as experienced in objective behaviours.
- iv) **Philosophy of Mind:** Keeping an alternative interpretation to the concept of mind to that notable in Psychology there is a branch of Philosophical enquiry called Philosophy of Mind. By this is meant that when Psychology discusses the facts and phenomena of mental episodes, Philosophy of Mind deals with the theoretic aspect of mind by analyzing the concept of mind and understanding this analysis in a framework that is

different from the empirical or the objective framework.

- v) Phenomenology: In context of denying the object-centric knowledge possibility and affirming the subject-centric wisdom Phenomenology appears before the scene as a revolution to traditional philosophy. In recent times, it is studied as a branch of Philosophy that concentrates on givenness (Phenomenon) in experience or what is presented before consciousness. In this givenness of experience Phenomenology discovers the self or what may be understood as the primary consciousness at the centre of this 'givenness in experience'. In other words, that consciousness is the subject and not the object of knowledge is shown here. Consequently, this consciousness or the self as the primary subject of experience forms the foundation of any knowledge. (Chakravarty, 2000: 163-164)
- vi) Existentialism: Existentialism, on the other hand, is ordinarily believed to be an extension of the Phenomenological movement in Philosophy. It opposes the essentialism aspect of traditional philosophy and encourages the thought that existence precedes essence. As a branch of study Existentialism emphasizes the role of authenticity in human existence.
- vii) Philosophy of Language and Analytic Philosophy: Dealing with the art of analyzing facts and concepts to reach a deduction is the aim of Analytic Philosophy. As a recent branch of Philosophy it explores the significance of analysis through the use of language. Simply speaking, it declares linguistic analysis of facts or concepts as a prime criterion of philosophizing. In doing so

Analytic Philosophy enters the region of Philosophy of Language as a method of philosophical interpretation of language.

- viii) **Theology and Philosophy of Religion:** It is a study on the religious authenticity, a deal with the religious aspects of 'Being', usually conceptualized as God. Theology, thus, discusses the context of God and the relation between God and the World. Philosophy of Religion, on the other hand, though a study of the various issues of religions and religious concerns, is mostly directed to the analysis of the meaning and nature of various religions as well as religious concepts (like God) or religious experience and the like.
- ix) **Social and Political Philosophy:** Dealing with the social ideal, ends, and values of society Social Philosophy guides us to know and determine the ultimate values of social life such that we can evaluate the evolution of the society as well as make necessary or relevant developments in the social structure with reference to that ultimate value, or the highest social ideal or end. (Bhattacharya, 2010: 4) Political Philosophy, broadly speaking, is included within the scope of Social Philosophy in so far what is 'political' happens within a 'social' structure. (Ibid: 217) However, as an independent and specialized area of philosophical judgment Political Philosophy deals with the concepts and issues of political concerns in a way that presents before us a critical analysis of the various issues like justice, equality, liberty, democracy, state, etc., along with the evaluation of the policies and decisions of a government, state or a nation.

- x) **Philosophy of Science:** It is a branch of Philosophy that questions the role and relevance of scientific theories by interpreting the principles, postulations as well as deductions of the scientific enquiries. It, therefore, aims at evaluating the standard of scientific generalizations and at discovering the corresponding significance of science and scientific methods as used in such generalizations.
- xi) ***Aesthetics or Philosophy of Art:*** Aesthetics or what is often called the Philosophy of art is that branch of philosophy which deals with the issues of beauty, especially in the domain of art. Reflecting on the surrounding Nature, Culture, language and literature within the world of art or even in the world itself Aesthetic makes analysis as well as evaluation of the concept and nature of beauty.

Apart from the above mentioned branches of Philosophy there may be, and there are, a huge number of sub-branches of it in the sense that Philosophy is the mother of different branches of study, analysis and exploration. For example, Modern Symbolic Logic is an advancement of the branch of deductive-inductive logic, while Counselling is a very recent dimension of philosophy where analysis of therapeutic concepts related to mental health is discussed. This may be kept under the branch called Psychology. Critical Thinking may, again, be treated as an extended branch of Analytic Philosophy. Issues related to our practical concerns like suicide, euthanasia, surrogacy, environmental crisis, animal ethics and the like fall under the province of Practical Ethics which is a sub-section of the branch called Ethics. Ethics, further, contains a professional dimension widely known as Professional Ethics where the role of Bio-

Science, Mass-Media, Business or Commerce, Sports, Administration, “Research” and the like form the central concerns. Feminism, Hermeneutics, Philosophy of Law, Philosophy of any other existing area of study, can be well accommodated to the section of sub-branches of Philosophy at a significant relevance.

In fact, all these branches of Philosophical concerns have relevance to the previously stated scope of philosophy some glimpse of which may be considered from below.

X. Relevance of the Branches of Philosophy with the Scope of Philosophy

Thus, any and all these various branches of Philosophy represent one or other aspect of the scope of Philosophy, namely, Ontology or Metaphysics, Epistemology, and Axiology. Hence, for instance, logic is that branch of Philosophy which is applicable to all the available areas of Philosophy in so far the issue of systematic justification of any formulation in any field is concerned. Taken in this sense it is essential to the area of Metaphysics, Ontology, Epistemology as well as Axiology. That is why logic is treated as the very essence of Philosophy by many thinkers like Bertrand Russell in the sense that without appropriate argumentation the apprehension of reality, of knowledge, of being or even the issues of valuation remain blank and pointless.

On the other hand, ethics is a branch of Philosophy which falls under the primary scope of Philosophy known as Axiology which covers the issues of valuation, of good and bad, of “should and ought” of life, particularly of human life. It also is connected to the scope of Metaphysics when it postulates the rule of God, the supreme reality or the reality

of individual Soul and it's immortality in context of explaining the law of Karma. (Bhattacharya, 2007: 157-158)

The other branches of Philosophy like Psychology, Philosophy of Mind, Phenomenology, Existentialism, again, deals with the questions of "reality" or "existence", of course keeping their difference in approach or in the use of methods in interpreting the nature of this 'existing reality'. These may, thus, be kept under the province of Metaphysical or Ontological discussion of reality or being-hood of which Epistemology remains an underlying concern in each of these branches.

Philosophy of language, further, opens a new dimension in the study of language that presents the metaphysical or epistemological questions with a novel orientation. Theology or Philosophy of Religion is an extension of the area called Metaphysics when it deals with the nature of ultimate reality and the possible phases of the realization of this reality. Social-Political Philosophy comes under the purview of Axiology mainly in the sense of determining the highest ideal of society or nation. Philosophy of Science may be treated as a sub-section of Epistemology as well as Ontology as it deals with the questions of scientific knowledge and corresponding exploration of the existing reality as notable in objective phenomena. Philosophy of Art is, again, a sub-section of Axiology in interpreting the questions of valuation.

Philosophy is, therefore, an approach which is applicable to and inclusive of different areas of knowledge and study. In fact, it provides a large possibility of research areas within its own multiple branches of enquiry like Psychology, Religion, Social and Political fields, Existentialism, Phenomenology, Philosophy of Language, Ethics, Aesthetics, Indian

Philosophy or even Contemporary Indian Philosophy, and etc. while the rest of possible fields of enquiry or research in any of the fields of particular interest find their base at philosophical methods as well as temperaments. So, with this interpretation of Philosophy and its different branches let us unearth the possible methods of Philosophical enquiry that are highly relevant to every other branch of study and thereby to any field of research as follows.

XI. Methods of Philosophy and Their Application in Research

It is really very difficult to systematize the comprehensive or an exhaustive list of the methods of Philosophy. However, from the above discussion some of the common and notable methods of Philosophy may be mentioned here to understand the role and significance of Philosophy in research. Some of these methods are:

- a. Method of Analysis
- b. Method of Diagnosis
- c. Method of Hypothesis
- d. Method of Abstraction, Imagination or Speculation
- e. Method of Symbolization
- f. Method of Negation
- g. Method of Justification
- h. Method of Deduction or generalization
- i. Method of Induction or probable conclusion
- j. Method of Criticism or Evaluation

Of all these methods the method of hypothesis, analysis, evaluation or criticism, and deduction stand supreme and relevantly include the other methods as mentioned here. To understand the role of Philosophy in research more

particularly, thus, we may note the following vital methods of philosophy which form the essential tools of any research.

A. Method of Analysis and Research: The role of analysis in any field of research is not only relevant but also necessary. Without analyzing the content or problem of the area of research systematic formulation as well as appropriate apprehension of the issue at hand can hardly be made. Here, by 'analysis' is meant the breaking of the complex content or concept of research into further parts as far as possible to find out the foundational constituents of that complex content or concept in order to study and understand its basic nature. (Ammerman, 1994: 2) The method of analysis as notable in the branch of Philosophy of Language and Analytic Philosophy is really of significant use in different dimensions of every research.

B. Method of Hypothesis and Research: Hypothesis framing is an important step of various research activities. (Roy, 1986: 39) In this regard, what is hypothesis, what are its conditions, or even the steps of forming a hypothesis etc., are essential to know before we use hypothesis in research. All these concepts and conditions are discussed in Philosophy in such a detail that it can be the starting point of different researches based on the particular hypothesis. So, researches of any kinds are indebted to philosophy for this method of forming hypothesis.

C. Method of Criticism or Evaluation and Research: Criticism or evaluation is exclusively a philosophical method which is extensively used in researches of various types. In fact, without critical estimation the loopholes of hypothesis or the deductions from the hypothesis cannot be checked. Consequently, a systematic and reliable research would not

be produced. Hence, criticism or evaluation of concepts and issues rule the validity of a research.

D. Method of Deduction and Research: The method of Deduction is another important logical method of Philosophy that is of significant use in any and every research. The finding or concluding section of every research contains the reflection of the use of this necessary method of Deduction. This is a fulcrum of each research in the sense that it marks the findings of the current research as well as gives the outline to start a new research.

C. Method of Induction or Probability and Research: The method of inductive generalization is another important method of Philosophy which is vehemently used in scientific researches. This method guides the probability element of the deductions of scientific researches along with highlighting the relevance of the Law of Causality and the Principle of Uniformity of Nature in the experimental researches. (Ibid: 6-8) Hence, in this era of science and scientific researches this method of induction is of high relevance as a method of philosophy.

From the above analysis of the application of philosophical methods in research we may, further, find out how Philosophy with its significant branches is applicable to the relevant fields of research. In fact, by systematizing the role that these remarkable branches and methods of Philosophy play in any research we can well understand the genuine relation between Philosophy and Research as follows.

XII. Significant relation of Philosophy and Research

Of the different branches of Philosophy logic and ethics are very significant and have the greatest impact in any area of research. For, logic and ethics constitute the general feature of any systematic and authentic research as noted below,

A. Philosophy, Logic and Research: The branch of Philosophy called logic is the preliminary point of any research activity starting from stating the problem of a research to the deduction of conclusion. In this regard, logic or reasoning is the guide of a researcher in his area of research, whatever that area be. For, without the use and application of reasoning no research can gain fruitful recognition. In this sense, logic supports the points of formulating the issue or what is called statement of the problem of a research in a systematic order, shows the application of the method of hypothesis, analysis, and deduction of conclusion. So, it gives rigor and precision not only to theoretic subjects like Philosophy itself but also to the problems of scientific orientation. (Miri, 2010: 45) Hence, the understanding and application of logic and its methods is indispensable to any systematic research be it a research in the field or science, arts or commerce.

B. Philosophy, Ethics and Research: Ethics as a branch of Philosophy plays an immense role in any research activity. Without following some basic and customary ethical principles no research can be authentic in itself. This includes the setting of objectives as per the available norms, criticism or evaluation of various concepts and contents, and continuous awareness of the role and responsibility at the different phases of the research etc. In fact, proper acknowledgments of all the previous searches that have reference in the field of an existing re-search, recognizing the responsibility towards the society, regulation of the entire research activity in accordance with the

ethical norms like avoidance of plagiarism, respecting the copy right issue, keeping honesty, sincerity and reliability in framing and formulating the prospects of research, and etc. are the basic ethical guidelines for any research. Ethics, thus, is that important branch of Philosophy which regulates the whole journey of an authentic research. So, as branches of Philosophy logic and ethics, in a way, binds the various aspects of a research throughout its development.

C. Some other branches of Philosophy and Research: The other branches like psychology, analytic philosophy, socio-political philosophy, religion or theology, phenomenology, philosophy of science or of art have indirect influence in research areas in context of their being human enterprises where application of reason, faith and will must remain in balanced form so as to support the various phases of a research in general and its completion. Moreover, these latter sections of Philosophical concerns may be useful in individual research areas too as mentioned earlier like when one who is doing research in psychology, in education, in science, in art and literature, in religious texts, in sociological aspects, in political science, in cognitive science, and etc. By this is meant that when a researcher is experimenting in psychology, for instance, he/she will have to go through the various issues and aspects as related to mind including the theoretic aspect which a combined study of psychology and philosophy of mind will provide. Again, a person doing research in the field of any basic science would have to understand the relevance of scientific postulations as are critically analyzed by philosophy, in general, and by philosophy of science, in particular, as a branch of philosophy. In the same way one researcher doing research in the social or political phenomena or concepts would have to understand the relevance of the social or political ideal of the society or the nation. The research in the area of art and literature also follows the philosophical concepts of valuation or

beauty particularly. A study of theology or an interpretation of the philosophy of religions would, again, give enormous resources to the researchers who explore religion or religious texts. And, those doing research in any area of philosophy itself would of course be privileged to have basic access to any of these branches of philosophy.

XIII. Concluding remarks

Now, besides the above, the significant role of Philosophy in Research may be grasped from the intimate relation of Philosophy to different other disciplines. For example, Mathematics, the Deductive or Abstract Science is a correlate of the branch of Philosophy known as Deductive Logic. All the different Natural Sciences, the Inductive Sciences or Experimental Sciences, again, correspond to the premises and principles of Inductive Logic dealing with the law of causality, with the principle of uniformity in nature, with probability and etc. The Social Sciences or the Evolutionary Sciences, further, has reference to the concepts and ideals of Social & Political Philosophy. Literature, a world of Art, is also in conformity with the branch of Philosophy of Art or Aesthetic.

Thus, from the above we may sum up in conclusion that since philosophy is the mother of different disciplines with its unique nature as mostly a rational enterprise, and not a mere subject itself, and since research in any discipline is closely connected to the execution of different philosophical methods research of any kind is not at all possible without recognition to the role of philosophy. In other words, the extensive use of the different methods of philosophy forms the basic criterion of any research work. Hence, the worth of a research is dependent on the mode of its application of the philosophical methods. In fact, the initial academic research degree as awarded to a researcher is in the title of “Doctor of Philosophy”. The reason behind such

a use of an academic degree is that the research of any kind, in any discipline, is nothing but the way of undergoing philosophical activity of analysis, criticism, and deduction, for instance. Thus, as a rational enterprise every research includes philosophizing and as such enquires after the knowledge of truth and reality, aspires after the 'love of wisdom' and at a final stage presents a vision (darshan) of reality or what is actually existent. It is, in this way, that we can understand the inseparable relation between the role of philosophy and acts of research.

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Chapter - 8

ETHICAL TEACHING AND LEARNING

*Richa Baghel **

I. Introduction

As students navigate through their educational journey, it's important that they seek guidance from a diverse range of ethical personalities who hold different values. It's crucial to avoid teachings that may divide orthodox schools and stay away from current social or political issues. The foundation for faith, divinity, and ethics should be strong so that students can construct their lives upon it. To cater to their intellectual and emotional temperaments, it's best to focus on more specialized principles. Ultimately, the main goal is to develop a character that is upright, righteous, gentle, powerful, self-reliant, pious, and well-balanced.

In order to become a good human being and a responsible citizen, it is essential to embrace fundamental principles of values that shape our perception of life and obligations. It is important to be mindful of promoting tolerance and respect for different thoughts and practices across all faiths. Developing an open-minded attitude towards diverse perspectives is crucial for building a strong character that embodies traits such as kindness, empathy, honesty, and responsibility. By prioritizing these values, we can create a positive impact on our own lives and the lives of those around us.

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As per the University Grants Commission's policy framework, "Mulya Pravah – Guidelines for Inculcation of Human values and Professional Ethics in Higher Educational Institutions," it is crucial for all stakeholders of an institution, including faculty, students, administrators, and others, to be guided by core values such as integrity, dedication, trusteeship, sustainability, inclusiveness, commitment, respectfulness, harmony, and belongingness. The National Education Policy (NEP), 2020 also emphasizes the importance of ethical reasoning, traditional Indian values, and basic human and Constitutional values such as seva, ahimsa, swachchhata, satya, nishkam karma, shanti, sacrifice, tolerance, diversity, pluralism, righteous conduct, gender sensitivity, respect for elders, and respect for all people and their inherent capabilities, regardless of background. By prioritizing these values, we can create a positive and inclusive educational environment that promotes responsible citizenship and prepares students for success in all aspects of life.

The National Education Policy of 2020 sends a powerful message about the importance of ethics and happiness in personal and professional growth. It highlights the significance of ethical, human, and constitutional values such as respect, empathy, scientific temper, responsibility, equality, and justice. The policy aims to instill a sense of pride in being Indian and cultivate a culture of responsibility and commitment to global well-being among learners. It stresses the development of knowledge and skills that enable students to make informed decisions and contribute to creating a sustainable world. The NEP recognizes that cultural diversity is a unique feature of India and emphasizes that without ethicality, diversity cannot flourish.

It is crucial for teachers and educationists to pay attention to these aspects and to encourage a broad mindset of respect for all cultures. Cultural diversity is a unique feature of India, and it is essential to nurture collective well-being and broadmindedness in our children and society as a whole. It should be encouraged and celebrated the metamorphosis that children go through as they grow up, and must ensure that their ego is Sattvic, meaning it is coupled with compassion. This will enable them to take on challenges and draw more energy from themselves to contribute to creating a sustainable world.

It is important to recognize the value of ancient scriptures such as the Bhagavad Gita, not just as religious texts, but as a source of valuable life lessons. The teachings within these texts can help individuals understand the tendencies of their own minds and behaviors, as well as how to correct them through specific activities and diet. It is crucial for teachers and educators to observe the nature and tendencies of each child and provide them with the necessary tools to excel in all facets of life. By establishing a strong communication line between the tutor and the taught, we can ensure that progress happens in the right direction and that our youth are inspired to become innovators and leaders in their own right.

II. Ethics

Ethics: As rational beings, it is important that we behave towards each other and other creatures with integrity, honesty, adaptability, compassion, forgiveness, and a spirit of moving forward with vision. Human relationships are crucial, and prejudice against religious, cultural, or racial groups should be handled with care and inner strength. Learning about different cultures through descriptions,

explanations, and reflections is both a science and an art that can help us better understand each other and build a more harmonious world. As H. H. Sri Sri Ravishankar wisely said, "Ethics is what you don't want others to do to you, you don't do it to others." Let us strive to embody these values in our daily lives and interactions with others.

Morality: Understanding and following ethical principles is crucial for promoting morality and right conduct. In order to determine what is right, it is important to have knowledge about human behavior and the environment. Following social norms and laws is a key aspect of morality and promotes the safety and well-being of all beings. Living in harmony with one another and our surroundings is essential to maintaining peaceful relationships. By embodying integrity and having a strong consciousness, we can cultivate focus, clarity, and sincerity in our daily lives. Let us strive to uphold these values and promote ethical behavior in all that we do.

Discrimination: It's important to remember that the right thing to do isn't always the most pleasant, and vice versa. However, focusing on conduct that follows righteousness can lead to lasting happiness. While the fruit of wrong doing may seem sweet at first, it often leads to poison and pain in the long term. This ability to distinguish between what is changing and what is non-changing, what is temporary and what is permanent, and what is sustainable and what is perishable is known as discrimination, or Vivek. Having a sense of discrimination is crucial for avoiding misery and achieving long-term benefits in life.

Conduct: As a teacher or moral guide, it is important to help students understand the importance of discernment and good conduct. These virtues, known as Dharma, are

crucial in leading a fulfilling life. Good conduct, or Achara, is a mark of righteousness and should be prioritized above all else. By demonstrating and promoting good conduct, we can guide others towards lasting happiness and success.III. Doctrine of ethics

Diversity: It is important to understand that ethical science recognizes unity and the absence of an "I" and "You" mentality. The foundation of right conduct lies in reasoning, and students must first take moral precepts from great sages and saints taught in scriptures because they may not have the time or power to think them out for themselves. By applying these perspectives in their lives, they can develop a sense of belongingness and oneness to everybody, which is a unique feature of India. The ego is just a feeling of having a wall between you and others, but in reality, there is no wall. You belong to me, and I belong to you. When we wish good for others, good things come back to us, and this is the law of nature. We all belong to one human family with one cause, which is to bring more happiness and more smiles on the planet. India has an ancient saying, 'Vasudeva Kutumbakam,' which means the world is one family. When we are well-educated and have a larger heart, the world becomes our family.

Consciousness: The mind is a fascinating thing, and it is an essential part of our consciousness. We perceive the world through our senses, and the mind helps us process that information. But it is crucial to understand that the mind is just a wave in the vast ocean of consciousness. Our consciousness is what allows us to experience life. When we learn to let go and attain higher states of consciousness, we can experience cosmic consciousness, where we perceive the whole universe as part of ourselves. Love flows strongly between us and the world, and we can overcome the opposing

forces and disturbances in life. Nurturing the sapling of consciousness through spiritual practices like meditation can help us grow into higher states of consciousness. As we elevate ourselves physically, mentally, and spiritually, we become delicate and beautiful individuals capable of accommodating different values in life without any conditions. Our lives become worth living, and we become strong yet soft.

Knowledge and Harmony: As humans, we are blessed with the ability to gain knowledge in various ways. We can use our senses to perceive the world around us, and our intellect to understand it better. Science is one such example of knowledge gained through intellect. However, sometimes we experience moments when we feel something beyond our intellect has taken over, and we gain intuitive knowledge. This type of knowledge is beyond our understanding, but it helps us grow and learn more about ourselves and the universe. Our body is made up of matter, but our spirit or consciousness is made up of beautiful qualities like joy, energy, peace, and happiness. When we nurture our spirit through spirituality, we can experience harmony in our material life. Spiritual knowledge enhances our intuitive, innovative, and communicative abilities, making us better individuals. Therefore, it is essential to cultivate spirituality in our lives and strive towards a higher state of consciousness.

To achieve a state of balance and inner peace, it is important to cultivate harmony in all aspects of our lives. Whether it be through music, dance, meditation, or celebration, finding harmony within ourselves and with the world around us is key to achieving a higher state of consciousness. The Bhagavad Gita offers a beautiful philosophy of action, devotion, and knowledge, harmoniously

blending the three yogas of Karma, Bhakti, and Gyan. By aligning our thoughts, speech, and actions with each other, we can achieve a sense of harmony and fulfillment in our lives. Let us strive towards this goal, and cultivate spirituality in our lives to enhance our intuitive, innovative, and communicative abilities.

IV. Right and Wrong

Experience: In order to grow and develop our bodies and minds, we must actively seek out experiences and work to incorporate them into ourselves. Life is a balance between turning inward and recognizing that everything is under divine intervention, and actively seeking perfection in the details of our work. When we turn inward, we must trust in the divine plan and accept what is. However, when we are working in the world, we must strive for perfection and constantly seek ways to improve upon what we are doing. By cultivating these two attitudes, we can find a sense of balance and harmony in our lives.

Evolution: When we are actively engaged in the world, it's important to constantly seek ways to improve upon what we are doing. We should examine our actions and see where we can bring improvement and what we can change. However, when we turn inward, we must trust in the divine plan and accept what is. Instead of finding faults in everything, we should say to ourselves, "Everything is fine." This attitude will allow us to connect with ourselves and go deep within ourselves. This balance between action and introspection will help us develop our capabilities, strengths, intellect, and enthusiasm to work. With this mindset, we can work with both awareness and enthusiasm.

Right decision: Sometimes, we just know when we've made the right decision. Even if it turns out to be the wrong one, there's always something to learn and grow from it. Having a peaceful and satisfied mind gives us the power to bless others. When we're happy, we can give blessings to those around us. On the other hand, when we're filled with desires and our minds are agitated, it's hard to give blessings. It's important to have contentment, not just for ourselves, but for the benefit of others too.

Remember that even if you make a wrong decision, it's not the end of the world. You always have the opportunity to grow and learn from your mistakes. In life, it's important to have a balance between passion, dispassion, and compassion. Passion is necessary for pursuing your goals and interests, while dispassion allows you to let go and find relief. Compassion should be a part of your nature, as it allows you to bless others and spread happiness. So, keep these three qualities in mind as you navigate through life: passion, dispassion, and compassion.

Correcting self and others: When it comes to correcting both yourself and others, it's important to remember that mistakes happen all the time. While it can be tempting to immediately correct every mistake you see, it's important to consider your intentions before doing so. Correcting mistakes simply because they bother you is not an effective approach. Instead, corrections should come from a place of authority and love. These two qualities may seem contradictory, but they are actually complementary. When you are able to find the right balance between authority and love, you can successfully correct mistakes while also being compassionate and understanding. Remember, it's okay to make mistakes and to allow room for growth and learning.

V. Standards and Virtues

Virtues: As human beings, we all possess incredible qualities and virtues within us. These virtues can be moral, social, or intellectual and are seen as a fundamental principle of our existence. However, sometimes we get so caught up in the stress of our daily lives that we forget about these virtues. It's important to remember that we are the source of all these virtues. It's like a seed that has a membrane around it, preventing it from sprouting. But when the seed is given the right environment and nourishment, the membrane loosens and the seed begins to sprout, eventually growing into a tree. So, take the time to cultivate and refine your virtues and let them shine through in all that you do.

It's interesting to explore the ways in which we can cultivate and refine our virtues. Sadhana is a great way to soak the seed, while yoga can help us manifest all the perfections that are already within us. However, it's important to remember that our virtues can sometimes be covered by impurities, a veil of ignorance, or wrong concepts that cause disturbance. Fortunately, meditation and yoga can help us come out of all of this and experience full enthusiasm, energy, joy, and all of our virtues shining through.

Duty: When we approach our responsibilities with love and joy, we transform the heavy stone of duty into a beautiful flower. Instead of seeing our duties as a burden or bondage, we can view them as opportunities for service and expression of our virtues. For example, taking care of children can be seen as a service to the Divine, as we are helping to guide and nurture these young souls. By shifting our perspective and embracing the beauty of our actions, we can experience a sense of fulfillment and purpose in all that we do.

One of the most empowering things you can do is take responsibility for all your experiences in life. When we do this, we put an end to negative tendencies such as grumbling and making excuses. By setting a time-bound goal, we give direction to our life force, and imagination is essential for this. It can be frustrating when we have a limited imagination, but as a devotee, we can surrender to the Divine and step lightly towards our goals. It's important to make a distinction between surrendering to God and taking responsibility for our actions, as stated in the Bhagavad Gita. By taking responsibility for uplifting those around us, we can use our actions as opportunities for service and expression of our virtues.

Truth: Finding true and long-lasting happiness is our duty, and we can achieve this by identifying the truth. The truth is something that doesn't change, and by examining our lives, we can identify what is not true. This outlook helps us realize that we are surrounded by untruth. It's essential to identify what appears as untruth to become free from it. Our life experiences help us identify our own untruth, and as we mature, we realize that everything, including events, situations, people, emotions, thoughts, opinions, concepts, and our bodies, is untruth. It is only then that we can experience true satsang, or company of truth and good.

Self-regarding virtues: In our scriptures, self-control is emphasized as the most valuable virtue. Our actions are born from our mind, speech, and body, and it's important to be free from the influence of our five senses and sense organs - including eyes, ears, nose, tongue, and skin. While we have the ability to enjoy sense objects, it's important to recognize that our ability to do so is limited. When desire becomes unlimited, it creates an imbalance that can lead to

dissatisfaction. Through practices like yoga and meditation, we can replenish our energy reserves and achieve a better balance between spending and conserving energy through our senses. By mastering our senses, thinking before we speak, and having control over our physical body, we can achieve a greater sense of self-mastery and fulfillment.

Relation with superior, equal and inferior: When it comes to relationships, it's important to consider the different levels of connection that exist. There are intellectual connections, emotional connections, and soul connections. While emotional connections are important, soul connections take things to a deeper level where you surpass all emotions and connect on a much more profound level. Even if there are disagreements or misunderstandings on an intellectual or emotional level, recognizing that everyone and everything is part of us can help us evolve our consciousness and achieve a greater sense of connection with the world around us. By prioritizing soul connections, we can create more meaningful and fulfilling relationships with people from all walks of life.

It's true that the mind and intellect can create a sense of separation and ego. This can make it difficult to feel love and connection with others. It's important to recognize this and work towards breaking down those barriers in order to create more harmonious relationships. Whether it's in the office or at home, prioritizing meaningful connections and recognizing that we are all part of the same consciousness can help us achieve a greater sense of fulfillment and connection in our lives.

It's important to treat our superiors with respect and honor, as this can lead to a healthy life, knowledge, fame, and strength. When it comes to our relationships with equals, it's

important to prioritize love, compassion, friendliness, and sweet speech. As for our interactions with inferiors, tenderness, compassion, gentleness, and kindness are key. And let's not forget the importance of forgiveness - a truly noble nature is one that is able to forgive wrongs and do what is right.

VI. Emotional Intelligence

Emotions: It's very important to use wisdom when it comes to our emotions. Knowing which emotions to express and when to express them is key. Emotional intelligence involves understanding our own emotions and the emotions of others, and how they affect behavior. Being able to listen without an agenda, maintain a positive attitude, take responsibility for our actions, develop self-awareness, connect our breath to our emotions, and empathize with others are all important steps towards becoming more emotionally intelligent. This can lead to more successful relationships in both our personal and professional lives. It's worth noting that emotional intelligence is different from IQ and can have a huge impact on our overall success and happiness.

- i) It's important to be an attentive listener when communicating with others. Instead of waiting for a chance to interject with your own opinions, try to listen without any preconceived notions or agendas. By doing so, you can foster a more positive and productive conversation, and help to bring out the most important points of the speaker. In turn, this can help to create a more fulfilling and satisfying relationship with the person you are speaking with. Remember to choose the behavior you want to see in others, and try to mirror it yourself.

- ii) Maintaining a positive attitude can go a long way in improving communication and relationships, both in the workplace and in our personal lives. It's important to remember that even when faced with difficult or irritable colleagues or loved ones, exuding positivity can help to ease tensions and create a more conducive atmosphere. By choosing to approach situations with a positive outlook, we can promote open communication and build stronger, more fulfilling relationships.
- iii) It's important to take responsibility for your actions, whether it's at work or at home. Emotionally intelligent people understand this and are honest when they make a mistake. By focusing on the issue at hand instead of your own mistakes, you can connect with others and build more meaningful relationships. When you take responsibility for your actions, you'll find that people are more forgiving and accepting of you. Remember that honesty and accountability go a long way.
- iv) It's important to develop self-awareness in order to better understand yourself and others. Spending time alone and practicing meditation can help you gain perspective and observe your thoughts and emotions objectively. This can lead to a greater level of emotional intelligence and the ability to relate to others' needs and feelings. By taking responsibility for your actions and focusing on the issue at hand, you can build meaningful relationships with others. Honesty and accountability are key to creating an environment of forgiveness and acceptance.
- v) It's important to be aware of how your emotions impact your interactions with others. Expressing emotions at

the right time and in the right way is key to building meaningful relationships. One way to control your emotions is by connecting them to your breath. Observing your breath can help you become more aware of your emotional state and regulate it better. When you're angry, your breath is typically fast and heavy. Practicing breathing exercises can help you manage your emotions in a healthy way.

- vi) It's important to be able to see things from others' perspectives, especially when managing a large team. What may seem right to you might not be the same for someone else, so it's important to empathize and understand their point of view. This is where being emotionally intelligent comes in handy - it allows you to see things from different angles and act accordingly. The right perception happens when you put yourself in the other person's shoes. And don't forget, one way to regulate your emotions is by connecting them to your breath. By observing your breath, you can become more aware of your emotional state and manage it in a healthy way.

To increase Emotional Quotient, it's crucial to be in tune with emotions and own sense of self-awareness. This allows to better understand and connect with others. Remember, Emotional Intelligence is a quality that develops gradually throughout your life, and nurture plays a huge role in its cultivation. Practicing meditation and gaining knowledge can facilitate healthy development of Emotional Quotient. The more consistent we are with our practice, the easier it becomes to tap into our inner strength, creativity, self-esteem, and intuitive ability - all of which contribute to Emotional Intelligence.

VII. Conclusion

If one wants to become a true master of something, one must teach it to others. One cannot give to others what they do not have their-self. Teaching is an effective way to learn deeply. It is important to provide students with training in moral values and life skills, as they will encounter new situations that will challenge their judgment and sense of morality as they grow older. Ancient wisdom can help instill a strong moral compass in children and youth based on rationality and inner strength.

Having received a lot of education, it is important to contribute to society. Education is not just about acquiring knowledge, but also about utilizing that knowledge to create a beneficial influence. Regrettably, education is frequently misconstrued and misapplied, causing issues in the world. We must educate ourselves and those nearby about the actual purpose of education, which is to embody high ethical standards and promote harmony and compassion in society. By doing this, we can genuinely make a positive impact on the world.

Education should be focused on developing strong, well-rounded personalities that possess the ability to give and receive constructive criticism. Having a sense of humor and a feeling of belongingness can also go a long way in creating friendliness and promoting harmony in society. Additionally, Free thinking is crucial in encouraging creativity and innovation. It's unfortunate that many people are boxed in by narrow ideologies, but by continuing to educate ourselves and those around us, can break free from these limitations and expand our perspectives.

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Chapter - 9

**DECODING SELF-ARCHIVING RIGHTS: HOW
SHERPA/ ROMEIO SHAPES RESEARCH
DISSEMINATION**

*Mukut Sarmah**

I. Introduction

Online resources for checking publisher copyright and self-archiving policies, play a crucial role in the academic community by providing comprehensive and up-to-date information on publishers' open access policies. These tools enable researchers and authors to quickly ascertain their rights and obligations regarding the self-archiving of scholarly articles. They offer detailed insights into various aspects of copyright compliance, such as versions of articles that can be archived, potential embargo periods, and the specific conditions under which works can be shared in institutional or subject-based repositories. By simplifying the complex landscape of publisher policies, these online resources significantly aid in the legal and ethical dissemination of academic work, fostering wider access to knowledge and supporting the open access movement.

II. What is SHERPA/RoMEO?

Sherpa Romeo is a web-based platform that compiles and displays open access policies from publishers and journals globally. Utilized by researchers, repository personnel, and

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research support groups worldwide, it aids in deciphering the intricate open access policies of publishers and journals. Each publisher or journal in Romeo undergoes a thorough examination by a dedicated team, who provide detailed summaries of the self-archiving rights and conditions granted to authors, on an individual journal basis. This policy information is primarily targeted at the academic research community.

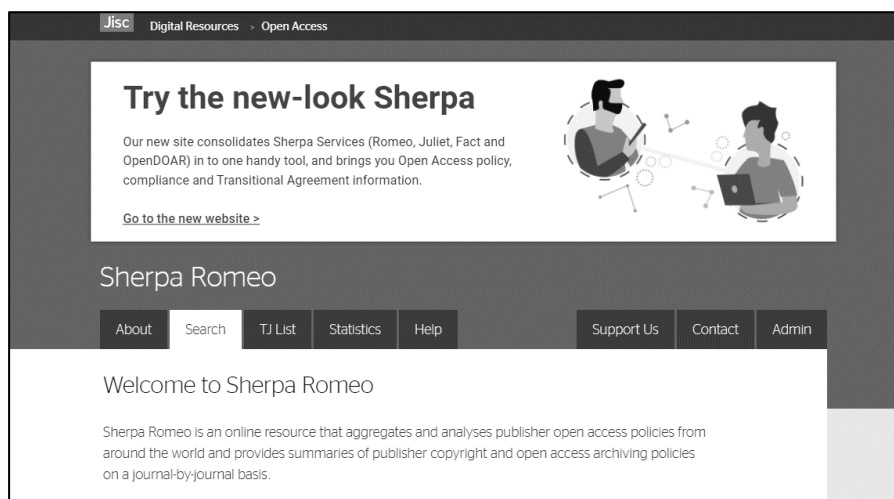


Figure 1: Home page Sherpa Romeo
(Source: <https://www.sherpa.ac.uk/romeo>)

Over the past 15 years, since its inception, there have been significant changes in publisher policies and the open access field, presenting challenges in accurately conveying the full spectrum of open access options allowed by publisher policies, in a user-friendly manner.

III. Updated Sherpa RoMEO

When Sherpa Romeo was initially developed, the landscape of open access was markedly different, presenting unique challenges to researchers and library professionals.

With the evolution of the open access sector, there has been a noticeable increase in the complexity of publishers' open access policies, a complexity that the old Romeo struggled to accurately represent. The revamped Romeo is designed to tackle this issue, ensuring it remains a reliable resource for researchers and repository staff. Acknowledging the need for an improved solution to help users navigate intricate policy details, Jisc's open access team embarked on an ambitious redesign project, tapping into the expertise of both their team and professionals from the sector. Their goal was to create a platform with a refreshed interface, better equipped to address the sector's current and future requirements, thus enhancing their support to users in understanding the ever-evolving open access policy environment.

Key enhancements in the user experience of the revamped Sherpa Romeo encompass:

- A refreshed, more contemporary interface that offers enhanced compatibility with mobile devices.
- An upgraded search and navigation system, allowing for quicker access to desired information.
- A restructured layout for publisher policies, simplifying the understanding of various open access choices permitted by these policies.
- The introduction of an iconography system to visually represent the features of publisher policies.

IV. Exploring and Finding Information

The updated Sherpa Romeo offers an expanded array of search and browse options compared to its predecessor. This enhancement aims to expedite your information retrieval process, catering to the diverse needs of the service's users.

V. Methods for Searching and Browsing

From the Sherpa Romeo homepage or the dedicated search page, you have multiple ways to look up the information you require. To perform a search on Sherpa Romeo (<https://www.sherpa.ac.uk/romeo>), the website offers specific search options. These new search and browsing features include:

- i) Journal Title or ISSN: Search by typing the title of the journal or its International Standard Serial Number (ISSN).
- ii) Publisher Name: If you're looking for policies from a specific publisher, you can search using the publisher's name.

Additionally, the site offers options to browse by country and by publisher, providing a more comprehensive way to explore open access policies



The image shows a search interface with two main search sections. The first section is for 'Journal Title or ISSN', featuring a text input field and a dark 'Search' button. The second section is for 'Publisher Name', also with a text input field and a dark 'Search' button. Below these are two light-colored buttons: 'Browse by Country' and 'Browse by Publisher'.

Figure 2: Search Options

Example:

Following is an example of search result on the journal “Library Hi Tech”

Title : Library Hi Tech [English]

ISSNs : Print: 0737-8831
URL : <https://www.emerald.com/insight/publication/issn/0737-8831>
Publishers : Emerald [Commercial Publisher]

Search

Enter a journal title or issn, or a publisher name below:

Journal Title or ISSN

Publisher Name

Figure 3: Search Page of Sherpa Romeo

Library Hi Tech

Publication Information

Title	Library Hi Tech (English)
ISSNs	Print: 0737-8831
URL	https://www.emerald.com/insight/publication/issn/0737-8831
Publishers	Emerald [Commercial Publisher]

Publisher Policy

Open Access pathways permitted by this journal's policy are listed below by article version. Click on a pathway for a more detailed view.

Figure 4: Display of Searched Journal

I. Policy Structure on Sherpa RoMEO

Policies are organized as a series of pathways, each delineating a method for achieving open access for a document. Authors can use these pathways to understand the steps to make their articles open access. Icons are used within these pathways to provide a succinct overview of the publisher's policies.

Each article version may have multiple open access pathways, influenced by various elements like funding sources, publisher stipulations, or article availability. Take, for instance, the accepted version of an article which might have two open access pathways. The author can choose either Pathway a or Pathway b, based on the article's funding source.







- Pathway a stipulates that the article must be funded by specific research councils. It includes a 2-year embargo and a CC BY-NC license, allowing availability on any repository or non-commercial website, along with two specific conditions.
- Pathway b is applicable for articles funded by different councils or departments. This also involves a 2-year embargo, a CC BY-NC license, and availability in any repository or non-commercial site, with two associated conditions.






II. Iconography for Publisher Policies

In its latest update, Sherpa Romeo introduces an iconography system to symbolize various facets of publisher policy. Publisher policies in Sherpa Romeo are organized as distinct pathways, each illustrating a unique method for a document to achieve open access. These pathways encompass a range of policies, and the icons are designed to depict the specific properties within these pathways. Jisc's team of open

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access experts carefully chose these icons, and their effectiveness was validated through user testing with a group of professionals from the industry. They may have the following properties, with associated icons:

Icon	Icon Name/Property	Description
	Prerequisites	Requirements that must be met to allow the pathway to be used, this includes: <ul style="list-style-type: none"> • Prerequisites: General prerequisites. • Prerequisite Funders: The pathway applies when funded by these funders. • Prerequisite Subjects: The pathway applies to research of these subjects.
	OA Fee	The pathway requires the payment of a fee (in addition to any normal publication fees that may be required) to make the article Open Access.
	OA Publishing	The pathway includes Open Access Publishing.
	Embargo	The pathway does not allow availability of the item until the embargo period has ended. Unless stated otherwise, the embargo starts on the date of publication.
	Licence	The licences that the pathway requires.
	Copyright Owner	The copyright owner that the pathway requires.

	Publisher Deposit	The repositories in which the journal publisher will automatically deposit the article version.
	Location	The websites on which the pathway allows the article version to be available. This includes self-archiving and publisher-deposit locations, including the website of the journal.
	Conditions	Conditions that apply to the pathway.
	Notes	Notes about the pathway
	Not Permitted	No Open Access pathway exists for the article version.

III. Registering a New Open Access Policy

To add a new open access policy for a publisher or journal not listed in Romeo, one must complete the detailed form on their Contact Us page. It's important to ensure the publisher or journal aligns with their inclusion criteria. Their team will evaluate the submission by reviewing the publisher and policy websites, and if they meet their criteria, they will add them to the directory, including related journals, and notify upon completion.

IV. Updating an Existing Open Access Policy on Romeo

They welcome updates to publisher and journal records from their community. To modify an existing record, one should use the 'Update Record' form accessible through the 'Suggest an update for this record' button at the bottom of each record. Publishers updating multiple titles can send a spreadsheet with the required information to help@jisc.ac.uk. Their team will

verify all updates with the publisher, so changes might take some time to reflect.

V. Inclusion Criteria for Journals and Publishers:

Journals:

- Must have a valid ISSN (including serial publications and conference proceedings).
- The editorial board must be clearly listed on the website.
- Licenses, open access policies, and copyright statements should be easily accessible online.

Publishers:

- The governing body should be clearly stated on the website.
- Contact information must be readily available.
- Publication ethics policies should be transparent on the website.
- They use the COPE Guidelines on publication ethics as a standard for evaluating publishers.

VI. Sherpa Services

Sherpa Services, provided by Jisc, comprise several tools designed to assist authors and institutions in open access publication and compliance. These services include:

- a) **Sherpa Fact:** It checks if compliance with funder open access policies can be achieved with a particular journal, using data from Sherpa Romeo, Sherpa Juliet, and other sources.
- b) **Sherpa Romeo:** This service summarizes publishers' open access archiving conditions for individual journals,

aggregating and analyzing publisher open access policies globally.

- c) **Sherpa Juliet:** A searchable database providing information on funders' conditions for open access publication, including policies and requirements on open access, publication, and data archiving.

Additionally, OpenDOAR, part of the Sherpa services family, facilitates the identification, browsing, and search for repositories

A. Journals

- Journals must have a valid ISSN listed on their website — to be valid it must appear on the ISSN portal.
- Each website must clearly state its editorial board.
- All licences, open access policies and copyright statements must be readily available online
- Your open access policy should include at least one way that an article (any version Published/Accepted/Submitted) can be made open access.

B. Publishers

- Contact details must be readily available
- Publication ethics policies must be clearly stated on the website

They use COPE Guidelines on publication ethics as a guide to best practice when evaluating publishers for inclusion. They recommend that publishers follow these guidelines.

VII. RoMEO Statistics

Sherpa Romeo, a comprehensive resource for open access publishing policies, provides vital statistics that reflect its extensive database and usage. The platform showcases a vast collection of publishers and journals, each with detailed open

access policies. These statistics not only highlight the number of journals and publishers included but also offer insights into user interactions, such as the frequency of searches and updates to policies. This data underscores the platform's role in aiding authors, researchers, and librarians worldwide in navigating the complex landscape of open access publishing, emphasizing its significance in the academic and research community.

Following is an overview of the data held in Romeo:

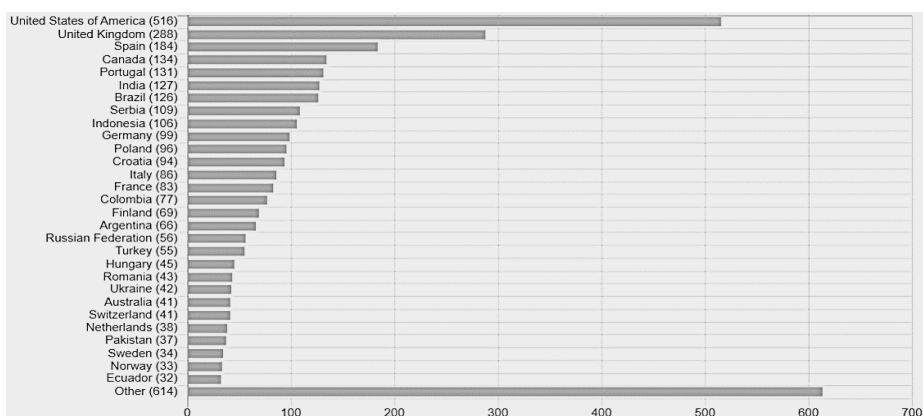


Figure 5: Publisher by Country

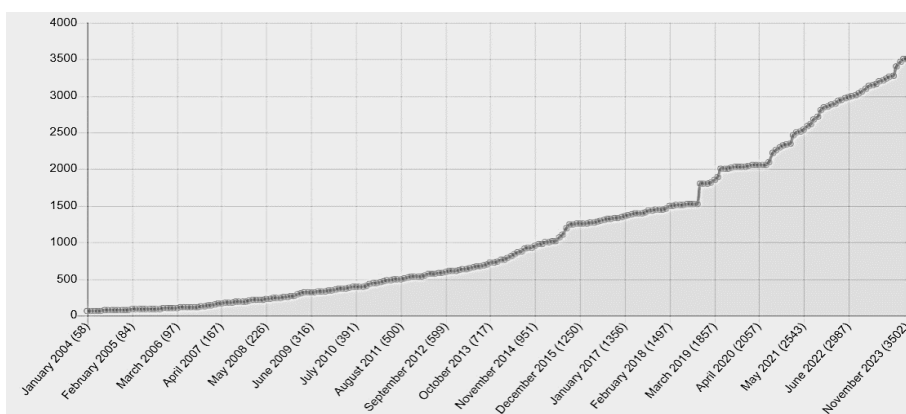


Figure 7: Growth of Publishers in Romeo (Source: https://v2.sherpa.ac.uk/view/romeo_visualisations/1.html)

VIII. Conclusion

Sherpa Romeo, is a globally utilized service that analyses open access policies of publishers worldwide, with over 80% of its usage coming from outside the UK. Collaborating with The Global Sustainability Coalition for Open Science Services (SCOSS), a funding initiative aimed at sustaining essential non-commercial, open access infrastructure services, Sherpa Romeo has received a positive response, garnering support from various consortia and institutions. It is an indispensable online resource for researchers, offering detailed information on publisher copyright and self-archiving policies. It allows researchers to understand and comply with these policies while ensuring their work's broader accessibility. The database's standardized format aids in comparing policies across publishers and includes specifics about article versions eligible for self-archiving, permissible deposit locations, and applicable embargo periods. This tool is particularly useful for researchers looking to share their work in institutional or personal repositories, or other platforms, ensuring they adhere to the relevant copyright and self-archiving policies, thereby increasing the visibility and impact of their research. SHERPA/RoMEO is a key asset in navigating the complex landscape of academic publishing, making it an essential tool for the research community.

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Chapter - 10

**GUIDELINES AND TOOLS ENGAGED IN
PUBLICATION ETHICS**

*Gautam Kumar Sarma **

I. Introduction

Ethics encompasses the moral concepts that dictate an individual's conduct. Publication ethics is careful observance of the scholarly publication's ethical and legal standards. These are standards of action that differentiate between acceptable and objectionable behavior, as well as right and wrong.

A publication is a medium designed for the purpose of disseminating information to a wide audience. Books, magazines, journals, and other printed materials are commonly referred to as publications. Online publications are distributed over the Internet. In the context of academics and research, publications pertain to a certain mode of communication employed by scholars and researchers to delineate the intellectual parameters of their respective fields and areas of proficiency. Academic and research articles are distinguished by their adherence to a formal tone and reliance on evidence-based arguments.

Consequently, there has been a notable surge in endeavors, discourse, and deliberation aimed at enhancing consciousness regarding research integrity while concurrently advocating for ethical norms, fairness, and inclusivity within the realm of academic publishing. The examination of the duties and obligations of authors, editors, publishers, societies, and funders

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in upholding trust and augmenting transparency is of particular significance. It is also essential to always acknowledge the source of any words, ideas, data, or quoted text that an academician or researcher has used in his/her writing as a defense against allegations of plagiarism.

The academic environment has undergone substantial changes in the last few years. These changes include advancements in publishing technology, the emergence of open science practices, the rise of predatory publishing, the globalization of academic endeavors, the growing reliance on research assessment exercises, and the widely discussed replication crisis.

Consequently, there has been a notable surge in endeavors, discourse, and deliberation aimed at enhancing consciousness regarding research integrity while concurrently advocating for ethical norms, fairness, and inclusivity within the realm of academic publishing. The examination of the duties and obligations of authors, editors, publishers, societies, and funders in upholding trust and augmenting transparency is of particular significance.

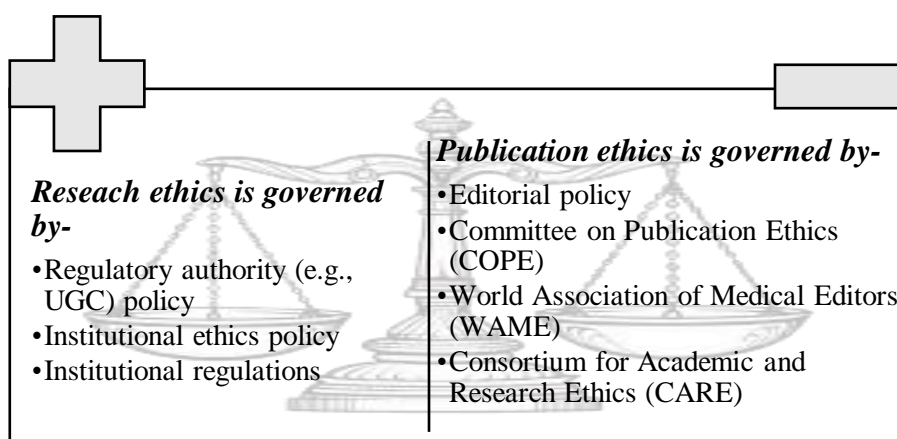


Figure 1: Research Ethics vs Publication Ethics

II. Publication Misconduct

Research misconduct is also applicable in the field of scholarly publishing. In scholarly publishing misconduct encompasses fabrication, falsification, and plagiarism. (<https://ori.hhs.gov/definition-research-misconduct>).

Publication misconduct violates publication ethics.

- *Fabrication* refers to the act of generating fictitious facts or outcomes and subsequently documenting or presenting them.
- *Falsification* involves manipulating study supplies, equipment, or techniques and altering or omitting data or conclusions to misrepresent the research in the official research record.
- *Plagiarism* refers to the act of appropriating another individual's ideas, procedures, results, or words without providing proper attribution.

Table 1: Types of plagiarism

(<https://www.ithenticate.com/resources/reports/decoding-plagiarism-and-attribution>)

Types of plagiarism	Definition	How to avoid
Complete Plagiarism	Complete plagiarism occurs when an author steals a study, article, or other work and resubmits it under their name.	Never copy someone else's work. Do original research and write papers yourself.
Verbatim Plagiarism	Verbatim plagiarism is duplicating someone else's words without	Cite other people's words and works if you have utilized them. If the source is cited precisely, it

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	credit, indentation, or quotation marks.	should be enclosed in quotation marks.
Misleading Attribution	An incomplete or erroneous list of authors contributing to a paper is known as misleading attribution.	Refrain from taking out co-authors who contributed to the study or adding new co-authors who did not participate.
Replication	Replication involves submitting an article to various publications and having it published twice.	Manuscripts should only be sent to one publisher at a time. Please cancel submissions submitted to numerous outlets by mistake.
Salami Slicing	Salami slicing divides data from a single research concept into smaller publishable parts or slices.	One scientific article should report one study. The second publication should focus on new understanding rather than rehashing data from the first.
Paraphrasing	Paraphrasing means modifying someone else's words and using them on your own. It includes basic rephrasing to total rewriting while	It is possible to paraphrase while properly crediting the authors.

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	retaining the original idea.	
Self-plagiarism	Authors commit self-plagiarism when they reproduce work from their prior studies without appropriately attributing the source.	Proper citation should be provided when utilizing data and text from one's own previously published work.
Invalid Source	When an author cites a false, nonexistent, or inaccurate source, it is considered invalid source.	Keep track of sources and verify correctness before submitting an academic paper. Never lie about a source.

III. Predatory Publishing

Predatory publishing is commonly used to define the deliberate and profit-driven dissemination of supposedly scholarly material, such as journal articles, monographs, books, or conference proceedings, in a manner that is dishonest or fraudulent and without any consideration for ensuring the quality of the content. Predatory publishers have the potential to deceive authors, as well as their sponsors and institutions, by imposing costs associated with publication without delivering the anticipated or industry-standard services (Kearney, 2015). The growth of predatory publication has been widely acknowledged due to the rise of online publishing, combined with a prevalent academic environment emphasizing

research assessment tied to the prestige of journal titles and journal-level metrics.

Predatory publishing may often be identified by the presence of several commonly co-occurring elements, which include hidden or ambiguous author fees, inadequate peer review conducted by individuals without expertise in the relevant subject, and the assurance of article approval and/or very rapid publication timelines.

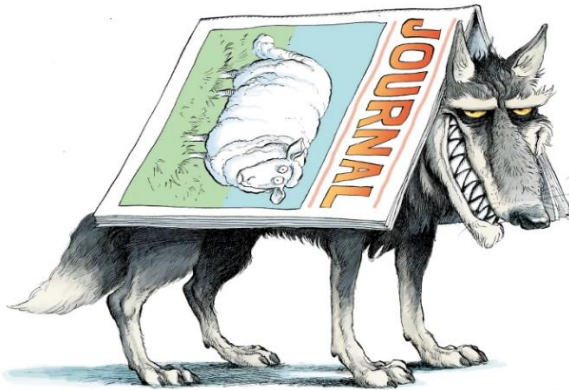


Figure 2: Predatory Publishing
Illustration by David Parkins

Additional potential signs of predatory publishing may encompass the following aspects:

- Insufficient or deceptive disclosure of policies (such as copyright and user licenses), procedures, editorial staff, achievements, and affiliations on the journal's website or in communication
- The journal's description and requirements, along with several published papers, exhibit deficiencies in language usage, characterized by poor grammar and substandard production quality.
- The current situation reveals a conspicuous need for complete ethical guidelines and the obligatory

inclusion of ethics statements, specifically in research involving animals and people, conflicts of interest, and research financing.

- There is a lack of mechanisms for correcting or retracting articles that may contain errors or misleading information.
- Articles included in a table of contents may only be retrievable on electronic search systems for a while.

The identification of indicators that may suggest the presence of counterfeit academic journals is derived from the comprehensive framework encompassing the “16 Principles of Transparency” (COPE, 2019). They are as follows-

- *Website*: The journal's website misrepresents indexing, metrics, and scientific publishing organization affiliation, needs an ISSN, borrows one from another publication, and copies another journal/publisher's site.
- *Name of journal*: The journal name may be like another, causing confusion regarding scope or relationship.
- *Peer review process*: Insufficient or no peer review is provided for submitted papers.
- *Ownership and management*: Information regarding the ownership and/or management will be missing, confusing, misleading, or incorrect.
- *Governing body*: Information regarding the editorial board will be missing, confusing, misleading, or incorrect.
- *Editorial team/contact information*: Information regarding the editorial team will be insufficient, confusing, misleading, or incorrect.
- *Copyright and licensing*: Missing or confusing copyright, publication, and user licensing policies.
- *Author fees*: There is no clear mention of submission fees.

- *Process for identification of and dealing with allegations of research misconduct:* There will be no explanation of how cases of claimed misconduct are dealt with.
- *Publication ethics:* No guidelines exist for publication ethics, including authorship, data sharing, data replication, intellectual property, ethical oversight, conflicts of interest, and corrections/retractions.
- *Publishing schedule:* No publication frequency is specified, and the publishing timeline looks inconsistent based on journal content.
- *Access:* Access to material and related prices are not specified, and some pieces are unavailable.
- *Archiving:* Journal material is not backed up electronically.
- *Revenue sources:* There are no explicit business models, partnerships, or sources of revenue. However, publishing fees or waiver status are tied to editorial decisions.
- *Advertising:* Advertising policy is unknown or tied to editorial decisions.
- *Direct marketing:* Direct marketing is obtrusive and deceptive.

IV. Best Practice in Scholarly Publishing

Several prominent organizations, including the Committee on Publication Ethics (COPE), the World Association of Medical Editors (WAME), and the Open Access Academic Publishing Association (OASPA), have collaborated to develop a comprehensive framework of principles about transparency and optimal methodologies in the context of academic publishing.

A. Committee on Publication Ethics (COPE)

COPE was created to advise journal publishers on ethical concerns. After initially targeting academic journal editors and publishers, COPE today welcomes universities, research institutions, organizations, and individuals interested in publishing ethics. The COPE was established in 1997 by a collective of medical journal editors who expressed apprehension about instances of misconduct in academic publishing. These instances encompassed various unethical practices such as plagiarism, attempted and actual duplicate publication, fraudulent data manipulation, unethical research conduct, breaches of confidentiality, and similar transgressions. COPE is now a registered charity after being a loose group. COPE encourages the publishing culture to embrace ethical practices. COPE influences via education, resources, member support, and professional debate in the community.

Journals, publishers, organizations, universities, or research institutes that are members of COPE must embrace ethical practices in scholarly publishing and must apply COPE principles of publication ethics defined in the “Core Practices of COPE”. The “Core Practices of COPE” includes (<https://publicationethics.org/core-practices>):

- *Allegations of misconduct*: Journals should have a defined mechanism for resolving accusations, but they are brought to their notice. Journals must investigate wrongdoing before and after publication. Policies should address whistleblower charges.
- *Authorship and contributorship*: Clear authorship and contributorship norms and dispute resolution mechanisms should clarify who contributed and in what capacity.

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- *Complaints and appeals*: Journals should explicitly explain how to handle complaints against personnel, editorial boards, or publishers.
- *Conflicts of interest / Competing interests*: Authors, reviewers, editors, journals, and publishers require apparent conflict of interest definitions and policies before and after publication.
- *Data and reproducibility*: Journals should promote data availability, reporting criteria, clinical trials and other research design registration according to professional standards.
- *Ethical oversight*: Monitoring of permission to publish, publication on vulnerable populations, ethical research using animals and humans, management of sensitive data, and ethical business/marketing practices is necessary.
- *Intellectual property*: Copyright, publication, and other intellectual property regulations should be clearly stated. Authors and readers should also know about publication fees. Policies should define pre-publication that precludes consideration. Define plagiarism and redundant/overlapping publishing.
- *Journal Management*: The business model, rules, practices, and software of an editorially independent publication and the administration and training of editorial team must be well-defined and executed.
- *Peer review processes*: The peer review process must be transparent and well-managed. The editors and reviewers should learn the rules on many areas of peer review, including suitable review models and methods for resolving conflicts of interest, appeals, and disputes.
- *Post-publication discussions and corrections*: Post-publication discourse should be there in the journal site, also should have provision via letters to the editor, or in

an authorized platform. They must have post-publication corrections, revisions, and retractions.

B. World Association of Medical Editors (WAME)

WAME (pronounced “whammy”), a nonprofit volunteer association of peer-reviewed medical journal editors worldwide, was founded in 1995 to promote worldwide collaboration and education. WAME has the following goals (<https://www.wame.org>):

- To facilitate worldwide cooperation and communication among editors of peer-reviewed medical journals.
- To improve editorial standards and promote professionalism in medical editing through education, self-criticism and self-regulation.
- To encourage research on the principles and practice of medical editing.

Member journals (medical journals) of WAME must undergo some recommendations as per its publication ethics policies. Medical journals strive to ensure the inclusion of the most rigorous scientific research by employing a peer-review process. To achieve this goal, the entire peer review and publication process must be carried out with care, objectivity, and equity. Most elements within this process include significant ethical concepts and judgements, frequently left implicit and seldom disclosed to the public. The credibility of academic journals relies on the level of trust they get from many stakeholders, such as readers, authors, researchers, reviewers, editors, patients, study participants, funding agencies, and public health policy administrators. Trust may be enhanced by thoroughly explaining the journal's rules and guaranteeing the ethical treatment of all parties engaged in the publication process.

The following are the areas of recommendation as per Publication Ethics Policies for Medical Journals by WAME (WAME, n.d.):

- *Conflict of Interest in Peer-Reviewed Medical Journals:* When an individual's private interests (competing interests) conflict with their scientific and publishing responsibilities, a reasonable observer might question whether the individual's behaviour or judgement was motivated by competing interests. COI in medical publications impacts journals, research institutes, funding agencies, the media, and the public who care about research integrity. Journals care about manuscript-specific COI.
- *Study Design and Ethics:* Good research should be well-justified, planned, and geared to answer the research topic.
- *Authorship:* Journals should publish authorship guidelines. Authorship usually involves drafting and evaluating the document and contributing intellectually, although roles might differ. Participants should decide who will be an author and in what order early in the study process to minimize disagreements and misunderstandings that might delay or prohibit article publication. All writers must pledge to write the paper accurately, and one must be the guarantor and assume responsibility for the job.
- *Peer Review:* Scientific publishing and dissemination depend on peer review. Editors choose Peer reviewers to evaluate written research's strengths and flaws to enhance journal reporting and discover the best and most acceptable information. Article reviewers should be scientific specialists and picked for their objectivity and scientific understanding.

- *Editorial Decisions*: The evaluation of a submission should rely only on its significance, novelty, transparency, and alignment with the journal's objectives and subject matter. It is essential to have a well-defined written policy outlining the specific method that will be adhered to.
- *Originality, Prior Publication, and Media Relations*: It is essential for academic journals to clearly articulate their editorial standards on the selection criteria for content to be considered for publishing. In academic publishing, it is typically expected that journals prioritize including original research that has yet to be disseminated.
- *Plagiarism*: When publishing original works, journals must adhere to established guidelines against plagiarism.
- *Advertising*: Advertising and reprints generate significant revenue for many scientific publications, creating a conflict of interest. Ad income and reprint possibilities should not affect editorial decisions. Journal editing and advertising should be separate. Advertisers and sponsors should never control editorial content.
- *Responding to Allegations of Possible Misconduct*: Journals need a well-defined protocol for addressing grievances or accusations of wrongdoing against writers, editors, reviewers, and other relevant parties.
- *Relation of the Journal to the Sponsoring Society (if applicable)*: The journals' governance and ties to the sponsoring society should be stated in their policy. Because disagreements may affect the journal's intellectual integrity, reputation, and financial success, owners and editors-in-chief should respect, trust, and recognize each other's authority and obligations.

C. Open Access Scholarly Publishing Association (OASPA)

The goal of OASPA, a varied network of organizations involved in open scholarship, is to support and facilitate open access as the

primary means of distribution for academic works. As a reputable convener of a wide range of international open-access stakeholders and a tried-and-true location for fruitful cooperation, OASPA promotes the adoption of Creative Commons licenses by publishers with the following missions (<https://oaspa.org>)-

- *Leadership and Development:* To draw attention to the advantages of open-access publishing and to policies that strengthen and encourage it.
- *Collaboration and Convening:* To bring together interested parties from the community to exchange stories, talk about issues, and find ways to promote open access.
- *Setting Standards:* To advance open access best practices and ethics, rigorously evaluate membership, and collaborate on significant academic communication efforts.
- *Promoting Innovation:* To support the creation and use of cutting-edge methods for academic publication and the associated benefits made possible by open-access material.
- *Supporting the OA Ecosystem:* To stimulate the creation of various frameworks, business plans, and regulations that back open-access publishing and, in the long run, foster a thriving, competitive market for open-access publishing exclusively.

OASPA engaged in a collaborative effort with the Committee on Publication Ethics (COPE), the Directory of Open Access Journals (DOAJ), and the World Association of Medical Editors (WAME) to establish guidelines for transparency and optimal practices in scholarly publications. The objective was to identify these principles and emphasize that they constitute a crucial component of the evaluation criteria for membership applications.

- *Peer review process:* Journal material must indicate peer-review status. Reviewers and specialists outside the

journal's editorial staff provide feedback on articles. The journal's website will fully explain this approach and any peer review policies.

- *Governing Body*: Journals must have editorial boards or other governing bodies with subject-matter experts. The journal's website will provide its editors' complete names and affiliations.
- *Editorial team/contact information*: Journals must provide their editors' names and affiliations and the editorial office's contact information on their website.
- *Author fees*: The journal's manuscript processing and publishing fees must be clearly stated where potential authors can find them before submitting their manuscripts for review or explained to authors before they start preparing their manuscripts.
- *Copyright*: Copyright and licensing information will be prominently stated on the journal's website and all HTML and PDF articles.
- *Process for identification of and dealing with allegations of research misconduct*: Publishers and editors must identify and prevent research misconduct, including plagiarism, citation manipulation, and data falsification or fabrication. A journal or its editors cannot approve of such misbehaviour. If a journal's publisher or editors learn of a research misconduct claim related to a published paper, they must follow COPE's standards (or similar).
- *Ownership and management*: Journal websites must explicitly state ownership and management. Editorial board of a journal should be free from the influences of the ownership of the publication.
- *Web site*: A journal's Web site and texts contains must show high ethical and professional standards. It cannot imitate another journal or publisher's site or include deceptive information.

- *Name of journal*: The journal name must be original and not deceive potential writers and readers about its origin or affiliation with other publications.
- *Conflicts of interest*: A journal must explicitly define its procedures for managing editor, author, and reviewer conflicts of interest.
- *Access*: How the journal and articles are available to readers and if there are subscription or pay-per-view costs must be indicated.
- *Revenue sources*: The journal's website must explicitly disclose its business models or income streams, such as author fees, subscriptions, advertising, reprints, institutional funding, and organizational support.
- *Advertising*: If necessary, journals must declare their advertising policy, including what sorts of ads will be accepted, who makes the decisions, and whether they are tied to content or reader behaviour (online only) or presented randomly.
- *Publishing schedule*: Journal publishing frequency must be stated.
- *Archiving*: The journal should explicitly outline its strategy for electronic backup and preservation of access to its material if it ceases publication.
- *Direct marketing*: Direct marketing, including manuscript solicitation, by the journal must be relevant, well-targeted, and unobtrusive.

D. Consortium for Academic and Research Ethics (CARE)

The University Grants Commission (UGC) issued a public notice on November 28, 2018, officially announcing the establishment of the Consortium for Academic and Research Ethics (CARE) to address the issue of predatory publishing. The primary objective of CARE was to strengthen and enable the scholarly community in India across all fields by executing its

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"Quality Mandate" to conform to global standards of rigorous research. The UGC's "Quality Mandate" lays considerable emphasis on promoting high-quality research and producing novel knowledge by academics.

The objectives of the UGC-CARE are (<https://ugccare.unipune.ac.in>):

- To promote quality research, academic integrity, and publication ethics in Indian universities.
- To promote high-quality publications in reputed journals that would help in achieving higher global ranks.
- To develop an approach and methodology for the identification of good-quality journals.
- To prevent publications in predatory, dubious, or substandard journals that reflect adversely and tarnish the image of Indian academia.
- To create and maintain a "UGC-CARE Reference List of Quality Journals" (UGC-CARE List) for all academic purposes.

Organization of the UGC-CARE

UGC-CARE Empowered Committee (UGC-CARE EC): UGC has formed the Empowered Committee (UGC-CARE EC) to supervise the functioning of UGC-CARE. The same committee will govern the activities of the UGC Cell for Journal Analysis at Savitribai Phule Pune University (SPPU), Pune.

UGC-CARE Council members: Council Members are representatives from Statutory Councils / Academies/ Government bodies in Social Sciences, Humanities, Arts and Fine Arts, Science, Medical, Agriculture, Engineering and the Association of Indian Universities.

UGC-CARE Universities-

- *Jawaharlal Nehru University*, New Delhi (Northern Zone consists of Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand)
- *The M. S. University of Baroda, Vadodara* (Western Zone consists of Chhattisgarh, Dadara and Nagar Haveli, Daman and Diu, Goa, Gujarat, Madhya Pradesh, Maharashtra)
- *University of Hyderabad*, Hyderabad (Southern Zone consists of Andaman & Nicobar, Andhra Pradesh, Karnataka, Kerala, Lakshadweep, Puducherry, Tamil Nadu, Telangana)
- *Tezpur University*, Assam (Eastern Zone consists of Arunachal Pradesh, Assam, Bihar, Jharkhand, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, Tripura, West Bengal)

UGC-CARE Lists

The UGC-CARE List is established and sustained by the "Cell for Journals Analysis" at Savitribai Phule Pune University (SPPU) inside the Centre for Publication Ethics (CPE), with assistance from the INFLIBNET Centre located in Gandhinagar, Gujarat.

UGC-CARE prepares two approved lists of journals. Indian journals are included in List Group I, focusing on those from the humanities, arts, languages, culture, and Indian knowledge systems. Journals from all disciplines that are indexed in widely recognized databases, such as Web of Science (Arts and Humanities Citation Index Source Publication, Science Citation Index Expanded Source Publication, and Social Science Citation Index Source Publication), or Scopus (Source list), are included in

List Group II. The UGC-CARE List is dynamic. Quarterly updates will occur in January, April, July, and October annually.

Procedure for Submitting a New Journal in UGC-CARE

- *Universities and Colleges:* Teachers at universities are the only ones who can suggest journals that follow the correct filing process. For submission of journals of a university, the IQAC cell of the university may suggest the titles to regional UGC-CARE Universities. For colleges, IQAC cells of the concerned colleges may suggest journal titles to parent university IQAC cells. If found suitable, parent university IQAC cell may suggest journal titles to any of the four UGC-CARE Universities, whichever is nearest.
- *Individuals:* Individuals can suggest a journal title/s to a UGC-CARE University through the nearest university's IQAC cell by following the submission process.
- *Publishers:* Publishers can propose journal titles to the IQAC Cell of a university by completing the submission process.
- *UGC-CARE Universities:* Each UGC-CARE University should follow the UGC-CARE protocol to add journal titles from regional universities, colleges, people, and publishers. The UGC-CARE University shall evaluate the journal as per UGC-CARE protocol Part II (Primary Criteria). If the title is suitable, the UGC-CARE University has to submit the necessary information through the CARE portal.
- *UGC-CARE Council members:* Each UGC-CARE Council member should validate the academic quality of journal and must justify their recommendations to add journal title/s. Also, members must provide basic details of the journal title/s on UGC-CARE if found suitable.

Addition criteria of journal Title/s in UGC-CARE list

The UGC Cell at Savitribai Phule Pune University will look at every title sent in by UGC-CARE Council members and UGC-CARE universities, following the rules for journal analysis set by the UGC-CARE Empowered Committee.

The analyzing methodology for new titles consists of three parts (<https://ugccare.unipune.ac.in>):

- UGC-CARE Protocol Part I: Basic information
- UGC-CARE Protocol Part II: Primary Criteria
- UGC-CARE Protocol Part III: Secondary Criteria

Protocol Part I is designed to acquire basic details about the journal from universities/ colleges/ individuals or publishers. The basic information includes the title of the journal, focus subject, publisher, address, language, publishing frequency, editorial details, ISSN/eISSN and membership of organizations like COPE, WAME, etc.

Part II and III of the protocol are intended to conduct internal analysis and assessment. This involves thorough examinations, conducting extensive research, and critically evaluating the subject matter utilizing a systematic, algorithmic elimination process and metrics based on weighted criteria on a scale ranging from 1 to 10.

V. Publication Ethics Checklist

The proliferation of predatory journals poses a significant threat to the integrity of scientific communication. Authors may use checklists to ensure adherence to publication ethics when submitting journal papers, research articles, and other scholarly works. Several publishers have created checklists to assist writers

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and editors in identifying possible predatory journals. Also, authors can independently review their manuscripts before submission to avoid predatory publishing.

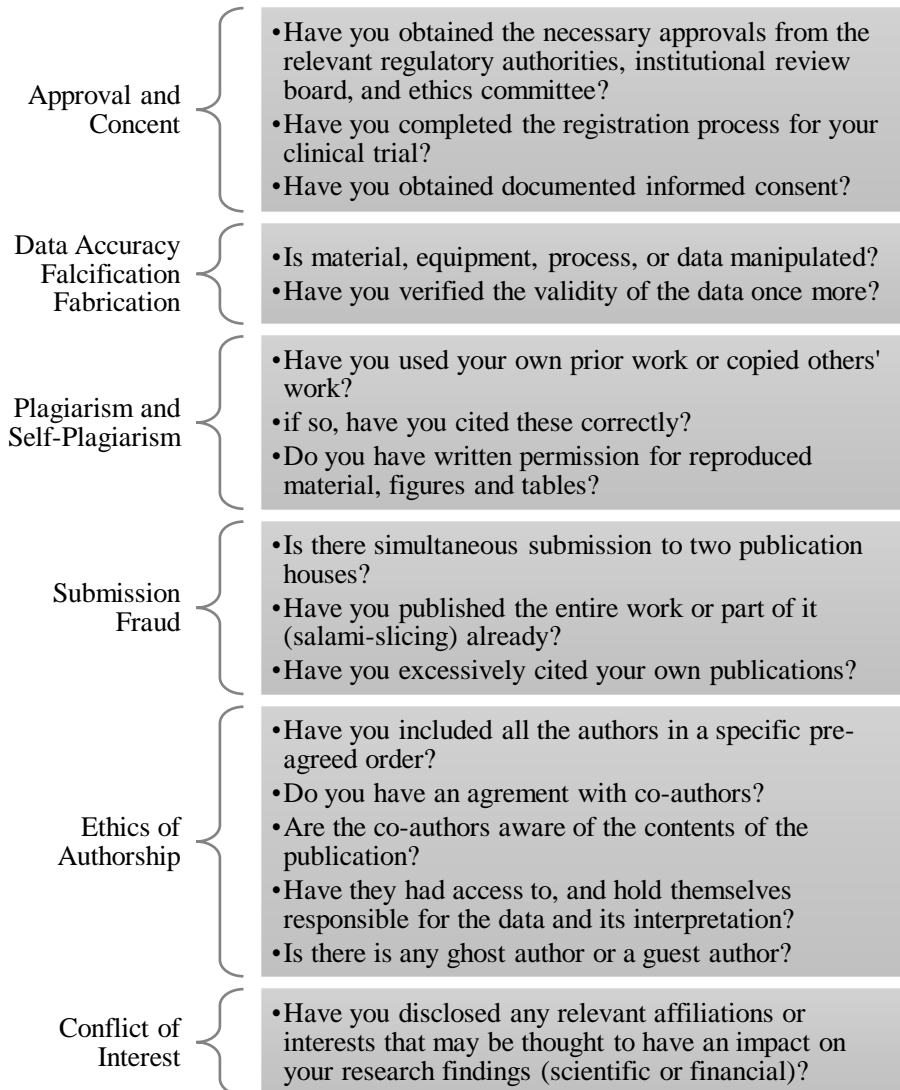


Figure 3: Publication Ethics Checklist (Sengupta & Honavar, 2017)

VI. Conclusion

The significance of ethical issues has been increasingly recognized within the scientific community. The growing public apprehension over the boundaries of investigation and legal modifications in human rights and data protection has brought ethical issues to the forefront of research. The authors engage in various unethical practices, which may be deliberate or unintentional. Knowing publishing ethics enables authors to deliberately avoid engaging in such misbehaviour and conduct their research honestly and ethically while striving to publish their work. It is also considered advantageous for publishers to implement publishing rules to guarantee ethical and responsible research dissemination. Publishers must guarantee that authors have obtained the necessary consents and licenses before publishing their work.

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Chapter - 11

**BEYOND COPYRIGHT WALLS: AN INTRODUCTION
TO CREATIVE COMMONS, COPYLEFT, AND OPEN
EDUCATIONAL RESOURCES**

*Badan Barman**

I. Introduction

The concepts of creative commons, copyleft, and Open Educational Resources (OER) involve the sharing and reuse of creative works; however, they have distinct meanings and purposes at some points in time, while in others they overlap. Creative Commons (CC) is a global non-profit organisation that provides a suite of open licenses for creators with varying degrees of sharing and reuse permissions. Copyleft denotes a specific type of licensing that ensures derivative works of a copyrighted creation inherit the same licensing obligations, which means content can be copied and modified provided the user preserves the freedom of use and modification for all versions. OER materials include textbooks, lesson plans, and multimedia that are openly accessible for use, reuse, and adaptation without significant restriction. Therefore, copyleft licenses are stricter, enforcing derivative works to be open, while CC offers a spectrum of open licenses with different permissions, and OER is a range of materials that can be used, reused and adapted without significance restriction.

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II. Creative Commons

Creative Commons (CC) is an American non-profit organization and international network devoted to educational access and expanding the range of creative works available for others to build upon legally and to share. It was founded on January 15, 2001 by Lester Lawrence Lessig III, Hal Abelson, and Eric Eldred with the support of Center for the Public Domain. Creative Commons is located at Mountain View, California, United States.

The organization has released several copyright-licenses, known as Creative Commons licenses, free of charge to the public. The initial set of Creative Commons licenses was published on December 16, 2002. These licenses, depending on the one chosen, restrict only certain rights or none of the work instead of traditional copyright, which is more restrictive.

Creative Commons licenses are built on three core principles and they are:

- i) **Attribution:** Properly crediting the original creator when using their work.
- ii) **Sharing:** Allowing others to freely copy, distribute, and adapt the work, with or without restrictions depending on the chosen license.
- iii) **Remixing and Building Upon:** Enabling users to create derivative works based on the original, again within the boundaries of the specific license chosen.

A. Conditions in Creative Commons Licenses

All the creative commons licenses comprise a selection of four conditions:

- i) **Attribution (by):** Licensees may copy, distribute, display and perform the work and make derivative works based on it only if they give the author or licensor the credits in the manner specified by these.
- ii) **Non commercial or NonCommercial (nc):** Licensees may copy, distribute, display and perform the work and make derivative works based on it only for noncommercial purposes.
- iii) **No Derivative Works or NoDerivs (nd):** Licensees may copy, distribute, display and perform only verbatim copies of the work, not derivative works based on it.
- iv) **ShareAlike (sa):** Licensees may distribute derivative works only under a license identical to the license that governs the original work.



Creative Commons

CC stands for Creative Commons. It represents that the content is released under Creative Commons (CC) license.



BY

BY stands for By Attribution. It represents that the original creation needs to be credited.



SA

SA stands for ShareAlike. It represents that if the content is used for remix, transform or build upon, it needs to be released under the same license as the original.



ND

ND stands for No Derivative. It represents that the content cannot be modified, transformed or built upon.



NC

NC stands for NonCommercial. It represents that the content cannot be used for commercial purposes.

Figure 1: Conditions in Creative Commons Licenses

B. Types of Creative Commons Licenses

Mixing and matching the four conditions of creative commons produces 24 combinations, of which 16 are unique. Out of the sixteen, five include both the “nd” and “sa” clauses, which are mutually exclusive and are therefore not valid Creative Commons licenses. This is because ND forbids any modifications, while SA requires derivative works to be shared under the same license, creating a contradiction. Out of the eleven valid licenses, five lack the Attribution element and are phased out because 98% of licensors requested Attribution, but they are still available for viewing on the website. There are thus six regularly used licenses:

- i) Attribution alone (BY);
- ii) Attribution + Noncommercial (BY-NC);
- iii) Attribution + NoDerivs (BY-ND);
- iv) Attribution + ShareAlike (BY-SA);
- v) Attribution + Noncommercial + NoDerivs (BY-NC-ND);
- vi) Attribution + Noncommercial + ShareAlike (BY-NC-SA).
- vii) CC0: Creative Commons sought to provide a standardised, global solution for public domain dedication because creators used to face difficulties releasing their works into the public domain due to varying copyright laws across jurisdictions. This resulted in the origin of the CC0 license. Contents declared under Creative Commons Zero (CC0) are the content in which copyright is absent and the material is released into the public domain. This type of content does not even require attribution.

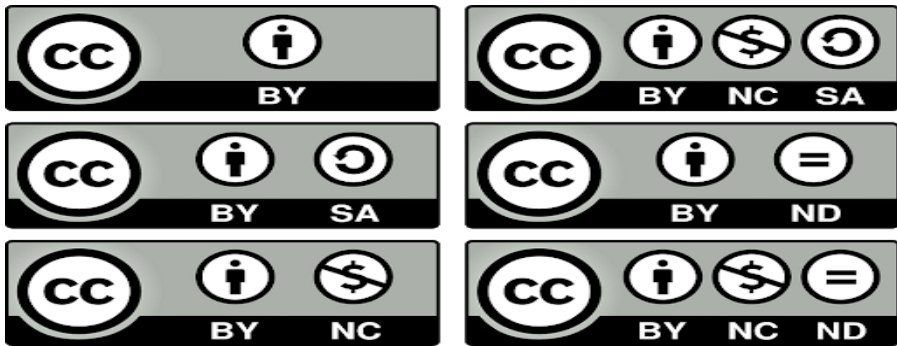


Figure 2: Six Most Commonly Used Creative Commons Licences

Creative Commons offers the above six international licenses, which are called unported licenses. However, the organisation provides “ported” versions of their core licenses for some jurisdictions. These versions incorporate local legislation and legal terms into the existing license text, making them more readily enforceable in specific countries. However, these ported versions are not a distinct category of licenses and are still considered variants of the core six licenses. As of February 2008, there are 43 jurisdiction-specific licenses.

The Attribution (BY) is the most permissive option offered by Creative Commons and are part of all six regularly used creative commons licenses. The only requirement under the BY license is to provide proper attribution to the original creator. Therefore, one could consider the permissions granted by the BY license as a kind of “baseline” in the sense that any other Creative Commons license will either add restrictions or maintain all of these baseline permissions. It allows anyone to:

- i) Share and copy the work,
- ii) Adapt and build upon the work,
- iii) For any purpose, and
- iv) Even commercially.

III. Copyleft

Copyleft is the practice of granting the right to freely distribute and modify intellectual property with the requirement that the same rights be preserved in derivative works created from that intellectual property. So, intellectual property that is released under copyleft cannot be redistributed by adding additional restrictions. This means that every copy of the intellectual property, even if it has been modified, must be released under the same initial licence.

Li-Chen Wang, an American computer engineer, made early use of the word copyleft in Palo Alto Tiny BASIC's distribution notice "@Copyleft All Wrongs Reserved" in June 1976. Tiny BASIC was not distributed under any formal form of copyleft distribution terms but was presented in a context where source code was being shared and modified. Tiny BASIC was designed in response to the open letter published by Bill Gates complaining about users pirating Altair BASIC, which sold for \$150.

Richard Matthew Stallman, who worked for a few years on a Lisp interpreter- a software, supplied a public-domain version of his work to Symbolics Inc. Symbolics extended and improved the Lisp interpreter, but when Stallman wanted access to the improvements, Symbolics refused. This incidence prompted Stallman to work towards eradicating this emerging behaviour and culture of proprietary software. Again, later on, Stallman was influenced by the letter from Don Hopkins in 1984 or 1985, who used the phrase "Copyleft – all rights reversed". All of these influenced Stallman to work on the concept of copyleft and he pioneered the concept, which uses the principles of copyright law to preserve the right to use, modify, and distribute free software. He is also the main author

of several copyleft licences, including the GNU General Public Licence, the most widely used free software licence.

A. Definition: The concept of copyleft was described in Richard Matthew Stallman’s GNU (a reflexive acronym for GNU’s Not Unix) Manifesto in 1985 as “GNU is not in the public domain. Everyone will be permitted to modify and redistribute GNU, but no distributor will be allowed to restrict its further redistribution. That is to say, proprietary modifications will not be allowed. I want to make sure that all versions of GNU remain free.” Thus, Richard Matthew Stallman uses the principles of copyright law to preserve the right to use, modify, and distribute free software.

Copyleft.org (<https://copyleft.org>) describes copyleft as “a strategy of utilizing copyright law and licensing to pursue the policy goal of fostering and encouraging the equal and inalienable right to copy, share, modify and improve creative works of authorship.”

According to Dictionary.com (<https://www.dictionary.com/>) copyleft is “the right to freely use, modify, copy, and share software, works of art, etc., on the condition that these rights be granted to all subsequent users or owners”.

The copyleft symbol is a mirrored version of the copyright symbol, i.e., a reversed C in a circle, and the copyleft is based legally on copyright, so the work should have a copyright notice or symbol along with the copyleft licence. Therefore, to copyleft, we first state that it is copyrighted; then we add distribution terms, which are a legal instrument.

B. Copyleft and Other Licences: The Public Domain (PD) consists of all the creative work to which no exclusive intellectual property rights apply because those rights may have

expired, been forfeited, expressly waived, or may be inapplicable. Because no one holds exclusive rights, anyone can legally use or reference those works without permission, and therefore it grants all rights to all people. PD does not require users to distribute derivative works under the same license and therefore, it allows uncooperative people to convert the program into proprietary software. Whereas a permissive license is a free-software license that carries only minimal restrictions on how the software can be used, modified, and redistributed, usually including a warranty disclaimer. It grants use rights, including the right to relicense, and allows proprietization. However, copyleft licenses grant use rights but prevent proprietization, and copyright is the provision where all rights are reserved.

Open access accepts some licenses that are considered too restrictive. In the case of OER, they are either licensed under the open license, public domain, or copyleft licenses.

C. Foundation: The foundation of copyleft can be seen from the following three angles:

- i) **Free to Use:** The content released under copyleft license is free to use, remix, tweak, and build upon the work, even for commercial purposes.
- ii) **Gives Due Credit:** The people who will use the content need to give credit to the original creator;
- iii) **Release Modified Content under Similar License:** The people who will remix, tweak, or build upon the content released under copyleft license need to release their new creations under identical terms.

The copyleft content treats reciprocity as the base. Instead of allowing a work to fall completely into the public domain, where no ownership of copyright is claimed, or under

copyright, where all rights are reserved, copyleft allows authors to impose restrictions that derived works from their work must also be released under a compatible copyleft licence. The basic principle is that if you freely benefit from the work of others, you must likewise freely grant others the same benefits.

The copyleft content emerges due to:

- i) **Gift Culture:** Copyleft is in line with gift culture, where social power is determined by an individual's contributions.
- ii) **Recognition is Considered More Important than Economic Benefit:** By opting for copyleft to work, content creators may seek complementary benefits like recognition from their peers rather than prefer the economic benefit.

D. Types of Copyleft Licences: Richard Matthew Stallman, in 1985, created his own copyright licence, the GNU Emacs General Public License, the first copyleft license. This later evolved into the GNU General Public License.

i) Based on How the New or Modified Code or Document is Released: Copyleft licences can be categorised into two categories based on how the new or adjacent code is subject to the copyleft licences: strong and weak.

- **Strong Copyleft Licences:** A strong copyleft licence requires that any work used to modify, enhance, or add to the original work must also inherit all the original work's licence requirements, like the new document or software that must be made publicly available. For example, GNU General Public License (GPL), Sybase Open Watcom Public License, and Affero General Public License (Affero GPL).

- **Weak Copyleft Licences:** Weak copyleft licences refer to licences where not all derivative works inherit the copyleft licence. Weak copyleft licences are often used to cover software libraries. For example, Mozilla Public License 2.0, Common Development and Distribution License (CDDL), and GNU Lesser General Public License (LGPL).

ii) Based on the Type of Content Covered: Although the notion of copyleft began in the software world, it exists outside as well, like in written work, visual art, etc. The use of software licences for non-software work is generally discouraged. Therefore, based on the type of content covered, copyleft licences can be of the following types:

- **Copyleft Licences for Software:** For example, GNU General Public License (GPL), GNU Lesser General Public License (LGPL), Sybase Open Watcom Public License, Affero General Public License (Affero GPL), Mozilla Public License, and Common Development and Distribution License (CDDL).
- **Copyleft Licences for Document:** For example, GNU Free Documentation License, Creative Commons Attribution-ShareAlike (CC BY-SA 4.0)
- **Copyleft Licences for Artistic Work:** For example, Free Art License (FAL).

E. Examples of Copyleft Licences: A few common copyleft licences are described below:

i) GNU General Public License (GPL): The GPL was originally written by Richard Matthew Stallman in 1989. It was the first

software copyleft licence to see extensive use, and continues to dominate the licencing of copylefted software.

ii) GNU Lesser General Public License (LGPL): GNU Library General Public License was first published in 1991. In 1999, it was renamed as the GNU Lesser General Public License which is mainly used for free software and was published by the Free Software Foundation (FSF). The LGPL was developed as a compromise between the strong copyleft of the GNU General Public License (GPL) and more permissive licences such as the BSD licenses and the MIT License. The word “Lesser” in the title shows that the LGPL does not guarantee the end user’s complete freedom in the use of software.

iii) Sybase Open Watcom Public Licence: The Sybase Open Watcom Public Licence appears to have been written in 2002, but was publicly released in 2003. It is a software licence that has been approved by the Open Source Initiative. The Sybase Open Watcom Public License is one of the strongest copyleft licences, as this licence closes the so-called private usage loophole of the GPL and requires the publishing of source code in any use case.

iv) Affero General Public License (Affero GPL): The Affero General Public License (Affero GPL and informally Affero License) was first published by Affero, Inc. in March 2002. It is a free software license. It was based on the GNU General Public License, version 2 (GPLv2).

v) Mozilla Public License (MPL): MPL is a free and open-source, weak copyleft licence for most Mozilla Foundation software. The MPL license is developed and maintained by Mozilla.

vi) Common Development and Distribution License (CDDL):

CDDL is a free and open-source software licence produced by Sun Microsystems, based on the Mozilla Public License (MPL).

vii) Microsoft Reciprocal License (Ms-RL):

Ms-RL license is Microsoft's copyleft licence, which only allows one to sublicense with other licences that comply with this one. Files that are entirely their own work stay unaffected, but the users must receive access to any files that contain code under the Microsoft Reciprocal License.

viii) Microsoft Public License (Ms-PL):

Initially titled Microsoft Permissive License, it was renamed to Microsoft Public License while being reviewed for approval by the Open Source Initiative (OSI). The licence was approved on October 12, 2007. The Ms-PL is a copyleft licence because it requires the source code of the software it governs to be distributed only under the same licence (the Ms-PL).

ix) GNU Affero General Public License (GNU AGPL):

The GNU AGPL licence is especially for projects that will be run over a network to ensure that the source code is available to users of software over a network. This is a free, copyleft licence published by the Free Software Foundation in November 2007.

x) The Eclipse Public License (EPL):

EPL is a free and open source software licence most notably used for the Eclipse IDE and other projects by the Eclipse Foundation. EPL is designed to be a business-friendly free software licence and features weaker copyleft provisions.

xi) Open Software License (OSL):

OSL is a copyleft software license created by Lawrence Rosen. The Open Source Initiative (OSI) has certified it as an open-source licence.

In some countries, it is acceptable to sell a software product without warranty in the standard GNU General Public License style, while in some other countries, it is not permitted. This resulted in the origin of the European Union Public Licence (EURL) and the CeCILL licence, which allow one to use GNU GPL in combination with a limited warranty.

xii) European Union Public Licence (EURL): EURL is a free software licence that was written and approved by the European Commission and was first published in January 2007.

xiii) CEA CNRS INRIA Logiciel Libre (CeCILL): CeCILL is a free software licence adapted to both international and French legal matters, in the spirit of and retaining compatibility with the GNU General Public License (GPL).

xiv) GNU Free Documentation License: GNU Free Documentation License (GNU FDL or simply GFDL) is a copyleft licence for free documentation, designed by the Free Software Foundation (FSF) for the GNU Project. It was designed for manuals, textbooks, other reference and instructional materials, and documentation that often accompanies GNU software. However, it can be used for any text-based work, regardless of the subject matter.

xv) Creative Commons Attribution-ShareAlike (CC BY-SA 4.0): In 2001, Lester Lawrence Lessig III founded Creative Commons, a non-profit organisation that initially released Creative Commons Licenses on December 16, 2002. CC-BY-SA licence opens the provision of sharing, i.e., copying and redistributing the material in any medium or format for any purpose, even commercially; adapting, i.e., remixing, transforming, and building upon the material for any purpose, even commercially, under the condition of attribution

(appropriate credit). However, if anyone remixes, transforms, or builds upon the material, they must distribute their contributions under the same licence as the original. This licence is especially used in text-based work.

xvi) Free Art License (FAL): The FAL [French: Licence Art Libre (LAL)] is a copyleft licence written in July 2000 that grants the right to freely copy, distribute, and transform artistic and creative works. The Free Art License is equivalent to the Creative Commons Attribution-Share Alike (CC BY-SA) licence.

xvii) Open Database License (ODbL): ODbL is a copyleft licence agreement intended to allow users to freely share, modify, and use a database while maintaining the same freedom for others. ODbL is published by Open Data Commons, which is part of Open Knowledge Foundation.

E Websites for Copyleft Contents: In the following, a few websites are listed that release their content under copyleft-compatible licences.

- i) **Wikipedia:** Wikipedia is a free-content online encyclopaedia written and maintained by a community of volunteers using MediaWiki software and hosted by the Wikimedia Foundation, an American nonprofit organization. It was founded by Jimmy Wales and Larry Sanger on January 15, 2001. As of October 2023, 6,729,745 articles under the CC BY-SA licence are available on Wikipedia. The wikis, which are launched by Wikimedia and are available in other languages, also use the same licences.
- ii) **WikiEducator** (<https://wikieducator.org>): was created in 2006 by Wayne Mackintosh. It is an international online community project for the collaborative

development of learning materials. The content in WikiEducator is available under the Creative Commons Attribution Share Alike Licence, unless otherwise noted.

- iii) **Citizendium** (<https://en.citizendium.org>): is an English-language wiki-based free online encyclopaedia launched by Larry Sanger, co-founder of Wikipedia, in 2006. All contents of Citizendium are available under a CC-BY-SA licence.

- iv) **Stack Overflow** (<https://stackoverflow.com>): is a question-and-answer website for programmers. As of March 2022, Stack Overflow has over 2 crore registered users and has received over 2.5 crore questions and 3.50 crore answers. All user-generated contents are released under the CC BY-SA 3.0 licence.

- v) **RationalWiki** (<https://rationalwiki.org>): is an online wiki that is written from a scientific, sceptic, secular, and progressive perspective. Its stated goals are to analyse and refute pseudoscience and the anti-science movement, document crank ideas, explore conspiracy theories, authoritarianism, and fundamentalism, and analyse how these subjects are handled in the media. The contents are released under a CC BY-SA 3.0 licence.

- vi) **Flickr** (<https://www.flickr.com/creativecommons/by-sa-2.0/>): Flickr is an image and video hosting service, as well as an online community, founded in Canada and headquartered in the United States. It hosted about 5 crore photos which are released under the CC BY-SA licence.

- vii) **Mapillary** (<https://www.mapillary.com>): is a service for sharing crowdsourced geotagged photos. It was launched in 2013 and developed by remote company Mapillary AB, based in Sweden. It was acquired by Meta Platforms in 2020.

- viii) **Fortepan** (<https://fortepan.hu>): is a community photo archive based in Budapest, Hungary, established in 2010. As of May 2023, the database contained 180,000 photographs under a CC-BY-SA licence.

- ix) **Anatomography** (<http://lifesciencedb.jp/bp3d/?lng=en>): is an interactive website that supports generating anatomical diagrams and animations of the human body. Anatomography, and 3D polygon data used on the website (called BodyParts3D) are freely available under the Creative Commons Attribution-ShareAlike licence.

- x) **OpenStreetMap (OSM)** (<https://www.openstreetmap.org>): is a free, open geographic database available in 96 languages, updated and maintained by a community of volunteers via open collaboration. The data in OSM is available under the Open Database License (ODbL).

D. Open Educational Resources

Open Educational Resources (OER) refers to educational resources that include lesson plans, quizzes, syllabi, instructional modules, simulations, etc. that are freely available for use, reuse, adaptation, and sharing. OER are free and openly licensed educational materials that include text, media, and other digital assets that can be used for teaching, learning, assessment, research, and other purposes and are freely accessible. OER has emerged as a strategy for lowering barriers to students' access to high-quality material, specifically by

ensuring that all students have access to course materials regardless of their financial situation. The term open educational resources was first coined at UNESCO's 2002 Forum on the Impact of Open Courseware for Higher Education in Developing Countries. With the advent of growing international awareness and implementation of open educational resources, a global OER logo was adopted for use in multiple languages by UNESCO. The design of the Global OER logo creates a common global visual idea, representing "subtle and explicit representations of the subjects and goals of OER". Its full explanation and recommendation of use is available from UNESCO.

i) Definition: UNESCO defined OER as "teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions."

The William and Flora Hewlett Foundation defined OER as "teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions".

OER Commons defined OER as "teaching and learning materials freely available for everyone to use, whether you are a teacher or a learner. This includes full courses, modules, syllabi, lectures, homework assignments, quizzes, lab activities, pedagogical materials, games, simulations, and many more resources contained in digital media collections from around the world."

Research and Publication Ethics

The Commonwealth of Learning defined OER as “materials offered freely and openly to use and adapt for teaching, learning, development and research”.

OpenContent.org defined OER as “any copyrightable work (traditionally excluding software, which is described by other terms like open source) that is either (i) in the public domain or (ii) licensed in a manner that provides everyone with free and perpetual permission to engage in the 5R activities”

David Wiley proposed 5R Activities/Permissions i.e. Retain, Reuse, Revise, Remix and Redistribute.

- **Retain:** The right to own and control copies of the content i.e. download, duplicate, store, and manage.
- **Reuse:** The right to use the content in settings like classes, study groups, on websites, in videos, etc.
- **Revise:** The right to adapt, adjust, modify, or alter the content or translate the content to another language.
- **Remix:** The right to combine the original or revised content with other material to create something new.
- **Redistribute:** The right to share copies of the original content, revisions, or remixes with others.

ii) Advantages of OER: According to an NBC News study, textbook costs have increased more than 1,000% since 1977. It simply means the cost of educational materials has risen dramatically. Expensive course materials can be detrimental to students as they may struggle to keep up in classes and may be more likely to drop out when they cannot readily access the high-cost textbook material. The advantages of OER can be looked from the following points

- **Free or low-cost:** OER materials are available with zero cost provided the Internet connection is there.

- **Can be accessed before the start of the course:** OER materials can be accessed before or from the start of course and therefore provide the learners with every opportunity to perform better.
- **Available in ready to consume form:** OER that meets a particular topic or course can be readily used by the faculty members without devoting their valuable time in its preparation.
- **Can be customized:** The teachers as well as students can customize the OER materials without any legal bindings.
- **Extend the boundaries of the course:** OER extend the learning boundaries of the student beyond the lecture and textbook by providing access to more reference material.
- **Provide lifelong learning:** Because OER are open, they allow people to return to course content again and again- before and after the courses.
- **Support rapid dissemination:** The OER material can be distributed rapidly in comparison to the conventional printed book.

iii) Licences of OER: The OER are either licensed under the open licensed or public domain resources or copyleft contents.

- **Open Licensed:** The exact meaning of open license may vary, but a common idea of an open license is one that requires attribution but otherwise lets people use the content in any way completely free, including commercially, sometimes requiring them to share their modifications under the same license.
- **Public Domain:** The public domain is not actually a license, but it is the absence of any copyrights, license, or restriction of any kind. Public Domain is a range of

creative works whose copyright has expired or was never established; as well as ideas and facts which are ineligible for copyright. The resources under Public-Domain License (PD) have been identified as being free of known restrictions under copyright law, including all related and neighbouring rights.

- **Copyleft:** Copyleft is the practice of granting the right to freely distribute and modify intellectual property with the requirement that the same rights be preserved in derivative works created from that property.

Following are some of the popular licences for OER resources.

- **CC-BY:** Creative Commons, By Attribution license.
- **CC-BY-SA:** Creative Commons, By Attribution, Share Alike license.
- **GFDL:** The GNU Free Documentation License (GFDL). GFDL is a license similar to the Creative Commons ShareAlike Attribution license.
- **CC0:** Contents declared under Creative Commons Zero (CC0) are the content in which copyright is absent and the material which are released into the public domain. It is like the content under public domain (PD).

iv) Creating OER: As noted by David Wiley, OER creation typically entails the following:

- **Find:** Searching for OERs may involve use of search engines, repositories, and individual websites, as well as offline materials.
- **Compose:** Piece together resources that you have found with others.

- **Adapt:** If you are using other resources, you will likely need to adapt them for your students and your local context. Be sure that borrowed materials have licenses allowing modifications.
- **Use:** Use the resource in a class, workshop or other.
- **Share:** Publish your OER in other OER repositories like Pressbooks, Research Exchange, Scalar, Open Textbook Library, etc. so others can find and reuse it.

v) Assessing OER: OER assessing will help in judging the quality of OER. Different OER promoters set their own assessing criteria for OER. Some of them are as follows-

BCcampus: BCcampus is an open education project in British Columbia. They set 6 review criteria for OER material and they are-

- Relevance
- Accuracy
- Production Quality
- Accessibility
- Interactivity and
- Licensing

Open Textbook Library: Open textbooks can be defined as “textbooks that have been funded, published, and licensed to be freely used, adapted, and distributed.” Open Textbook Library is supported by the Open Education Network. OTL has accepted the following review criteria.

- Comprehensiveness
- Content Accuracy
- Relevance/Longevity
- Clarity
- Consistency
- Modularity

- Organization/Structure/Flow
- Interface
- Grammatical Errors
- Cultural Relevance
- Other Comments and
- Target Group

MERLOT: MERLOT is a repository of open educational resources that adds new resources via a peer review process. MERLOT evaluation revolves around three criteria and they are

- Quality of content
- Potential effectiveness as a teaching tool and
- Ease of use

vi) OER Initiatives: Some of the major OER initiatives are listed below

OpenStax CNX (formerly Connexions) (<https://cnx.org>), came out of Rice University starting in 1999. In the beginning, the Connexions project focused on creating an open repository of user-generated content. The content licenses are required to be open under a Creative Commons Attribution International 4.0 (CC BY) license.

Multimedia Education Resource for Learning and Online Teaching (MERLOT) (<https://www.merlot.org>) is an online repository and international consortium of institutions and systems of higher education, industry partners, professional organizations and individuals. MERLOT partners and members are devoted to identifying, peer reviewing, organizing and making available existing online learning resources in a range of academic disciplines for use by higher education faculty and students. The MERLOT project began in 1997.

SkillsCommons (<https://www.skillscommons.org>) was developed in 2012 under the California State University Chancellor's Office. SkillsCommons open workforce development content was developed and vetted by 700 community colleges and other Trade Adjustment Assistance Community College and Career Training (TAACCCT) institutions across the United States. It is considered to be the world's largest repository of open educational and workforce training materials.

MIT OpenCourseWare (MIT OCW) (<https://ocw.mit.edu>) is an initiative of the Massachusetts Institute of Technology (MIT) to publish all of the educational materials from its undergraduate- and graduate-level courses online, freely and openly available to anyone, anywhere. The project was announced on April 4, 2001, and uses Creative Commons Attribution-NonCommercial-ShareAlike license.

OER Africa (<https://www.oerafrica.org>), an initiative established by the South African Institute for Distance Education (SAIDE) to play a leading role in driving the development and use of OER across all education sectors on the African continent. It was established in 2008.

OER Commons (<https://www.oercommons.org>) is a freely accessible online library that allows teachers and others to search and discover open educational resources (OER) and other freely available instructional materials.

WikiEducator (<https://wikieducator.org>) is an international online community project for the collaborative development of learning materials, which educators are free to reuse, adapt and share without restriction. WikiEducator was launched in 2006 and is supported by the non-profit Open Education Resource Foundation (OER).

Writing Commons (WC) (<https://writingcommons.org>) is a peer-reviewed open education resource (OER) for college-level writers. It was founded in 2008 by Joseph M. Moxley.

Curriki (<https://www.curriki.org>) is an online, free, open education service. Curriki is structured as a nonprofit organization to provide open educational resources primarily in support of K-12 education.

Open Education Consortium: The Open Education Consortium (OEC) (<https://www.oecconsortium.org>) is a non-profit, global, members-based network of open education institutions and organizations.

Norwegian Digital Learning Arena: Norwegian Digital Learning Arena (NDLA) (Norwegian: Nasjonal digital læringsarena) (<https://ndla.no>) is a joint county enterprise offering open digital learning assets for upper secondary education. In addition to being a compilation of open educational resources (OER), NDLA provides a range of other online tools for sharing and cooperation.

CK-12 Foundation (<https://www.ck12.org>) is a California-based non-profit organization which aims to increase access to low-cost K-12 education in the United States and abroad.

Searching Tools for OER: The following tools can be used to search the OER.

Google Advanced Search: The Google Advanced Search (https://www.google.com/advanced_search) by going through Settings -> Advanced search and then navigating to “usage rights”.

Research and Publication Ethics

OASIS: OASIS (<https://oasis.geneseo.edu/index.php>) can be used to search 388,707 records from 117 sources.

Table 1: Some of the Search Tools for OER

Website Name	Website Address
The Internet Archive	https://archive.org/details/education
Digital Public Library of America	http://dp.la
Library of Congress Digital Collections	https://www.loc.gov/collections/
National Science Digital Library	https://nsdl.oercommons.org
New York Public Library -Public Domain Collections	https://www.nypl.org/research/collections/digital-collections/public-domain
Open Osmosis	https://www.osmosis.org
Public Domain Review	https://publicdomainreview.org/collections/
The Directory of Open Access Journals (DOAJ)	https://www.doaj.org
Open Knowledge Repository [The World Bank]	https://openknowledge.worldbank.org

Table 2: Some of the Websites for Open TextBooks

Website Name	Website Address
BCcampus Open Textbook	https://open.bccampus.ca/find-open-textbooks/
Center for Computer-Assisted Legal Instruction (CALI)	https://www.cali.org/the-elangdell-bookstore

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Lumen Learning	https://lumenlearning.com
Luminos	https://www.luminosoa.org/site/books/
MERLOT	https://www.merlot.org/merlot/index.htm
OASIS	https://oasis.geneseo.edu/index.php
OER Commons	https://www.oercommons.org
Open Textbook Library (OTL)	https://open.umn.edu/opentextbooks/
OpenStax	https://openstax.org
Project Gutenberg	http://www.gutenberg.org
Purdue e-Pubs	https://docs.lib.purdue.edu/press_ebooks/
SUNY Open Textbooks	http://textbooks.opensuny.org
Teaching Commons	http://teachingcommons.us
UC Press E-Books Collection	https://publishing.cdlib.org/ucpress/ebooks/
University of Pittsburgh Digital Editions	https://digital.library.pitt.edu/collection/university-pittsburgh-press-digital-editions

Table 3: Some of the Search Tools for OER Images

Website Name	Website Address
Flickr	https://www.flickr.com/commons
Wikimedia Commons - Images	https://commons.wikimedia.org/wiki/Commons:Featured_pictures
Los Angeles County Museum of Art (LACMA)	https://collections.lacma.org/search/site/?f[0]=bm_field_has_image%3Atrue&f[1]=im_field_classification%3A24
NASA Images	https://www.nasa.gov/multimedia/imagegallery/index.html

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Open Content Program - The Getty	<a &rows='10&srt=a&dir=s&dsp=0&img=0&pg=1"' collection+highlights"&highlights="Collection%20Highlights\$Open%20Content%20Images" href="https://search.getty.edu/gateway/search?q=&cat=highlight&r=">https://search.getty.edu/gateway/search?q=&cat=highlight&r="Collection+Highlights"&highlights="Collection%20Highlights\$Open%20Content%20Images"&rows=10&srt=a&dir=s&dsp=0&img=0&pg=1
Creative Commons Search	https://search.creativecommons.org/

Table 4: Some of the Search Tools for OER Music

Website Name	Website Address
ccMixter	http://ccmixter.org
Jamendo	https://www.jamendo.com

Table 5: Some of the Search Tools for OER Videos

Website Name	Website Address
YouTube Advanced Search	https://www.youtube.com
The Periodic Table of Videos (University of Nottingham)	http://www.periodicvideos.com/videos/001.htm

Table 6: Some of the Search Tools for OER Simulation

Website Name	Website Address
PHET Interactive Simulations	https://phet.colorado.edu

viii) Declaration and Policy on OER: Open educational resources policies are principles adopted by governing bodies in support of the use of open content and practices in educational institutions. Many of these policies require publicly funded resources to be openly licensed. Such policies are emerging increasingly at the country, state/province and more local level.

OER World Map maintained a registry of OER Policies and as on 24th November, 2020, it listed out 5756 OER policies.

In September 2007, the Open Society Institute and the Shuttleworth Foundation convened a meeting in Cape Town to which thirty leading proponents of open education were invited to collaborate on the text of a manifesto. The Cape Town Open Education Declaration was released on 22 January 2008, urging governments and publishers to make publicly funded educational materials available at no charge via the internet. This is a major international statement on open access, open education and open educational resources and till 2014 over 2,400 individuals and 250 organisations have signed the declaration.

The UNESCO 2012 Paris OER Declaration popularly known as the Paris Declaration on Open Educational Resources is a ten (10) point declaration urging governments to promote the use of open educational resources (OERs) and calling for publicly funded educational materials to be released in a freely reusable form. This declaration is the outcome of the June 2012 World OER Congress held by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the Commonwealth of Learning (COL).

ix) Disadvantages or Challenges of OER: The challenges for OER can be looked from the following points-

- **Lack Surety of Access:** Unless it is backed by a trusted agency, institute the OER material can disappear from a website at any moment of time sometimes even without even a notice.
- **Quality may not be so good:** OER materials may be produced with little or no support for copy editing or language editing, resulting in the lack of quality.

- **May not be updated frequently:** Some OER materials may not be updated so frequently as the education community might like it to see.
- **Time Consuming for search and retrieval:** Locating an existing OER material may be time consuming for the users.
- **Technological access barriers:** People from remote locations or without proper devices and internet connection may face problems in accessing and using the OER.

V. Conclusion

Creative Commons has revolutionised the way creators share and users access creative works in the digital age, and in the days to come, Creative Commons will continue to be a vital force for empowering creators and promoting a more open and accessible internet. As the digital world evolves, its role in shaping a future where creativity thrives for all becomes increasingly important. However, it is to be noted that Creative Commons is only a service provider for standardised license text and not a party in any agreement. No central database of Creative Commons works controls all licensed works, and the responsibility of the Creative Commons system rests entirely with those using the licences. As of May 2018, there were 1.4 billion works licensed under the various Creative Commons licenses. Wikipedia also uses one of these licenses i.e., CC-BY-SA. As of May 2018, Flickr alone hosted over 415 million Creative Commons-licensed photos.

Copyleft is a general method for making an intellectual property free, and requiring all modified and extended versions of the intellectual property to be free as well. It means releasing the content with permission for anyone to use, copy, and distribute, either verbatim or with modifications. However, one

needs to proceed with caution if he or she wants to include some text from the copyleft licences in his or her copyright work, as it is a direct violation of the rules.

Copyleft ensures that rights cannot be later revoked and therefore, requires the work and its derivatives to be provided in a form that allows further modifications to be made. So, basically, copyleft licences require the same rights for all works that use the already-published content under copyleft licences.

Open educational resources (OER) are freely accessible, openly licensed text, media, and other digital assets that are useful for teaching, learning, and assessing as well as for research purposes. Types of open educational resources include full courses, course materials, modules, learning objects, open textbooks, openly licensed or often streamed videos, tests, software, and other tools, materials, or techniques used to support access to knowledge.

Copyleft prioritises freedom; CC emphasises creator control and flexibility; and OER focuses on improving access to educational materials. In case of similarities, CC-BY-SA is a copyleft license that is released by CC, is used as a copyleft license, and is also used in the materials that are intended to be released as OER materials.

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Chapter - 12

**PLAGIARISM DETECTION SOFTWARE:
AN OVERVIEW**

*Kankana Baishya**

I. Introduction

The quality of an academic enterprise relies on the quality of its research outputs. And the quality of a research work primarily based on its originality. But at present the major problem of academic research is ‘plagiarism’ which means “the practice of taking someone else’s work or idea and passing them as one’s own.” Due to the advent of internet, researchers find ‘cut and paste’ as instant solution while conducting research. To foster the original thinking and to curb the plagiarism HEIs take help of Plagiarism Detection Software (PDS) or anti-plagiarism software now- a-days. PDS are the tools to detect the instances of plagiarised content and copyright infringement within a research work. However, in actual, those tools basically match similarities of texts of one document with others. Anti-plagiarism software are widely available in the form of proprietary software and open access software.

II. Evolution of PDS

Plagiarism Detection tools have significantly developed over the years. During the pre-internet period the educators relied on their expertise and knowledge to trace the plagiarized contents. But with the growth of the internet, it became

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imperative to shift the manual task to automated one to check similarity. During that time Turnitin came into the picture and it used to compare the submitted contents against the available academic databases and publications. The tools have become more sophisticated due course of time and their content coverage increased ranging from academic databases to social media content with generation of cross reference. The most recent development involves integration of AI. The software allows real time checking including AI generated contents and even paraphrased contents and today, the software offers the provision of integrating the LMS system of academic institutes enabling educators to examine student submissions seamlessly and provide instant feedback. As technology advances, these tools become more powerful with more compatibility with multimedia and regional languages.

III. Evolution of PDS: Indian Scenario

The UGC Notification on “Minimum Standards & Procedure for Award of M.Phil. / Ph.D Degree, Regulation, 2009 mandated the submission of electronic version of theses and dissertations in universities with an objective of making the Indian theses and dissertations openly available worldwide. The regulation entrusted the task of hosting and maintaining the digital repository of Indian Theses and Dissertation (named **Shodhganga: a reservoir of Indian theses**) of all the Universities in a single platform to INFLIBNET Centre, an autonomous inter-university centre of University Grants Commission. Accordingly, the center established the repository in the year 2011. With the growth of the theses in the repository, considering the necessity of checking plagiarism of the theses openly available to the world, INFLIBNET centre started providing web based antiplagiarism software namely Turnitin and i-thenticate to 100 universities

those have signed MoU with Shodhganga from 1st February, 2014 onwards.

In June, 2019, University Grant Commission came up with a regulation on "Promotion of Academic Integrity and Prevention of Plagiarism in Higher Educational Institutions Regulations, 2018". The regulation emphasised on establishing technology based modern system to detect plagiarism by Higher Education Institutes (HEIs). It is stated in the clause 6(a) of the regulation that "HEI shall declare and implement the technology-based mechanism using appropriate software so as to ensure that documents such as thesis, dissertation, publications or any other such documents are free of plagiarism at the time of their submission."

Based on the recommendation of the regulation, Ministry of Education, Government of India launched E-ShodhShuddhi Programme and provided access to a web based Anti-Plagiarism software Ouriginal (previously known as Urkund) to all the universities since September 1, 2019 to September 30, 2023. The M/S Ouriginal has been acquired by Turnitin pvt ltd. Thereafter, INFLIBNET continued to provide the facility of checking plagiarism with DrillBit-Extreme Plagiarism Detection Software' since October 1, 2023 onwards till date.

IV. PDS Used in Higher Education Institutes in India

A. Turnitin: Turnitin is an Internet-based similarity checking software provided by Advance Publications, Inc. Turnitin was founded in 1998. It sells its licenses to schools, colleges and universities who use it as software as a service (SaaS) to check documents against its database, already submitted contents by others and the content of other websites with the aim of identifying similarities in text. Turnitin's similarity checking solutions are used by 34 million

students and 16,000 institutions worldwide (140 countries), including 80 of the top 100 universities globally. The submitted texts also match with commercial and/or copyrighted pages from books, newspapers, and journals. Every day, more than 300 million pages are re-crawled for updates and 50 million new pages are added in Turnitin.

The pricing for Turnitin depends on several factors like the tool and volume of usage. Turnitin has various integrity tools (e.g. Feedback Studio including Grademark and Peermark features, iThenticate, Turnitin Originality Check, etc) which are used by different subscribers as per their workflow requirement and hence the pricing also varies accordingly.

Students typically upload their papers directly to the service for teachers to access. Teachers may also submit a student's papers to Turnitin.com. Teachers can also set assignment-analysis options so that students can review the system's "originality reports" before they finalize their submission. A peer-review option is also available.

Some virtual learning management systems can be configured to support Turnitin, so that student assignments can be automatically submitted for analysis. Blackboard, Moodle, ANGEL, Instructure, Desire2Learn, Pearson Learning Studio, Sakai, and Studywiz integrate in some way with the software.

Turnitin software checks for potentially unoriginal content by comparing submitted papers to several databases using a proprietary algorithm. It scans its own databases and also has licensing agreements with large academic proprietary databases. The results obtained from Turnitin can identify similarities with existing sources and can also be used in

formative assessment to help students learn to avoid plagiarism and improve their writing.

Turnitin has acquired the Ouriginal (Urkund) software which was provided free of cost to the Indian Universities by INFLIBNET Centre.

Turnitin provided AI detection tools free of cost upto October, 2023 and from 2024 onwards they have made it an add on service for its subscribers. Turnitin mentioned in their website that “Turnitin's AI writing detection capability is designed to help educators identify text that might be prepared by a generative AI tool. Our AI writing detection model may not always be accurate (it may misidentify both human and AI-generated text) so it should not be used as the sole basis for adverse actions against a student. It takes further scrutiny and human judgment in conjunction with an organization's application of its specific academic policies to determine whether any academic misconduct has occurred.” However, the AI writing detection feature of Turnitin was named a winner of Tech & Learning Awards of Excellence Best of 2023 for demonstrating outstanding innovation in the last 12 months in artificial intelligence to help educators identify when AI writing tools may have been used to write any part of a student’s submitted work, helping them safeguard academic integrity.

B. Drillbit: DrillBit Plagiarism detection software is a India based similarity checker. From 1st October 2023 onwards, the INFLIBNET Centre is providing Drillbit-Extreme 'Plagiarism Detection Software' to Higher Education Institutions (HEIs) under the ShodhShuddhi Programme. Drillbit claims to have 200K+ global users and 65 Million+ pages crawled in real-time.

The software covers Internet sources: Live & Archives, Open & Subscribed Publishers content, student's database and institutional repository for plagiarism check. It supports other national and international languages, detects paraphrases. Supervisors can upload the contents from their accounts. However, students don't have access to it as there is some limitations in uploading students' projects, assignments and dissertations.

The software can trace unfair means like hidden characters or symbols, files illicitly modified using alphanumeric characters, small fonts in between the words which shall be not visible to naked eyes, supports Multiple File, supports exclusion of reference and quotations, supports Integration capabilities with Learning Management System (LMS) including google classroom, provides QR code to download plagiarism report on mobile, centralized Admin Panel Monitoring and has the provision of automated grading system.

As Drillbit has been recently launched it has many limitations e.g. insufficient database coverage, limited clients from other countries, limitation in creation of user accounts, delayed reports etc. Drillbit also claims to have AI detection mechanism. However, it is too early to judge the reliability and accuracy of the AI detection mechanism of the software.

C. Google Originality Report: Google's Originality Report uses the power of Google in comparing the text of submitted assignments with crore and crore of web pages available through Google Search and over 4,00,00,000 books available in Google Books to find out possible matches. Google's Originality Report is especially helpful in finding out missing citations quickly and thus helps in avoiding plagiarism. Originality reports are only available for Google

Workspace for Education accounts set to: Danish, English, Finnish, French, German, Hindi, Indonesian, Italian, Japanese, Korean, Malay, Norwegian, Portuguese, Spanish and Swedish.

Google Workspace for Education Fundamentals is free for eligible institutions. Instructors using Classroom and Assignments in Google Workspace for Education Fundamentals can enable up to five originality reports per class, for free and the students can run 3 reports on that assignment before submitting their work.

Google Workspace for Education Standard is a priced version of Google Workspace and costs around Rs. 210.00 per user per annum and provides the same number of originality report to that of Google Workspace for Education Fundamentals.

Teaching and Learning Upgrade and Google Workspace for Education Plus are priced versions of the Google Workspace which is priced in between Rs. 280.00 to Rs. 350.00 per user per annum. The Instructors with the Teaching and Learning Upgrade or Education Plus licenses get unlimited originality reports and the ability to make student-to-student comparisons on the domain-owned repository of past submissions.

There are two ways to use Google's Originality Report. The 1st is to access it through Google Classroom - all-in-one place for teaching and learning and the second is to through Assignments - a free add-on application for the Learning Management System (LMS).

To turn the Google Originality Check on, the teacher with Google Workspace for Education need to create a

classroom at the address <http://classroom.google.com> and then under **Classwork** need to Create Assignment with the **Check plagiarism (originality)** box checked. If the teacher “Turned on” originality reports for an assignment, the student can run up to 3 reports on their work.

To enable Google’s Originality Report in the Learning Management System (LMS) one needs to click on the course. Create an assignment in the LMS and then select Google’s Assignments as the External tool. After that one needs to check the Enable originality reports box.

To check Google’s Originality Check Report, the students, need to join the **class** and then need to go to the **Classwork** and then **View Assignment**. Now under **Your work**, create a **Google Doc** file and in that file copy and paste their text. Then next to **Originality reports**, they need to click on **Run**. Under the file name, they need to click on **View originality report** to see the report. To save or print the originality report, at the top, they need to click on the **Print** icon and choose an option from **Save as PDF**, **Save to Google Drive** or **Print the report**.

Google displays the percentage of flagged content to review and show how much source material is used. For example, if the report shows 9% flagged content, it means 9% of the document matches source material that wasn’t cited or quoted. It is exactly what is called plagiarism by definition and sometimes other software only show the similarity and include the text that even were cited and does not fall under plagiarism. This is the point in which Google stands out among their competitors. Google’s Originality Report consists of the following components-

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In the originality report, Google shows the number or percentage of flagged contents and the user can switch views between the number of flagged passages and the percentage of flagged content.

The report flags passages are text which are similar to text found on a webpage that the student didn't cite or quote. The flagged passage shows the text from the external source and a link to the webpage.

Cited and quoted passages are excerpts of text that are similar to text found on a webpage that were cited or quoted by the student.

Google's Originality reports don't evaluate citation formatting or verify the source of the text. However, originality reports determine if a student used tricky text or notify the instructor / teacher if multiple scripts are present in an assignment when 6 or more non-text characters are found. The originality reports are automatically deleted after 45 days.

Table-1: Parameters of Drillbit and Turnitin

Sl. No	Items	DrillBit	Turnitin
1	Origin	2016/India	1998/US
2	Content Coverage	Academic Journals, Web Content, Student Paper Archives; Depth: Extensive and diverse	Academic Journals, Books, Conference Proceedings, Student Papers (Through Turnitin), Web Content; Depth: Massive, Global and Comprehensive

Research and Publication Ethics

3	Cost	<p>Free for Universities those signed MoU with INFLIBNET.</p> <p>In case of other institutes varies based on the factors like usage volume, user type, number of reports, individual vs institutional etc.</p>	<p>Varies based on the features/ tools needed and usage volume</p>
4	Features	<ul style="list-style-type: none"> • Contents can be submitted by uploading in the web server and email. • Detection of hidden characters, symbols, files illicitly modified using alphanumeric characters, detection of small fonts in between the words which shall be not visible to naked eyes • Longer time required for Report generations • Originality report with a colour coded text highlighting potential plagiarism instances and source links • LMS integration, Multilingual similarity check. 	<ul style="list-style-type: none"> • Contents can be submitted by uploading in the web server • Detection of hidden characters, symbols, files illicitly modified using alphanumeric characters, detection of small fonts in between the words which shall be not visible to naked eyes • Report generates within a few minutes • Originality report with a colour coded text highlighting potential plagiarism instances and source links • Grademark, stream for cloud based collaboration, feedback studio, text analysis tool, LMS integration

Research and Publication Ethics

		<ul style="list-style-type: none"> • Report can be customized downloaded or emailed directly. • Customer support service is rendered via phone, email, live chat. 	<ul style="list-style-type: none"> • Report can be customized and downloaded • Customer support is provided by phone, email.
5	AI detection	Inbuilt feature	Add on feature.
6	Data Privacy	DrillBit is Compliant to the European Data Protection Compliance i.e. GDPR, various data protection legislations of the United States of America and based on the industry set standards in India.	Turnitin has procedural safeguards in place to protect personal data, including the use of SSL encryption, redundant servers, and SOC2 certified data centers

V. Required Features of PDS

To detect and prevent plagiarism has become the challenge for Plagiarism Detection Software. However, PDS requires the following features to measure similarity percentage in the present-day context,

- A. Compatible with multiple file types: PDS software supports various file types e.g. PDF, MS Word, Open Office (ODT), RTF, Latex, Word XML, WordPerfect, PostScript, TIFF, HTML, and plain text
- B. It allows bulk uploading of contents for similarity checking
- C. Users can upload contents for similarity by directly logging into their accounts or email the content in the prescribed email id of the software.

- D. PDS software allows real-time review of the similarity reports by instructors
- E. Side by side comparison can be done from the similarity report by viewing submitted work alongside original material, i.e., block text / paragraph copy / paraphrased text shown multiple colours.
- F. The software supports similarity check of the works in regional and translated languages.
- G. The PDS tools generates similarity report with content tracking and summary report which can be retrieved either downloading via QR code or sending through email.
- H. Standard repository of PDS software comprises of subscribed contents, open access contents, academic IRs, webpages, document submitted by the client subscribers, newspaper databases, academic social networks etc.
- I. It can exclude quoted materials, references and portion of words as required.
- J. The software detects AI generated contents.
- K. The software flags the unfair means used in the submitted contents.
- L. The software identifies images, Tables, Equations, Formulas, videos, music, audio and video.
- M. Plagiarism Detection Software supports integration with Learning Management Software, Content management software, IR and other web contents of the institution.
- N. Supports administrative control remotely.
- O. Support administrators to create bulk user accounts.
- P. Supports generation of user and usage statistics.
- Q. Removal of documents from its repository at institute and users level.

VI. How to Reduce Plagiarism

- i) Contents require to be typed rather than copying and pasting.

- ii) The information needs to be read and put into researchers' own words. It should be ensured that copy verbatim more than two words in a row from the text may lead to plagiarism.
- iii) Paraphrased contents are to be properly acknowledged and cited.
- iv) Proper citation style like APA, MLA, Bluebook etc. is to be followed, enabling PDS to automatically exclude contents under specific headings like Bibliography and Reference within a submission.
- v) PDS excludes quotations between double quotation marks. The double quotes used should be similar in nature when used as an opening quote and closing quote (dissimilar style should not be used) when applied in the text. Else, this can cause the problem. The similarities of open and close quotation mark can be checked in word file by coping the opening quote from the document and using 'Find and Replace' from Find bar in the Edit menu. Then Without clicking 'Replace', the number is to be noted. Again, the same procedure has to be repeated for the closing quote. Then to check differences comparison of the two numbers needs to be done. If the numbers are different this will cause the issue. However, too many quotations are also need to be avoided

VI. Some of the Challenges for PDS Software in Combating Plagiarism

Previously the PDS couldn't detect some minor tricks used by the students and scholars to hide plagiarism. However, now a days the PDS tools are become more sophisticated as they identify those means by their powerful algorithms.

- i) Insertion of special characters in between words
- ii) Use of numeric or symbols e.g., "O" with "0" (Zero), "1" with 1 etc.

- iii) Use of software for manipulating plagiarism/similarity detection (like non printable characters, etc.)
- iv) Image(s) of text inserted in the formatted / unformatted text
- v) Use of AI/paraphrasing tools e.g. ChatGPT, Bard, Grammarly etc. Very limited AI detection software are available till date. GPT4.0 is the example of widely used AI detection tool as of now. However, Drillbit and Turnitin also claim to have the facility of AI detection. However, reliability of those software is the topic of debate. There are also possibilities to trace the AI contents by asking whether the contents are generated to the AI tools or not.

VII. Conclusion

In the era of generative AI, it is the need of the hour of every HEI is to set AI policies and guidelines along with Plagiarism Policy. As a baseline, the academic institutes should emphasize the students that, along with use of uncredited ideas and content created by persons, use of uncredited AI-generated content will be treated as plagiarism. Many major citing and referencing styles e.g. APA citation style, Chicago citation style, Harvard, MLA etc. have already published guidelines on how to cite and reference artificial intelligence technology sources. The policies of using AI generative tools may vary course to course. Therefore, understanding this shift of education, educators can define policy statement many ways, e.g. Prohibited use of advanced automated tools, Students are allowed to use advanced automated tools with the prior permission of the instructor, students can use AI if properly acknowledged etc. The AI detection products available today are unreliable. The latest research on AI detection software from MIT highlights the false positive and negative rates. OpenAI (the company behind

ChatGPT) recently withdrew its own detection software due to the software's unreliability again detection software is biased against non-native speakers, as research from Stanford shows, detection software cannot keep up with the rapid change of AI. But despite of all this challenges, the researcher should always adhere to the academic integrity and avoid unethical measures to conduct responsible research.

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Chapter - 13

**ACADEMIC INTEGRITY, PLAGIARISM AND THE
IMPACT OF AI IN EDUCATION**

*Purna Bose **

I. Academic Integrity & Plagiarism

Academic Integrity is critical to the success of any educational endeavour. What do we mean by Academic Integrity? By definition, it is the “commitment, even in times of adversity, to honesty, trust, justice, respect, courage and responsibility” in learning and education. The terms that are most closely associated with Academic Integrity are original writing and plagiarism; some even view them as the opposite of each other!

According to the Merriam-Webster online dictionary, to "plagiarize" means:

- to steal and pass off (the ideas or words of another) as one's own
- to use (another's content) without crediting the source
- to commit literary theft
- to present as new and original an idea or product derived from an existing source

Essentially any piece of writing that shares the author’s original ideas, thoughts or perspectives can be termed as original writing. In case, it needs to refer to some existing

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content, then providing a valid reference or citing the source can help safeguard against plagiarism.

II. Effects of Plagiarism

The effects of plagiarism are multi-fold and can have an impact at multiple levels. At the individual level, the very purpose of education and learning gets impacted. If detected, there is a loss of reputation, both at the individual and at the institutional level. Capital cost (financial loss) is almost a certainty for the individual (loss of job, degree, etc), along with legal costs. The institution may also need to incur legal costs as well as suffer loss due to retraction of grants, etc.

Please understand that even one instance of academic misconduct in your educational endeavors can have major impacts long after you have actually completed the journey of formal education. There are several instances (any internet search can give the details) where academic misconduct has come to light several years after the actual incident. However, time may not dilute the severity of the implications like loss of job or powerful positions in the private or public sectors.

III. Does the Similarity Report Help?

What is similarity? Is it the same as plagiarism? No it is not, and we need to understand that if we want to leverage the Similarity report to improve our quality of content. Text similarity is the “amount of ideas or words of another that is present in your work”. There are tools available which can help instructors get an idea of the amount of similarity a student’s content has with existing sources; however, a similarity index is not an index of plagiarism. The types of plagiarism can vary between extremes of “inadvertent plagiarism” to “contract cheating”. What makes text similarity an instance of plagiarism is the absence of proper citation or attribution to the source. It

is also important to be aware of the concept of “expected similarity” wherein some forms of text, e.g. quotation, reference list, are expected to show up as text similarity as they are likely to be there in other sources of content but are certainly not “plagiarism”. Along the same lines, a higher text similarity does not imply higher plagiarism and vice versa.

It is also critical to understand that there is no “MAGIC” number as the acceptable level of similarity. How much text similarity is acceptable is highly subjective and depends on various factors including (but not limited to) the kind of subject & assignment and the academic integrity policies governing the institution. If a student is ever in doubt, they should connect with a project guide, instructor, educator, etc who can help guide them in this.

From another perspective, the Similarity report can be a useful tool for the student to understand if there is a good balance of original writing and supporting content/evidence (references) in their papers/submissions, and they can self-correct to a large extent before actually submitting their papers for review. This, in turn, can help the instructors spend the review time providing more qualitative feedback, rather than issues that can be corrected by the students themselves.

IV. Where Does AI Fit into the Scheme of Academic Integrity?

Now that we have some clarity on the basic aspects of Academic Integrity and plagiarism, let us look at the latest trend that is causing a lot of (ethical) concerns among educators. Let’s take a step back and review the **possible impacts of AI in education:**

Positive Impacts:

- Personalized Learning
- Automated Grading and Feedback
- Language Learning & Translation
- Content Creation
- Proactive Analytics
- Administrative Support

Likely concerns:

- Compromise with academic integrity
- Likelihood of bias creeping in (depending on the data used to train the model)
- Data security may be compromised

When it comes to AI in writing, the most common terms that come to the forefront are NLP (Natural Language Processing), Deep Learning and GPT-vx. We need to understand a few concepts to be able to make more sense of this term. Natural Language Processing (NLP) is a subfield of artificial intelligence (AI) that deals with the interaction between computers and human language. It involves using algorithms, statistical models, and linguistics to enable computers to “learn” (understand and interpret) and produce human language. GPT stands for Generative Pre-trained Transformer; GPT-3 (GPT version 3) uses advanced algorithms, a set of rules for problem-solving that computers follow, and lots of data to create original human-like text and other output.

GPT-3, or any other generative large language model, is usually fed loads of content, data and information (also known as training data) from a variety of open sources. Very simply put, the model is able to “generate” the content based on the prompt that is provided based on this “pre-training”. The more

(and varied) this training data, the more efficient the output from the model. If the training data is “biased” (e.g. few geographical or culturally specific data is used to train the model), the content output is likely to carry forward that bias as well. It is pretty similar to how we, as humans, get trained in our mother tongue (by hearing what people are speaking around us) and we tend to pick the same patterns and words!

The strength and weaknesses of AI generated content need to be delved into and understood.

Strengths:

- The biggest strength of AI based writing is that it can understand and generate simplified texts based on the input (prompt) e.g. representing a complex concept or text in a more “understandable” format.
- It is pretty versatile in its functionality in terms of generating images, working with different languages, subjects and concepts.
- The technology is continuously evolving (with more and varied training data) which implies its capabilities being more efficient as we move forward.

Weaknesses:

- GPT doesn't think in the sense that humans think, it uses clever algorithms and data to give the illusion of thought.
- The output essentially depends on the specific prompt (input) and there is always a possibility of bias creeping in, depending on the kind of data that has been used to train the language model and how the prompt is written.
- The quality of output is likely to fall if it needs to produce large amounts of text with some complexity.

- There is no validation of the data or accuracy of the content that is generated.
- Another big concern is the training data being outdated. Since AI takes content from pre-set data sources, the relevancy of the document to current context may go amiss.

V. Role of Educators

As with other Academic Integrity issues, educators play a crucial role in defining and executing strategies that can help minimize unauthorized AI writing:

1. Define what is “acceptable” (similar to text similarity), document those parameters as part of the overall academic integrity policies and explicitly communicate them to your students as a continuous endeavor.
2. Design assessments and assignments in a way that they become “AI-proof”.
3. If you think there might be an issue (maybe the AI detector has indicated some level of AI generated text), have a discussion with the student.

While detection is a tool to help you have a discussion with your students, let us focus on what is possible for us to ensure the students’ objective of getting effective education remains unhindered. It is very important for us to acknowledge that AI text generators like ChatGPT and so many other similar tools like BARD, etc are here to stay. And they may not always be a threat. AI can have so many useful applications in various fields like medicine, etc. Like any other technology, the benefit or threat comes from how we choose to leverage the technology.

IX. Turnitin and AI

Turnitin's association with AI goes a long way back to 2014, when we engaged in research and began leveraging AI to provide various useful features for both our integrity and assessment solutions. Turnitin initiated research and development around detecting paraphrased writing, AI writing, and the next generation of AI powered item authoring as well as grading and feedback tools for all assessment types from 2020 (as Open AI released GPT 3). When ChatGPT got released in November 2022, we, at Turnitin, could hear the concerns from our fellow educators. To support, Turnitin released a preview of its AI writing detection capabilities for educators and institutions into existing workflows in April 2023.

Turnitin has built the GPT detection experience into our existing workflows, starting with a detection 'button' and report. Our detectors are unique to Turnitin, and are specifically optimized to detect AI writing in student writing, based on 20+ years of experience in safeguarding academic integrity. We try to detect the distinct statistical signature that comes with the Large Language Model applications like ChatGPT. As with AI, this detection technology is also evolving.

Turnitin only flag something as AI-written when we are reasonably sure (with less than 1% false positive rate) it is actually written by AI.

The software's intention is to give educators the information and tools they need to investigate and work with the student to determine next steps. Just like with similarity, it is NOT our objective or purpose to determine if the student is plagiarizing or cheating. A figure in the AI detector DOES NOT necessarily indicate misconduct by the student. Similar to the concept of expected text similarity, it is an indicator to the

educator to explore further (if it was completely unexpected), have a conversation with the student and then come to a conclusion if any further action is required.

X. Develop the Culture of Academic Integrity

Academic Integrity is not a one-time intervention; on the contrary, it is an ongoing culture that needs to be inculcated early in the journey of education and nurtured as a student continues to move forward. Educators and students need to work together to ensure originality, accurate citation, and authentic references. Students should seek support in acquiring efficient research skills and reach out to their guides whenever in doubt. And, if scholars can imbibe this culture of Academic Integrity in their education system, they can combat the threats of plagiarism, using AI or contract cheating more effectively.

References:

Turnitin. (2023, April). Turnitin AI writing detection. <https://turnitin.com/>

Chapter - 14

JABREF: A REFERENCE MANAGEMENT TOOL

*Miteshkumar Pandya**

I. Introduction

Research is one of the important activities to ameliorate societal changes. Research may be conducted in scientific labs and in society too. It is essential to identify and accumulate all the resources on chosen/given areas of research. This requires studying past research conducted on similar or related areas of research. Researchers have to note down past events and identify the problem to bridge the gap. During the research journey, researchers are coming across considerable resources of different types. It is quite difficult to remember how many resources are referred to derive the statement of the problem and conduct an extensive literature review. Moreover, these different types of resources have their own structure of information and one has to gather all the metadata fields and store them somewhere for future use during the research cycle.

Managing information resources wisely is one of the basic strategies of research. The researcher comes across many useful resources during his research lifecycle. It would be difficult for researchers to remember which source was referred to for different topics. The reference management software helps a researcher to accumulate all the literature for different research topics in a single window under different groups. Many researchers are not aware of the scholarly databases and from where they can get relevant literature on their area of research

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work. Few reference management software help in finding out literature without even visiting the source Website of the desired resource. The in-built feature of searching from various databases can help in organizing literature along with full-text in reference management software. Reference management software also helps to follow the principles and ethics of research. There are many open-source and proprietary software solutions available in the market. Some of these software are developed using FOSS (Free and Open Source Software) enabling freelancers to contribute to the development process. JabRef is one such software developed using FOSS technology.

II. What is JabRef

JabRef is open-source reference management software available in the form of desktop applications for Windows, Linux and Mac operating systems. The software uses the BibTeX file format for storing bibliographic information of resources. The BibTeX is one of the international standard bibliographic data exchange formats (*Bibtex Entry Types, Field Types and Usage Hints, 2020*).

III. Functions and Features of JabRef

JabRef is reference management software that is being used by many researchers. The software has a variety of functions and features that are expected from modern reference management software (*Kopp, 2020a*). Some of the major functions and features are:

- Search and extract metadata of scholarly communications from across the different databases;
- Software facilitates extraction of metadata in BibTeX format from most of the databases;

- It provides an add-on for the Firefox browser known as JabFox to directly download bibliographic information in software;
- It allows users to import bibliographic information in different well-accepted international standards such as RIS, Endnote, Pubmed(XML), Refworks, BibTeX etc.;
- The software provides the feature to conduct extensive literature search using an in-built function and fetch desired literature along with softcopy in the local JabRef database;
- The software facilitates users to classify the bibliographic entries according to the subjects, author or any other fields of their choice;
- The software has integrated appropriate external applications to browse the full-text resources in a PDF viewer or Web browser;
- JabRef allows users of various text editors such as Vim, LyX, TeXstudio, and Windows Word to insert citations directly in the manuscript under preparation;
- The software automatically generates BibTeX keys using author names, titles and year of individual resource;
- It allows users to annotate the PDF files and share it with other stakeholders;
- The software has an in-built function to export all/selected bibliographic data in HTML, BibTeXXML, RTF, Endnote, etc.;
- Users may customize the JabRef interface as per their choice;
- The software also provides the facility to add new customized fields which are not available in the default input sheet; and
- JabRef allows users to choose their preferred language for working in their own language using JabRef translation available from Github.

IV. Managing References and Inserting Citations through JabRef

One has to first install JabRef software in the local system in any of the operating systems i.e. Windows, Linux and Mac. Researchers can download an executable file from the official website of <https://www.jabref.org/> under the download menu. As soon as the installation is completed successfully the JabRef application will be launched as shown in figure 1 below:

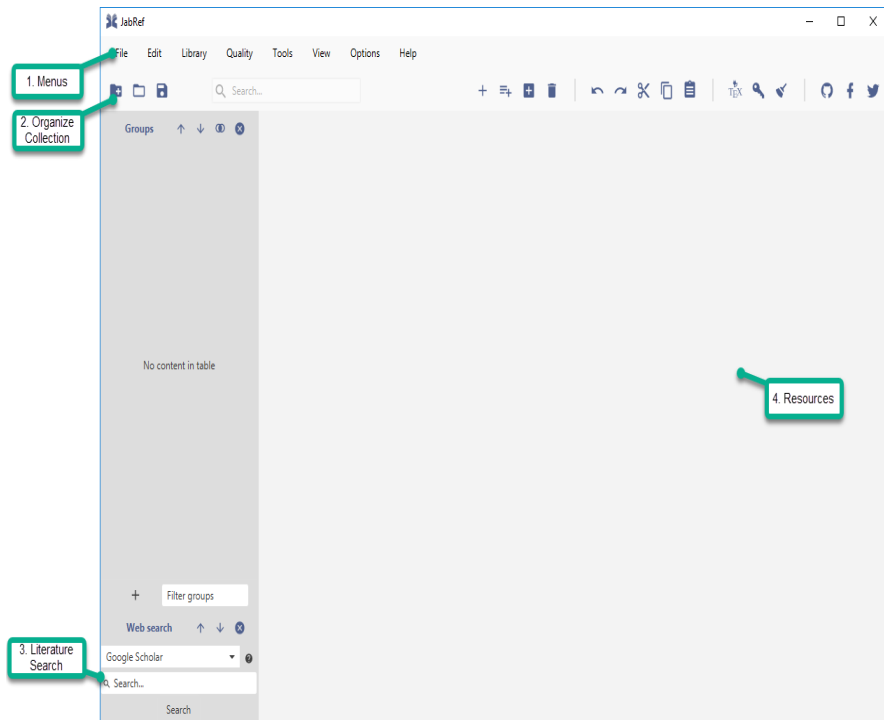


Figure 1: Main Screen of JabRef

One has to understand the internal structure and mechanism of the software before it is used for storing references and inserting citations while preparing the

manuscript. Let us first understand the flow of work and the use of various menus in the software.

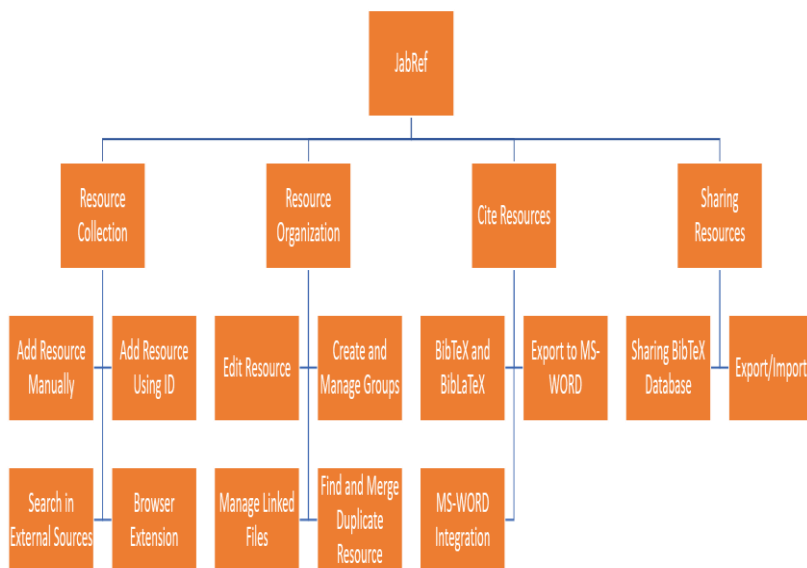


Figure 2: Organization of JabRef

A. Resource Collection

The resource collection allows users to create a collection of various types of resources that are required to be used for research work. On top of the software interface, you can see the menus which allow users to create New BibTeX Library. As soon as the BibTeX library is created users can create resources by entering it manually, by resource ID, parsing references and through a browser add-on. Let us see each one of the options for creating a resource collection.

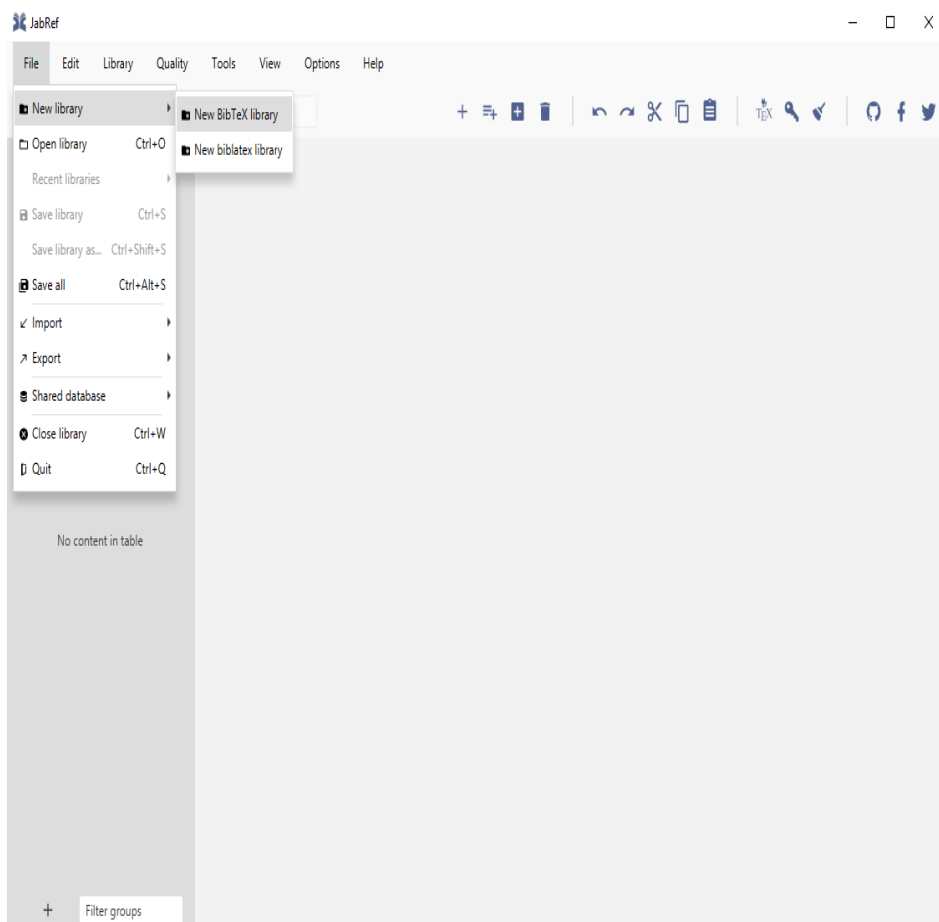


Figure 3: Creating New BibTeX Library

i) Add Resource Manually

To create a new manual entry for different types of resources, one must choose the 'Library' menu and click the 'New entry' option. The 'New entry' menu action will display a dialogue box having a list of multiple types of resources where you may choose the type of resource which you would like to enter as a resource.

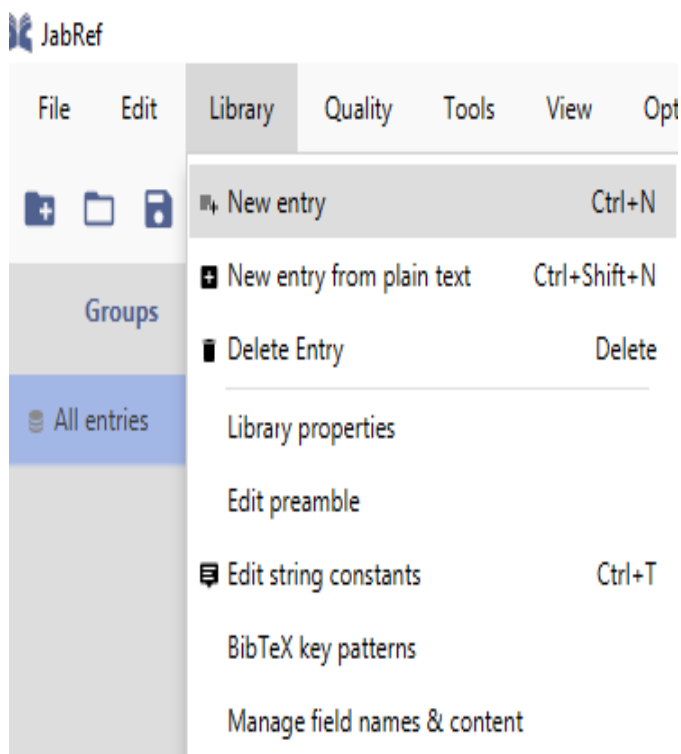


Figure 4: Add New Entry of Resource

ii) Add Resource Using ID

To add resources using a unique identifier, one must choose the 'Library' menu and click the 'New entry' option. The 'New entry' menu action will display a dialogue box in which the lower portion shows a list of unique identifiers in the dropdown box. Select the desired identifier such as ISBN, DOI, ArXiv and many more unique identifiers. As soon as the unique identifier for the desired resource is entered, press generate button to fetch metadata in the Library as shown in Fig 5 below.

Select entry type

BibTeX

Article InBook Book Booklet InCollection Conference

InProceedings Proceedings Manual MastersThesis

PhdThesis TechReport Unpublished Misc

IEEETran

Electronic IEEETranBSTCTL Periodical Patent Standard

ID type: DOI

ID: <https://doi.org/10.1080/>

Generate Cancel

Figure 5: Creating New Resource Using Unique Identifier

Entrytype	Author/Editor	Title	Year	Booktitle/Journal	BibTexkey
Article	Pandya	Radical Shift from OPAC to Federated Search Engine in Language Diversified Community	2014	International Journal of Inf...	Pandya2014
Article	Basu and Chakraborty	Land, Labor, and Rural Development: Analyzing Participation in India's textquesingles Village Dairy Cooperatives	2008	The Professional Geograp...	Basu2008
Book	Aitchison et al.	Thesaurus construction and use: a practical manual	2003		Aitchison2003
Article	Bechhofer and Goble	Thesaurus construction through knowledge representation	2001	Data & Knowledge Engine...	Bechhofer2001
InProceed...	Ito et al.	Association thesaurus construction methods based on link co-occurrence analysis for wikipedia	2008	Proceedings of the 17th A...	Ito2008
Article	Güntzer et al.	Automatic thesaurus construction by machine learning from retrieval sessions	1999	Information Processing & ...	Guentzer1999
Article	Losee	Decisions in thesaurus construction and use	2007	Information Processing & ...	Losee2007
Article	Hardman and Ongaro	Subjunctive medicine: A manifesto	2020	Social Science & Medicine	Hardmar2020

Figure 5: Creating New Resource Using Unique Identifier

The software comes with well-accepted citation and referencing styles. In the default installation, only a few referencing styles will be displayed. In case, you would like to use some more citation and referencing styles then it can be enabled from the 'Preferences' under the 'Option' menu as shown in figure 6 below:

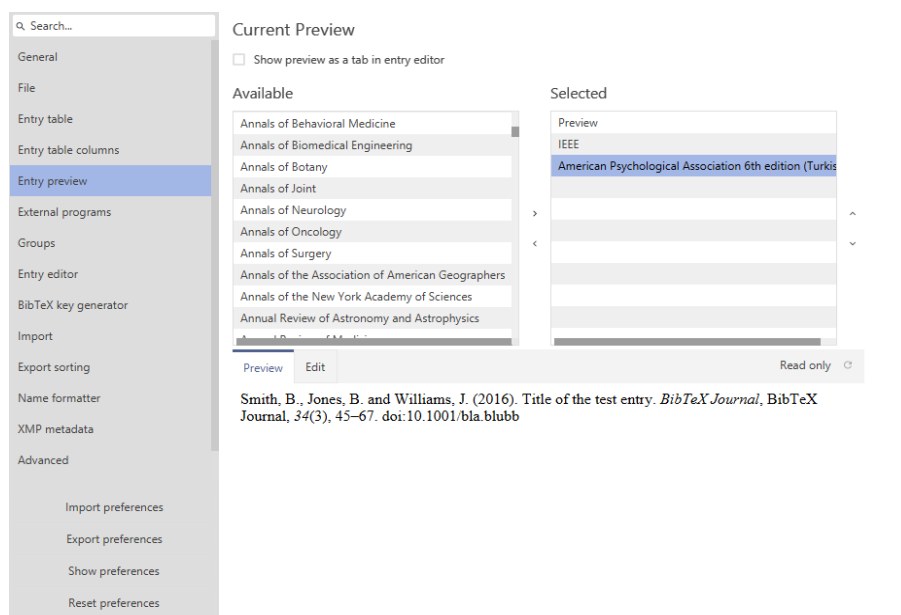


Figure 6: Changing Citation Style

iii) Search in External Sources

According to (Kopp, 2020b) metadata of various resources that are available in online databases can be searched from within the JabRef interface. To enable the search toolbar in the left pane of the screen, choose the 'View' menu and click 'Web search, the search interface will be displayed on the left pane of the software interface. JabRef provides a Web search facility for GORBID, GVK, Google Scholar, IEEEExplore,

INSPIRE, MathSciNet, Medline/PubMed, SAO/NASA Astrophysics Data System, Springer and zbMATH online databases. One has to select the pre-defined database from the dropdown list one at a time (e.g. Google Scholar) and type keywords related to the research area and press the 'Enter' key or click on the 'Search' button to retrieve the results from the selected online database as shown in figure 7 below:

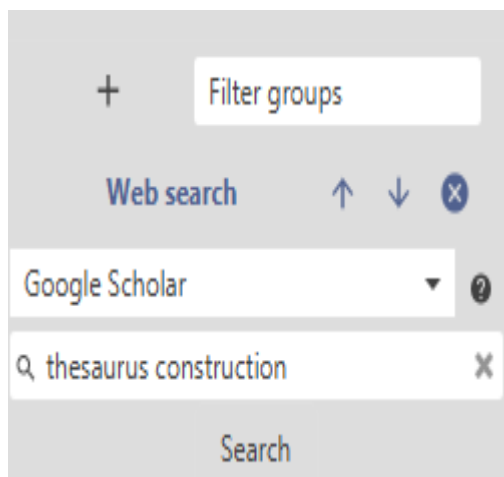


Figure 7: Search from External Source

The JabRef will fetch metadata of all the resources that are available in the selected online database irrespective of the document type. As soon as the query is fired, a list of available resources will be displayed on a dialogue box having a function to select the desired resource by clicking on '+' symbol in the right corner of each resource. Once resources are selected press the 'Import entries' button to bring all the selected resources to the library as shown in figure 8 below.

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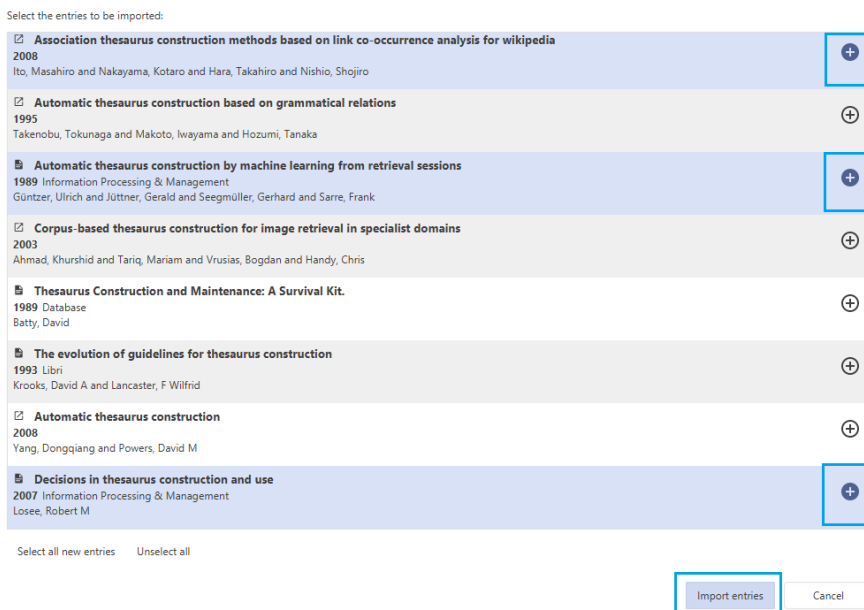


Figure 8. Search Results from External Source

iv) Add Resource Using Browser Extension

JabRef provides an extension for Firefox, Chrome, Edge and Vivaldi browsers. This extension automatically identifies and extracts metadata on the websites and imports it into JabRef in a single click. One has to configure the browser extension with the preferred browser as shown in figure 8 below. To enable an extension to fetch metadata and associated files a small configuration is to be done by typing the following command to the command prompt of the Windows machine. Detailed and step-by-step instructions for other operating systems are available on the JabRef Website.

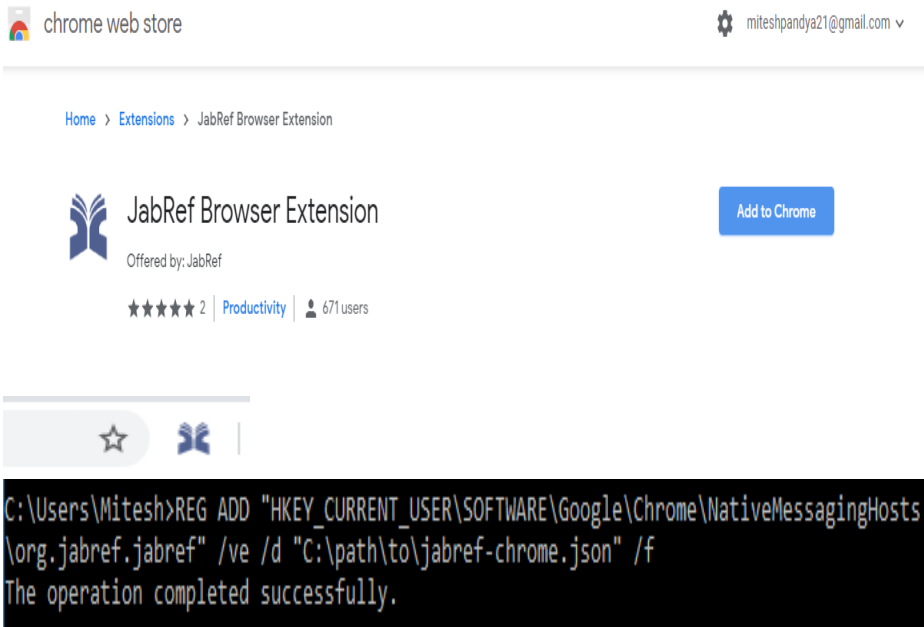


Fig 9. Configuring Browser Extension

Whenever the researcher is searching some scholarly databases and comes across relevant literature the browser extension helps the researcher to add references to JabRef library. It also fetched embedded full-text files with metadata provided that the scholarly database offers open access to a selected article or they are subscribed at the researcher's end. The researcher has to search resources and click on an add-on to download selected or group of resources available on the Webpage. As soon as the resource is sent to the JabRef, it will be displayed in separate dialogue box allowing users to import in the library as shown in Figure 10 below.

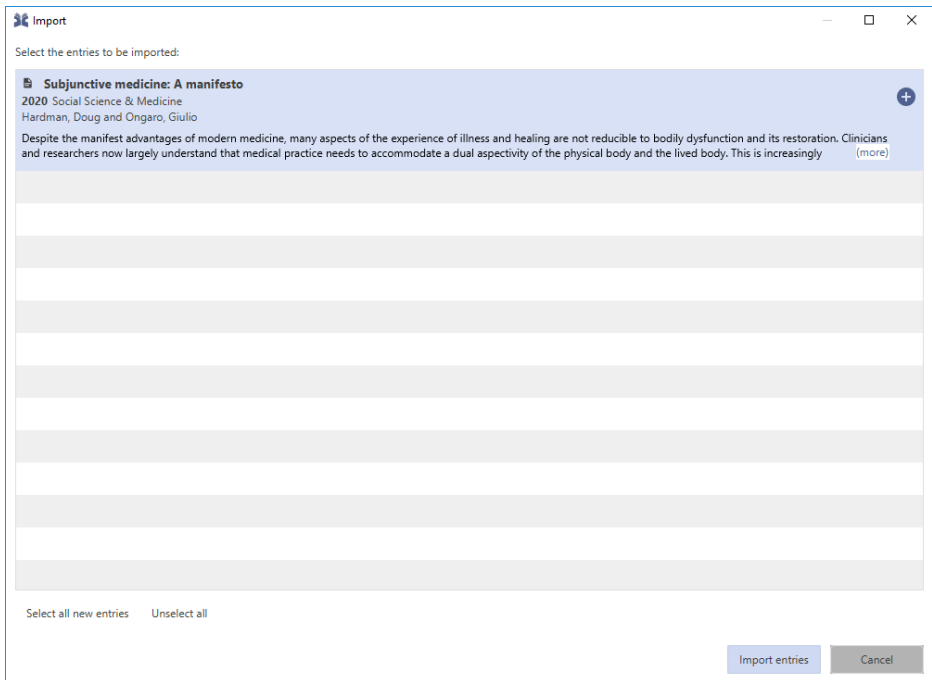


Figure 10: Extracting Metadata from Scholarly Databases

v) Resource Organization

The resource organization helps users to make necessary corrections in collected resources. Resources are gathered from a variety of sources and there are chances of typo errors as well as duplicate entries of resources. Many times users have PDF files, but they are not linked with their respective resources. Therefore, it is essential to organize the resources to avoid wrong entries by editing resources, linking associated PDF files, creating & managing groups and removing duplicate resources.

B. Edit Resource

The resource editor can be opened by double-clicking on the selected resource. This pane will help users to modify relevant information about a selected resource. It will be displayed at the bottom of the library/resource panel. One can

edit/modify, the relevant information and the changes will take place automatically. The panel will be displayed as shown in figure 11.

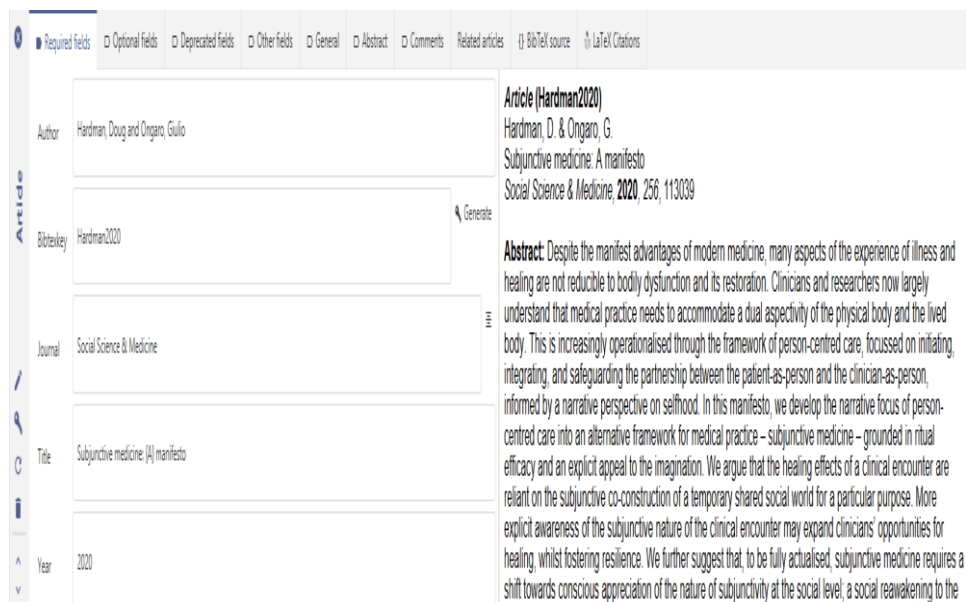


Figure 11: Edit Resource Panel

i) **Create and Manage Group**

JabRef allows users to organize resources according to project or research work as per requirement. All the collected resources can be distributed in groups according to relevancy. Groups allow structuring a BibTeX database in a parent-child relationship way that is similar to organizing files and folders on the hard disk. The resource entries can be then segregated into different group.

ii) **Manage Linked Files**

JabRef allows users to attach full-text PDF files with respective metadata which is being stored on the local computer

system. The JabRef uses a field known as 'Linked Files' and each entry can have multiple file links. These linked files can be opened from JabRef instantly.

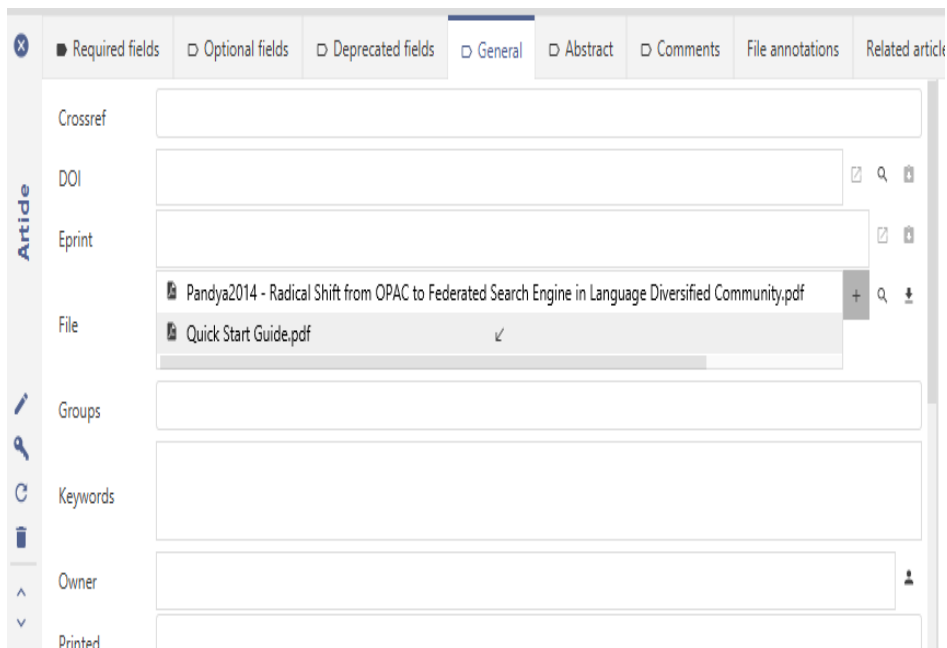


Figure12: Managing Associated Files

iii) Find and Merge Duplicate Resources

JabRef comes with a function to find out duplicate entries within the database. This option is available under the 'Quality' menu. The 'Find duplicate' option can be used to find and remove duplicate entries. This can also be used while importing records in a referencing format or directly from the Web. Users can merge duplicate entries by selecting the merge entry option. This option will be enabled by right click only after selecting both the prospective duplicate entries.

C. Cite Resources

One of the crucial tasks in research reporting is to cite the resources that are used in the research work according to

the style manual accepted by the publishers. Most of the publishers are using internationally recognized standard citation and referencing styles. JabRef facilitates inserting in-text citations while preparing the manuscript and generates references for the sources that are cited within the text of the manuscript.

i) BibTeX and BibLaTeX

JabRef software works on the BibTeX and BibLaTeX standardized structured metadata exchange formats. It uses the same file format as a database when it is saved with *.bib* extension. The file with *.bib* is a structured file format that is being used in JabRef.

ii) Export to MS-WORD

One can use an in-build export function for MS Office 2007 XML format. This file will store all the metadata in the compatible format of MS-WORD 2007. This is the same as it is used in the 'Reference' menu of MS-WORD that can be directly accessed by citing and creating references. This can only be used in office 2007 in the latest version of MS Office this feature will not work. To export the selected resources in office 2007 XML format, the option is available under the File menu. Please ensure that save as type is selected as MS Office 2007 (.xml). This exported file is required to be pasted under the following path:

C:\Users\Mitesh\AppData\Roaming\Microsoft\Bibliography

All the exported resources will be available in the MS-WORD bibliography database and can be used for citing while preparing the manuscript.

iii) MS-WORD Integration

Researchers can insert in-text citations while preparing manuscripts in MS-WORD. This requires to be downloaded an add-on available on the external website which allows

integrating plug-in within the MS-WORD. Users have to visit the following website to get the *bibtex4word* plug-in: <http://www.ee.ic.ac.uk/hp/staff/dmb/perl/index.html>

The system will download a zip folder which needs to be extracted. On extraction, users will find some files that are useful in different ways. To insert the in-text citation in MS-WORD this add-in would help researchers to communicate between JabRef and MS-WORD. This requires some configuration in local MS-WORD start-up folder available in the computer system. While working on Windows operating system, the settings related to add-in could be done in the following path: *C:\Users\Mitesh\AppData\Roaming\Microsoft\Word\STARTUP*

One has to copy *bibtex4word* template file from the extracted folder and paste it in the aforementioned path. As soon as it is pasted, MS-WORD will display some menus under Add-Ins menu as shown in figure 13 below:

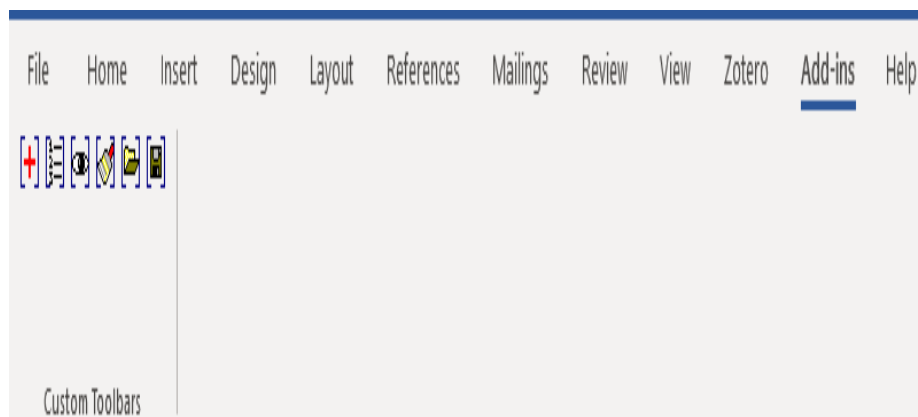


Figure 13: Integrating Add-In *bibtex4word*

If it does not display the *bibtex4word* add-in, please make sure that you are switching off and then switching on the MS-WORD to reflect the changes.

D. Sharing Resources

JabRef has a feature to connect with a shared database in MySQL, PostgreSQL and Oracle. To share a database in an external database some configuration is required for connecting it with the database as shown in figure 14 below:

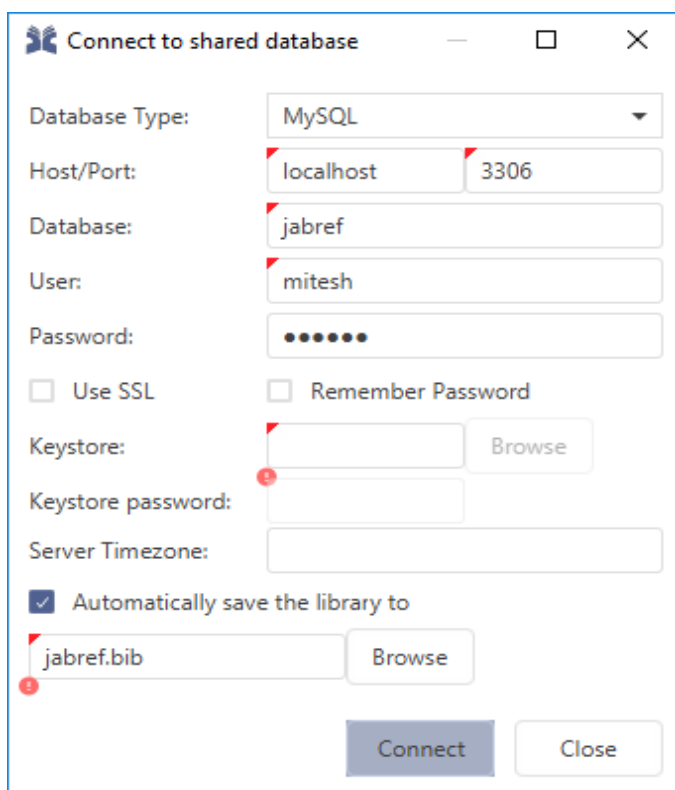


Figure 14: Connection Shared Database

i) Sharing BibTeX Database

It is essential for a researcher to share the resources with co-researchers that are being used in a research project. The JabRef facilitates sharing Bib(La)TeX database, in *.bib* file

source reference management software having many features and helps researchers to optimize their research skills. It also comes with an extension to a few well-known browsers enabling researchers to fetch embedded metadata while browsing resources.

References:

Bibtex Entry Types, Field Types and Usage Hints. (2020).
<https://www.openoffice.org/bibliographic/bibtex-efs.html>

Kopp, O. (2020a). JabRef—Free Reference Manager—Stay on top of your Literature. JabRef. <https://www.jabref.org>

Kopp, O. (2020b). User Documentation. <https://docs.jabref.org>

Chapter - 15

**REFERENCE MANAGEMENT TOOL: A BOON FOR
MANAGING RESEARCH REFERENCES**

*Tonmay Sabhapandit**

I. Reference and Reference Management Tool

Reference and referencing are an acknowledgment of the sources that a writer has read, analysed, and consulted to support their hypotheses and theories throughout the research. Every source we used for our research, including theories, websites, images, quotes, diagrams, statistics, and more, needs to be cited in our assignment. So, reference management software gives us the ability to gather, arrange, and credit sources for our writing, making it a practical tool for keeping track of Researcher's reading.

Reference management software can be defined as "any software product used for storage and retrieval of bibliographic records." It is often referred to as bibliographic software, citation management software, or personal bibliographic file managers. Scholarly research requires bibliographic citations (references), which reference management software generates and keeps in a database of bibliographic records.

Reference management software and technologies make it easier for researchers to find the work of others by rapidly and precisely citing it. These solutions can serve as a safe source repository for ongoing projects or be used as a one-time resource where users submit material and receive a complete citation. Large teams can be connected by reference

* Head Librarian, National Institute of Design, Jorhat, Assam

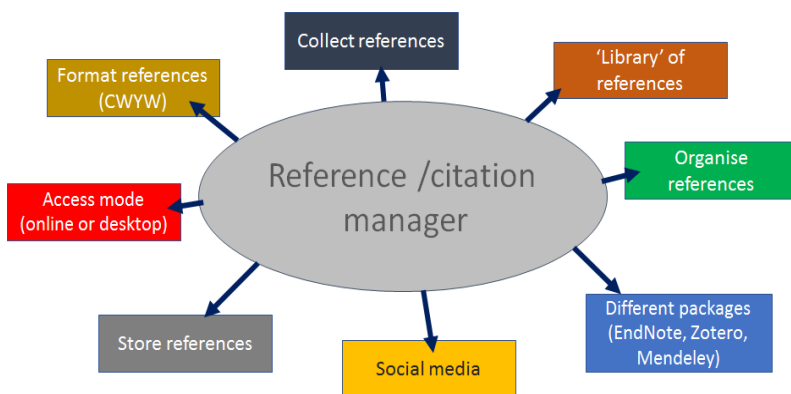
management software or tools via cloud servers, giving entire organizations access to reliable publications and resources. Reference management systems frequently can interface with portions of web browsers, file-sharing and storage systems, and document-authoring software. Instead of stumbling upon resources later, users can now preserve them as they are now located.

II. How Reference Management Tools Work

The following are the ways that reference management tools work:

- i) Storing and organizing references.
- ii) generating citations and bibliographies in the style anyone prefer; and,
- iii) easily converting referencing styles to suit publication requirements.

(Bolitho, n.d.)



III. Common features of Reference Management tools

- i) Store references in a searchable database.
- ii) Attach PDFs and other files.
- iii) Auto-generate citations and bibliographies/ reference lists in document in chosen style.

- iv) Share collections of references with others.
- v) Sync required references across multiple devices.
(Bolitho, n.d.)

IV. Why Reference Management Tool is Needed

Reference managers are software tools designed to help researchers to organize reference materials and create citations and bibliographies for their academic writing. These tools can have a significant impact on the accuracy and completeness of citations in academic writing. Here are some key points:

A. Efficient Organization of References: Reference managers allow researchers to collect, organize, and store references from various sources in a centralized database. This streamlines the process of managing a large number of citations for research papers.

B. Automated Citation Generation: One of the main benefits of reference managers is their ability to automatically generate citations and bibliographies in different citation styles (APA, MLA, Chicago, etc.). This feature reduces the chances of citation errors and ensures adherence to the required formatting guidelines.

C. Reduced Risk of Plagiarism: By providing accurate citation details and automatically generating citations, reference managers help researchers avoid accidental plagiarism. Properly citing sources gives credit to the original authors and prevents issues related to academic integrity.

D. Version Control and Collaboration: Some reference managers offer version control features, allowing researchers to track changes in their references and

collaborate with others in real time. This enhances research transparency and facilitates collaborative writing projects.

E. Cross-Platform Access and Synchronization: Many reference managers offer cloud-based services, enabling researchers to access their reference libraries from multiple devices. This ensures continuity and ease of use across different platforms.

F. Metadata Retrieval and PDF Management: Some reference managers can automatically retrieve metadata (e.g., title, author, publication year) for imported references, making the data entry process more efficient. Additionally, they may offer PDF management features to organize and search through PDFs of research papers.

G. Time Savings and Increased Productivity: By automating citation tasks, reference managers free up researchers' time, allowing them to focus more on their research and writing process.

Despite these benefits, researchers need to double-check the accuracy of the automatically generated citations. While reference managers can greatly assist in citation management, they are not infallible, and manual review is necessary to ensure the correctness of citations.

V. Limitations of Reference Management Tools/Software

A reference management program:

- i) may not create a perfect bibliography or reference list according to the researcher's preferred style (or the researcher's supervisor's or tutor's: i) Researcher still need to be familiar with the referencing style to be used;




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ii) Refer to Style Manuals; iii) In some programs it is possible to adjust or edit output styles.





- A. will not correct typos errors or omissions from references manually entered or downloaded from databases. The researcher will always need to proofread references for accuracy: punctuation, capitalization, and spelling.
- B. may not always know what reference type is downloading: For example, they cannot always distinguish a conference proceeding from a book; Also, some information may be inserted in the wrong format requiring editing. (Bolitho, n.d.)

VI. Reference Management software






There are several tools available which are important to choose the one that suits researchers' needs.




	<p>Mendeley: Mendeley is a desktop and web application for online collaboration, finding research data, and organising and sharing research articles. (<i>Mendeley - Reference Management Software</i>, n.d.)</p>
	<p>Find, use, and share research with EndNote. It's for more than bibliographies. Sync EndNote library across desktop, iPad, and online. Work on research from anywhere. (<i>EndNote FAQs</i>, n.d.)</p>
	<p>Zotero is a free, easy-to-use tool to help to collect, organize, cite, and share research sources. (<i>Zotero Your Personal Research Assistant</i>, n.d.)</p>

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 ReadCube	<p>ReadCube is a leader in scalable literature management solutions enhancing research-driven teams by transforming the way scholarly literature is accessed, organized, and shared. Information overload and outdated workflows can impede progress and grind innovation to a halt. ReadCube’s adaptive literature management solutions have helped thousands of organizations get back to the breakthrough work that matters most. With a focus on efficiency, security, collaboration, and interoperability, ReadCube is the literature management solution that scales from biotech startups to global pharmaceutical companies - making it possible to stay focused on tomorrow’s breakthroughs and world-changing discoveries. (Home, n.d.)</p>
 EasyBib www.easybib.com	<p>EasyBib.com provides citation, note-taking, and research tools. EasyBib offers free and premium services for individuals and institutions. (<i>EasyBib®: Free Bibliography Generator - MLA, APA, Chicago Citation Styles</i>, n.d.)</p>
	<p>Sciwheel is an award-winning tool providing library patrons with an easy way to discover, read, annotate, and write. Part of Technology from SAGE. (<i>Sciwheel</i>, n.d.)</p>
	<p>The Only All-in-One Writing and Referencing Solution Streamlines research writing process with the only tool designed to organize, track, and format writing and references. With features designed to methodically manage notes and articles and automatic citation formatting for over 10,000 styles, Citavi brings calm to the chaos of writing. With Citavi, researcher’s presentation is half-written before even begin. Buy now</p>

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	<p>or request a free trial to start improving research writing process. (<i>Citavi - Best Reference Management Software for Writing and Note Taking</i>, n.d.)</p>
	<p>Reference Manager is a powerful bibliographic solution for workgroups, networks, and collaborative projects. Search online databases, organize references easily, and watch the bibliography appear as the researcher write. (<i>The G2 on Reference Manager, 2022</i>)</p>
	<p>Paperpile is a Clean, simple reference management for the web. Sync the library to all used devices and read and annotate like on paper on iPad, iPhone, or Android device. Cite papers in Google Docs and Microsoft Word. (<i>Paperpile Reference Manager</i>, n.d.)</p>
	<p>RefWorks is an online research management, writing, and collaboration tool that is designed to help researchers easily gather, manage, store, and share all types of information, as well as generate citations and bibliographies. (<i>ProQuest RefWorks</i>, n.d.)</p>
	<p>The revolutionary Microsoft Word integration displays references and notes inside Word. Cite references by drag-and-drop and see the results instantly. (<i>Add Citations in a Word Document - Microsoft Support</i>, n.d.)</p>
	<p>JabRef is an open-source, cross-platform citation and reference management tool. It uses BibTeX and BibLaTeX as its native file formats and provides therefore a premier bibliography solution for typesetting with TeX/LaTeX. JabRef allows users to collect, edit, organize, and cite literature references. (<i>JabRef - Free Reference Manager - Stay on Top of Your Literature</i>, n.d.)</p>

	<p>Cite4me.org is a free research and reference tool designed to help users cite sources, check content for plagiarism, format, and keep papers in one place. (<i>Cite This For Me: Harvard, APA, MLA Reference Generator</i>, n.d.)</p>
	<p>Capture Anywhere, Use It Everywhere- Sorc'd provides the most efficient and effective way to save, share, and apply snippets of relevant content, creating smarter, more productive teams, flourishing thought leaders, and individuals who discover something new every day. Sorc'd empowers content creators to build stronger content, faster through a cloud-powered knowledge database of digestible snippets of relevant content, substantially decreasing research time and giving users more time to focus on what matters. Sorc'd seamlessly integrates with numerous content creation systems, such as Microsoft Office (Word, Powerpoint, Excel, & Outlook) and Google Docs/Sheets. (Ltd, 2024)</p>
	<p>Citationsy is a no-nonsense reference collection and bibliography creation tool for people who value simplicity, privacy, and speed. There's no tracking, and we don't sell or give data to anyone. (Cenk, 2019)</p>

VII. Some Popular Reference Management Software

From these available reference managers, the following three popular tools have been chosen that are described in more detail below.

A. Zotero: Zotero is open source and developed by an independent, non-profit organization that has no financial interest. With Zotero, the researcher always stays in control of

their data. Zotero automatically senses research as the researcher browses the web. Zotero has covered, everywhere. Zotero helps the researchers organize research any way they want. They can sort items into collections and tag them with keywords. Or create saved searches that automatically fill with relevant materials as work goes on. Zotero instantly creates references and bibliographies for any text editor, and directly inside Word, LibreOffice, and Google Docs. With support for over 10,000 citation styles, the researcher can format their work to match any style guide or publication. Zotero can optionally synchronize data across devices, keeping files, notes, and bibliographic records seamlessly up to date. Zotero also allow researchers to co-write a paper with a colleague, distribute course materials to students, or build a collaborative bibliography. Anyone can share a Zotero library with as many people as the researcher like, at no cost. (*Zotero | Your Personal Research Assistant*, n.d.)

B. Mendeley: “The strength of Mendeley, however, is what adds to that. Mendeley is also an academic social network that enables to share research with others. Researchers can collaborate online in public or private groups, and search for papers in the Mendeley group database of over 30 million papers. Mendeley can help to connect with other scholars and the latest research in their subject area. Because Mendeley is now owned by Elsevier, the leading provider of science and health information, it integrates with ScienceDirect.

By using Mendeley, the researcher can:

- Collect references from the Web and UCI databases.
- Automatically generate citations and bibliographies
- From within citation library, read, annotate, and highlight PDFs
- Collaborate with other researchers online.

- Import papers from other research software.
- Find relevant papers based on what are read.
- Access the scholar's papers from anywhere online.
- Read papers on the go with the scholars iPhone or iPad.
- Build a professional presence with Mendeley profile.
- Mendeley works with Windows, Mac and Linux” (*Mendeley*, n.d.)

C. Endnote: “EndNote is a commercial reference management software package produced by Thomson Reuters. Endnote is one of the most popular reference managers and has been around for more than 20 years. EndNote is a reference management software package, also known as bibliographic software, which enables researchers to:

- Create a personal database of references relevant to the scholar's research, along with associated files.
- Insert references into a Word document and format them automatically in a citation style of the scholar's choice.
- De-duplicate references retrieved from multiple sources.
- Share references with others” (“EndNote,” 2023)

Endnote software features

- Store up to 1 million references.
- Unlimited storage of references and attachments.
- Share the library with up to 100 people.
- Shared library activity feed logs changes made by collaborators.
- Insert citations and references from your library into your document and automatically build a bibliography (in over 7,000 styles) directly in Word.
- Add subheadings and categories to bibliographies in Word.
- Directly import references from online databases.

- One-click find full-text feature.
- Citation report (with Web of Science subscription).
- Read and annotate PDFs attached to references.

EndNote is available as:

A **desktop software application**, for which UCL has an institutional licence; The current version available at UCL is EndNote 20. It is also possible to download the previous version X9 (view our guide to EndNote X9). The latest version is EndNote 21. Our guidance will be updated for EndNote 21 once it is made available at UCL. A **web-based application** called EndNote Online (previously called EndNote Web) which may be accessed by anyone from any device with internet access. Access to the full version of EndNote Online is included in UCL's EndNote licence. A **free iPad app**. There is no app available for Android or other mobile operating systems. (Young, n.d.)

Everyone can use them independently or synchronise them and can work with EndNote references from any device: own computer, on the Web or on iPad. The online and iPad versions do not have all the functionality of EndNote Desktop (Young, n.d.)

D. A comparative status on the features of these three software

A status of comparison has been presented through the following table for better understanding of Zotero, Mendeley, and Endnote (Librarian, n.d.).

Research and Publication Ethics

Comparative analysis of Zotero, Mendeley, Endnote			
Features	Zotero	Mendeley	Endnote
Access	Zotero software with browser add-on (Firefox and Chrome).	Desktop application, but can sync with an online account which is editable	A commercial reference management program called EndNote is used to organize references and bibliographies when producing articles, reports, and essays.
Source Code Type	Open Source	Open Source	Closed Source
Where is my database stored?	Local computer with web-based syncing.	Local computers with web-based syncing between computers	Data can be stored locally or on cloud-based platforms like OneDrive, Google Drive, etc.
How does it work?	Detects citations that can be captured from databases or web pages. Search and import records using PMID, DOI, or ISBN. Extract citation information from PDFs.	Import from many popular databases. Extract citation information from PDFs.	can be added to a library manually, through exporting or importing, copying from another EndNote library, or connecting from EndNote, among other methods. The application shows the user a window with fields that range from general (author, title, year) to those specific to the type of reference

Research and Publication Ethics

Comparative analysis of Zotero, Mendeley, Endnote			
Features	Zotero	Mendeley	Endnote
			(abstract, author, ISBN, running time, etc.) and a dropdown menu from which to choose the type of reference they need (e.g., book, congressional legislation, film, newspaper article, etc.).
Ability to work offline	Yes	Yes	No
Cost	Free to anyone	Free.	Subscription-based access
Word-processor compatibility	MS Word, Google Docs, Open Office	MS Word, Open Office, LaTeX	Compatible with MS Word application.
Import from Library databases	Yes	Yes	Yes
Import from Library Catalogue	As of summer 2022, no, but expected.	Yes	No
<i>Find It!</i> Integration	Yes, via Library Lookup feature	No	No

Research and Publication Ethics

Comparative analysis of Zotero, Mendeley, Endnote			
Features	Zotero	Mendeley	Endnote
Import citation info from web pages	Yes, also archives the page and you can add annotations	Yes, with a bookmark for a limited number of sites (mostly publishers or databases)	Yes through Web Importer Option citation info can be collected about the web pages.
Manage large libraries	Easy	Moderate to difficult	Easy
Storage capacity	Unlimited local storage.	Unlimited local storage and data syncing; 2GB personal and 100MB group free Mendeley file syncing (larger syncing plans available for purchase; must sign in to view prices)	One can keep up to 50,000 records and 2 GB of attachments with EndNote Basic. EndNote 20 to X7. 2 offer limitless storage for records and attachments.
Attach associated files (PDFs, etc.)	Yes, with option to attach it automatically	Yes, and can highlight and annotate PDFs	PDFs and other items can be attached to the matching citation in the EndNote library in several ways. Drag and drop a file over the

Research and Publication Ethics

Comparative analysis of Zotero, Mendeley, Endnote			
Features	Zotero	Mendeley	Endnote
			relevant record to attach several files to an EndNote citation.
Search full text of PDFs	Yes	Yes	Yes
PDF Annotation and Notes	Yes	Yes	Yes
Create group or shared libraries	Yes	Yes, but limit of 3 members in a private group	Yes
Create a bibliography in different styles/formats	Yes, a limited number included by default; hundreds can be downloaded from Zotero.org	Yes	Possible
Edit output styles	Extremely difficult	No	No
Strengths	- Easy to learn	- Automatic citation extraction from PDFs	-Easy to learn with many tutorial videos
	-Quick for collecting citations and	- Sync library over multiple computers	EndNote includes powerful search and retrieval tools that make it easy

Comparative analysis of Zotero, Mendeley, Endnote			
Features	Zotero	Mendeley	Endnote
	organizing PDFs		to find specific references within a large library, enhancing overall efficiency.
	- Free unlimited storage and syncing with UChicago address.	- Sync with Zotero library automatically	EndNote is available for both Windows and macOS, making it accessible to a wide range of users, regardless of their operating system.
	- User friendly features such as tagging, attachments, and notes.		EndNote allows users to create and maintain a centralized library of references, making it easy to access and manage citation information for various projects.

VIII. Ways to Get the Most Out of Reference Management Software

Researchers may stay organised and avoid having to perform time-consuming chores by using reference management software. But if the researcher doesn't comprehend the fundamentals of what a reference management software can and cannot achieve, they may also be a major

source of avoidable troubles. According to the author Jennifer Schultz, the following are some ways that a deeper understanding could be helpful to the researcher to get the most out of the selected Reference management software (Rules for Reference Management - Lumivero, n.d.):

A. Garbage in, garbage out: If the source data is recorded accurately, a reference management program can generate perfectly formatted citations and bibliographies. Especially if you're entering information manually, make sure that you're putting it in the correct fields. This will ensure that your citation style will output the information where it needs to go.

B. Avoid using common abbreviations for citation styles. When adding reference information to research, it can be tempting to add supplementary information. For example, "ed." in front of the editor's name, "pp." in front of the page range, "vol." in front of a volume number, etc. This isn't necessary since the citation style controls which abbreviations and supplementary information is inserted. So be sure to always enter only the information itself and no designations of what it is.

Be skeptical in a constructive way: The ability to input source data and automatically add citation information using ISBN and DOI codes is a fantastic feature of reference management software. While most of the information is correct, mistakes do happen. Additionally, even if the data the researcher import is correct, it could still be in an unfavorable format.

C. Understand why some sources import better than others. Citation software users are often disappointed

when they see that a PDF or webpage that they imported has incomplete information. You can copy and paste the necessary information from the webpage or PDF by opening it in the preview pane of your tool, if it has one.

- D. Use Word plug-in wisely:** Most referencing tools that have a Word plug-in will insert references in fields or content controls. It's important not to manually make changes to these fields. So, make sure to be extra careful not to type information into a field or content control. There will always be some way to add the information you need in the Word plug-in you're using.

- E. Read citation style descriptions:** Most reference management programs will include additional information about the citation styles they provide. Double-check that you are using the correct citation style edition. Citation styles can sometimes change a great deal from one edition to the next, so always use the exact edition required.

- F. Use software to search for new sources:** Many people only use their referencing software to collect sources and then create bibliographies. Most of the reference management tools can do so much more! Most reference management programs will search online catalogues and databases that the parent institutions subscribe to for additional sources, so there's no need to leave your software.

- G. Get organized:** The majority of reference management systems provide groups or folders. This enables researchers to arrange references the way they want by topic or by section in your paper.

- H. Save notes:** Most reference management tools have a notes field where you can record information about a source. Use this to save a short summary or evaluation. Some tools have PDF annotation tools as well, so you can look back at your notes whenever you need to.
- I. Attachment of Files:** Another crucial aspect is to explore and utilize the software's capabilities for managing attachments, especially PDFs. Many reference management tools allow users to attach full-text articles directly to references, making it convenient to access relevant material while working on a project.
- J. Take caution when customising:** Make a thoughtful choice about working with custom options or using a field for a purpose other than what it was designed for, even though the templates in a reference management programme or the citation styles might not always be a great fit. Of course, sometimes customization cannot be avoided if you need to obtain a certain output result.
- K. Ensure that bibliography is always accurate and up to date:** Errors can still happen in reference management software, even if you take great care to enter data accurately. It's also possible that your programme hasn't updated to reflect the latest changes to the citation style guidelines. Seek to obtain the style rules for the format you're using, and double-check the formatting across a few sources. Once you're satisfied nothing sticks out as odd, the researcher can go through the remaining sources.

(Rules for Reference Management - Lumivero, n.d.)

IX. Conclusion

Choosing a reference management solution that complies with the particular guidelines of the study field and the preferred citation style is essential while producing academic papers. Additionally, staying updated with the latest versions of reference management tools/ software can ensure access to new features and improvements in citation management. However, everyone must be consistent and follow the guidelines specific to that style, regardless of the reference management systems or style that researchers are employing.

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Chapter - 16

**SHORTCUTS TO KNOWLEDGE: UNDERSTANDING
ABSTRACTING, INDEXING, AND CITATION
INDEXES AS PILLARS OF RESEARCH NAVIGATION**

*Badan Barman **

I. Introduction

In the world of information, navigating vast resources can be daunting. This is where abstracting, indexing, and citation indexes come in. They are powerful tools that help one find and explore relevant information quickly and efficiently. With these tools, one can navigate the vast ocean of information with confidence, discover new connections, and significantly improve their research efficiency.

An abstract provides a summary of a document, accompanied by its bibliographical details. Indexes provide lists of articles accompanied by bibliographical details, and the citation index is a database that tracks the references between academic publications. In the case of web-based databases, the difference between the abstracting, indexing and citation indexing is sometimes blurred.

II. Abstract

An abstract or summary is a short statement of the most important points in a text. Abstract – especially refers to scientific papers whereas summary – refers to more general news stories, administrative documents, reports, etc.

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According to Allen Kant, “an abstract is a summary of a publication or articles accompanied by an adequate bibliographical description to enable the publication or article to be traced”.

H. M. Weisman defines the abstract as “an announcement medium whose objective is to provide knowledge of and an ordered and logical access to new primary literature”.

Thus, an abstract can be defined as an abbreviated, accurate representation of the significant content of a document consisting scope, purpose, method used, kinds of treatment, results and findings, interpretation of the result by the author, argument, etc. which is usually accompanied by an adequate bibliographical description to enable to trace the original document.

An abstract is a brief summary of a research article, thesis, review, conference proceeding, or any in-depth analysis of a particular subject and is often used to help the reader quickly ascertain the paper's purpose.

An abstracting service is a service that provides abstracts of publications, often on a subject or group of related subjects.

A. Structure of an Abstract: When used, an abstract always appears at the beginning of a manuscript or typescript, acting as the point-of-entry for any given academic paper or patent application. The terms *précis* or *synopsis* are used in some publications to refer to the same thing that other publications might call an abstract. In management reports, an executive summary usually contains more information (and often more sensitive information) than the abstract does. Abstract length varies by discipline and publisher requirements. An abstract typically outlines four elements relevant to the completed work:

- i) The research focus (i.e. statement of the problem(s) / research issue(s) addressed);
- ii) The research methods used (experimental research, case studies, questionnaires, etc.);
- iii) The results / findings of the research; and
- iv) The main conclusions and recommendations

B Types of Abstract: Abstract may be of two types based on who have prepared the abstract i.e. manual abstracting and automatic abstracting. Manual abstracting is typically done by a human being. In automatic abstracting, abstracting is typically done by computer system. Automatic abstracting is very complicated, often fragile, slow in production and available in some restricted domain only.

Based on the inclusion and exclusion of heading and subheading in the abstract it can be structured and unstructured abstract. If the abstract is explicitly sectioned logically as an overview of what appears in the paper, with any or all of the following subheadings: Background, Introduction, Objectives, Methods, Results, Conclusions then it is called as structured abstracts. Abstracts that comprise one paragraph with no explicit subheadings are often called unstructured abstracts.

Abstracts can also be grouped as informative or complete abstract and descriptive abstract or limited abstract or the indicative abstract based on the information they contain. The informative abstract is a compendious summary of a paper's substance and its background, purpose, methodology, results, and conclusion. The informative abstract summarizes the paper's structure, its major topics and key points. Informative abstracts may be viewed as standalone documents. The descriptive abstract provides a description of what the paper covers without delving into its substance. A descriptive abstract is akin to a table of contents in paragraph form.

III. Index

The index word is derived from Latin, in which it means “one who points out”, an “indication”, or a “forefinger”. In Latin, the plural form of the word is indices, however in English it is used as indexes. Index is therefore basically concerned with indication of an object or idea to one who does not know where that object or idea is located. Indexing is the process of providing fast and accurate retrieval of information from document or record, online or offline.

An index is a systematic guide to i) items contained in or ii) concept derived from a collection. These items and derived concepts are represented by entries arranged in a known or stated searchable order.

In a traditional back-of-the-book index, the headings will include names of people, places, events, and concepts selected by the indexer as being relevant and of interest to a possible reader of the book and the pointers are typically page numbers, paragraph numbers or section numbers.

An index, within a library setting, is a list of articles or other publications within a discipline or topic. It provides bibliographic information such as author(s), title, where it was published and so on. Indexes, which were traditionally available in print formats, increasingly became available online.

An indexing service is a service that assigns descriptors and other kinds of access points to documents.

A. Types of Indexing: Based on the indexer- an index may be manual indexing or automatic indexing.

i) Manual Indexing: In manual indexing, the indexer reads through the text, identifying indexable concepts (those for

which the text provides useful information and which will be of relevance for the text's readership). The indexer creates index headings to represent those concepts, which are phrased such that they can be found when in alphabetical order. These headings and their associated locators (indicators to position in the text) are entered into specialist indexing software which handles the formatting of the index and facilitates the editing phase. The index is then edited to impose consistency throughout the index.

Indexers must analyze the text to enable presentation of concepts and ideas in the index that may not be named within the text. The index is intended to help the reader, researcher, or information professional, rather than the author, find information, so the professional indexer must act as a liaison between the text and its ultimate user.

ii) Automatic Indexing: Automatic indexing is the process of assigning and arranging index terms by machine without human intervention. As suggested by Eugene Garfield it is actually improper to use the word "automatic indexing" rather it should be called "algorithmic indexing".

In automatic indexing (or algorithmic indexing), the computer programme identifies the words in a text and their location, and then the collected words are alphabetized. In doing so definite and indefinite articles, prepositions and other words on a so-called stop list are not included in the program's output. Even some word processors provide this capability.

The advantages of automatic indexing include speed of generation and negligible cost associated with its generation.

No computer programme however intelligible makes full judgment; don't have the expertise, intelligence or audience awareness that is needed to create usable indexes. The main

drawback of automatic indexing is that indexes produced in this way are generally lists of words in a document rather than truly usable indexes. This is because to generate indexes, abstraction is more important than alphabetization. Abstractions result from intellectual processes based on judgments about what to include and what to exclude and any computer devoid of it. Sometimes in index even the terminology that does not make its appearance on the document contents are made available in the index and they are directed to the synonymous word within the document. Eg. In biological indexing separate entries may be needed for scientific names even if it was not mentioned in the document. Again, there are many occasions when a document lists some terminology without detailed information about them. A manual indexer will avoid such terminology from being included in the index, but computers will not be able to make a difference.

Nowadays automatic indexing is even used in large scale by search engines as well as other peoples for various reasons and they are quite effective within their scope though they need to go further to replace the indexers. The indexes of web documents created by some robotic devices of search engines are quite effective in meeting this end. The first automated citation indexing was done by CiteSeer in 1997 and was patented.

IV. Abstracting and Indexing

An abstracting and indexing service is a service that provides shortening or summarizing of documents and assigning of descriptors for referencing documents.

The metadata presented in abstracting and indexing services includes the title, author(s), date of publication, journal title, volume and issue, page numbers, subject area, keywords, DOI, etc. Users browsing these services using particular search

criteria are shown the relevant articles, chapters or books with the metadata, abstract and link to the full text. If the users themselves or an institution to which they are affiliated have access to the full text or it is an open access publication, then they can immediately use the full text. Otherwise, they are usually shown information from the publisher or other rights holder on how to access the text.

An abstracting periodical is “a regularly issued compilation of concise summaries of (i) significant articles (often in a very limited subject field) that appear in current primary source journal and (ii) of important new research monographs, reports, patent and other primary source publication in that field”.

The abstracting and indexing periodicals present a condensed form of the literature of the subject and provide a scientific or specialist bird’s eye view of the progress and development of the subject so that the inquirer can select the most relevant documents relating to his work in the hand. An abstracting and indexing periodical helps to find out specific information in the literature of a subject.

Abstracting and Indexing (A&I) services provide one location for researchers in libraries to search for articles in a subject. They present abstracts of articles and link to the publishers’ websites for the full text of the article. As such, Abstracting and Indexing Services are very important as the starting point for research. Abstracting and indexing (A&I) services unlock the content of scientific journal articles and eBooks using metadata and abstracts. In doing so, they contribute significantly to the use of scientific literature.

V. Citation Index

The first citation indices were used by legal citators such as Shepard's Citations (1873). In 1960, Eugene Garfield's Institute for Scientific Information (ISI) introduced the first citation index for papers published in academic journals, starting with the Science Citation Index (SCI), and later expanding to produce the Social Sciences Citation Index (SSCI) and the Arts and Humanities Citation Index (AHCI). Some other popular examples of citation indexes are Scopus published by Elsevier publishers (available online only), Web of Science, CiteSeerX, Google Scholar (GS), Indian Citation Index, etc.

A. Definition: A citation index is an index of citations between publications. It allows the user to easily establish as to which later documents cite which earlier documents. It is an ordered list of cited articles each of which is accompanied by a list of citing articles. The cited articles are identified as references and the citing articles as source. In a simple way it can be said that cited articles are ancestors and the citing articles are descendants and this descending relation of subjects is reflected through the citation index. Citations provide a further reading list besides paying homage to the pioneers and giving credit for their work; sometimes it also criticises, corrects and disputes the previous contributions.

ALA Glossary of Library and Information Science (1983) defines Citation Index as an index consisting essentially of a list of works which have been cited in other, later works and a list of the works from which the citations have been collected.

B. Uses: One very common use of citation analysis is to determine the impact of a single author on a given field by counting the number of times the author has been cited by others. Citation indices, such as Institute for Scientific Information's Web of Science, allow users to search forward in

time from a known article to more recent publications which cite the known item. Information scientists also use citation analysis to quantitatively assess the core journal in any subject field.

VI. Examples of Abstracting, Indexing, and Citation Indexes

In the following paragraphs, some examples of abstracting, indexing, and citation indexing are provided:

A. Science Citation Index (SCI): Science Citation Index is a citation index originally produced by the Institute for Scientific Information (ISI) and created by Eugene Garfield. It was officially launched in 1964 and is now owned by Clarivate Analytics.

The larger version of SCI is known as Science Citation Index Expanded and it covers more than 8,500 notable and significant journals, across 150 disciplines, from 1900 to the present.

The index is made available online through different platforms, such as the Web of Science and SciSearch. There are also CD and printed editions, covering a smaller number of journals. Thomson Reuters also markets several subsets of this database, termed Specialty Citation Indexes, such as the Neuroscience Citation Index and the Chemistry Citation Index.

B. Social Sciences Citation Index (SSCI): Social Sciences Citation Index (SSCI) is a commercial citation index product of Clarivate Analytics. The Social Sciences Citation Index is a multidisciplinary index and indexes over 3,000 social sciences journals – 1988 to present. It is made available online through the Web of Science service for a fee. It was originally developed by the Institute for Scientific Information from the Science Citation Index.

C. Arts & Humanities Citation Index (A&HCI): Arts & Humanities Citation Index (A&HCI), also known as Arts & Humanities Search, is a citation index, with abstracting and indexing for more than 1,700 arts and humanities journals, and coverage of disciplines that includes social and natural science journals. Available citation (source) coverage includes articles, letters, editorials, meeting abstracts, errata, poems, short stories, plays, music scores, excerpts from books, chronologies, bibliographies and filmographies, as well as citations to reviews of books, films, music, and theatrical performances. The index was originally developed by the Institute for Scientific Information, which was later acquired by Thomson Scientific. It is now published by Thomson Reuters' IP & Science division.

Part of A&HCI database is derived from Current Contents records and the print counterpart is Current Contents. According to Thomson Reuters, the Arts & Humanities Search can be accessed via Dialog, DataStar, and OCLC, with weekly updates and backfiles to 1980. The A&HCI database can be accessed online through the Web of Science.

D. Web of Science: Web of Science (<http://wokinfo.com>) is an online subscription-based scientific citation indexing service maintained by Thomson Reuters that provides a comprehensive citation search. Previously, it was known as the Web of Knowledge. It was originally produced by the Institute for Scientific Information (ISI) and is currently maintained by Clarivate Analytics. Web of Science now has indexing coverage from the year 1900 to the present. The Web of Science Core Collection consists of six online databases: Science Citation Index Expanded, Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index (A&HCI), Emerging Sources Citation Index (ESCI), Book Citation Index and Conference Proceedings Citation Index (CPCI). Since 2008, the Web of Science also hosts a number of regional citation indices. Web of Science gives

access to multiple databases that reference cross-disciplinary research, which allows for in-depth exploration of specialized subfields within an academic or scientific discipline.

E. Scopus: Scopus (<http://www.scopus.com>) is Elsevier's abstract and citation database launched in 2004. It claims to be the largest abstract and citation database of research literature and quality web sources. It covers three types of sources: book series, journals, and trade journals. All journals covered in the Scopus database, regardless of who they are published under, are reviewed each year to ensure high quality standards are maintained. Scopus gives four types of quality measure for each title; those are h-Index, CiteScore, SCImago Journal Rank (SJR) and Source Normalized Impact per Paper (SNIP). Scopus also offers author profiles which cover affiliations, number of publications and their bibliographic data, references, and details on the number of citations each published document has received. Scopus IDs for individual authors can be integrated with the non-proprietary digital identifier ORCID. But it is a paid service and access is denied to outsiders i.e. without id and password.

The difference between Scopus and Web of Science is: Scopus is easy to navigate, even for the novice user. The ability to search both forward and backward from a particular citation would be very helpful to the researcher. The multidisciplinary aspect allows the researcher to easily search outside of his discipline and one advantage of Web of Science over Scopus is the depth of coverage, with the full WOS database going back to 1900 and Scopus going back to 1966. However, Scopus and WOS complement each other as neither resource is all inclusive.

F. Dimensions: Dimensions (<https://app.dimensions.ai>) is an abstracting and indexing database. Dimensions indexes data from a myriad of sources so that the user can track and

understand the complete research cycle. Dimensions covers 12 crores 47 lakhs of research publications connected by more than 150 crores citations, supporting grants, datasets, clinical trials, patents and policy documents. Dimensions was launched in 2018 by Digital Science and is still in the development stage.

G. CiteSeer^x: CiteSeer^x or CiteSeer (<https://citeseerx.ist.psu.edu>) is a public abstracting and citation database for scientific and academic papers, primarily in the fields of computer and information science. It is the first product achieved through automated citation indexing, other such products include Google Scholar and Elsevier's Scopus. CiteSeer^x replaced CiteSeer and all queries to CiteSeer were redirected. Again CiteSeer is freely available online. CiteSeer was created by researchers Lee Giles, Kurt Bollacker and Steve Lawrence in 1997 while they were at the NEC Research Institute (now NEC Laboratories America), Princeton, New Jersey, USA. CiteSeer was granted a United States patent # 6289342, titled "Autonomous citation indexing and literature browsing using citation context", on September 11, 2001. Because CiteSeer only indexes freely available papers on the web and does not have access to publisher metadata, it returns fewer citation counts than sites, such as Google Scholar, that have publisher metadata. CiteSeer^x continues to be rated as one of the world's top repositories and was rated number 1 in July 2010. CiteSeer again is considered as a predecessor of academic search tools such as Google Scholar and Microsoft Academic Search.

H. Inspec: Inspec is a major indexing database of scientific and technical literature, published by the Institution of Engineering and Technology (IET), and formerly by the Institution of Electrical Engineers (IEE). Inspec coverage is extensive in the fields of physics, computing, control, and engineering. Inspec was started in 1967 as an outgrowth of the Science Abstracts

service. Access to Inspec is currently by the Internet through Inspec Direct and various resellers. Inspec has several print counterparts like Science Abstracts, Physics Abstracts and so on.

I. Indian Citation Index: Indian Citation Index (ICI) (<http://www.indiancitationindex.com>) is an online bibliographic database containing abstracts and citations/references from academic journals. Currently ICI covers more than 1100+ journals which are published from India covering scientific, technical, medical, and social sciences that includes arts and humanities. ICI was launched in India in 2009 and is funded by Diva Enterprises Pvt. Ltd.

J. Library and Information Science Abstract (LISA): The Library and Information Science Abstracts (LISA) is an international abstracting and indexing tool designed for library professionals and other information specialists. LISA covers the literature in Library and information science (LIS) since 1969 and currently abstracts 440+ periodicals from 68+ countries and in 20+ languages. LISA was originally published by the Library Association and now from 2007 it is being published by ProQuest.

K. Library, Information Science & Technology Abstracts (LISTA): LISTA indexes the fields of librarianship, classification, cataloging, bibliometrics, online information retrieval, information management, among others. It covers about 560 core journals, 50 priority journals, and 125 selective journals; in addition to books, research reports and conference proceedings. Coverage in the database extends back as far as the mid-1960s

The online version of LISTA, available through EBSCOhost, includes “Get It @ R” links to full text available

through Rutgers, and it allows cross-searching with other EBSCOhost databases.

L. Indian Science Abstract: Indian Science Abstracts (ISA), a semi-monthly abstracting periodical was started by Indian National Scientific Documentation Centre (INSDOC) [now National Institute of Science Communication and Policy Research (NIScPR)] in January 1965, to abstract comprehensively and expeditiously the Indian scientific literature. ISA covers original scientific research work published in Indian journals including short communications, reviews and informative articles and research work. Proceedings of Indian conferences, theses and standard articles of popular nature are not included.

The abstracts are broadly classified according to Universal Decimal Classification (UDC) scheme and arranged under UDC number (along with subject headings) in the following order of category of entry: journal article, standard and thesis. The documents are grouped under 25 broad classes. In each category the entries are arranged alphabetically by the surname of the first author and then by the journal title, and the year of publication. Entries are serially numbered.

VII. Conclusion

Navigating the vast ocean of information can feel like travelling through a maze. Thankfully, abstracting, indexing, and citation indexes act as lighthouses, guiding us to relevant knowledge and illuminating connections between scholarly works.

Abstracting condenses research into digestible summaries, offering glimpses into specific studies. Indexing organises data with keywords and subject headings, acting as a map directing us to targeted resources. Citation indexes, like

intricate webs, reveal the threads of influence binding ideas and charting the intellectual landscape.

Together, these tools empower us to explore research efficiently, unearth hidden gems, and trace the evolution of knowledge across disciplines. They act as active catalysts for discovery, collaboration, and innovation. In a world of information, abstracting, indexing, and citation indexing will remain more crucial than ever.

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Chapter - 17

RESEARCH METRICS: TRENDS AND OPPORTUNITIES

*Deepjoyti Kalita**

I Introduction

Research metrics play a pivotal role in the evaluation, assessment, and advancement of scholarly activities across diverse fields of study. In the dynamic landscape of academic and scientific pursuits, metrics provide quantitative measures to gauge the impact, productivity, and quality of research outputs. These metrics serve as valuable tools for researchers, institutions, funding agencies, and policymakers in making informed decisions, fostering collaboration, and shaping the trajectory of scientific progress. (Bornmann, 2008)

Research metrics encompass a wide array of indicators that reflect various aspects of scholarly work, ranging from traditional metrics like citation counts and journal impact factors to more contemporary measures such as altmetrics and social media mentions. Each metric contributes to a multifaceted understanding of research impact, allowing stakeholders to assess the influence of publications, the visibility of researchers, and the overall contribution of a study to the academic community and beyond.

As the scholarly landscape evolves, so do the methodologies for measuring research impact. Traditional metrics, while widely accepted, have been complemented by alternative approaches

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that consider the broader societal impact of research, including its accessibility, engagement, and applicability. The ongoing dialogue surrounding research metrics is reflective of the broader efforts to enhance the accuracy, fairness, and transparency of evaluating scholarly contributions. Some basic assumptions under research metrics

- Citations Measure Impact
- Higher is the better
- Citations are what that counts

II History of Research Metrics and Its Importance:

The history of research metrics can be traced back to the early 20th century when the scientific community began seeking quantitative methods to assess the impact and significance of scholarly work. Over the years, the evolution of research metrics has been marked by the development of various indicators, the establishment of standardized measures, and ongoing efforts to refine methodologies. It also has a close relation with the cold war era (Moed, 2005) which spanned roughly from the end of World War II in 1945 to the collapse of the Soviet Union in 1991, the global geopolitical landscape was characterized by intense rivalry and ideological competition between the United States and its allies and the Soviet Union and its allies. Scientific Competition, Emphasis on Quantifiable Achievements, Scientific Collaboration and Competition, National Assessments and Metrics were some key domains that influenced the development of standard process to evaluate research achievements. A brief overview of key milestones in the history of research metrics are:

- Citation Indexing (1950s): The concept of citation indexing emerged in the 1950s with the creation of the Science Citation Index (SCI) by Eugene Garfield. This pioneering effort laid the foundation for using citation

counts as a measure of the impact and influence of scholarly publications.

- **Impact Factor (1960s):** The impact factor, introduced by Eugene Garfield in the 1960s, became a widely recognized metric. Initially designed to aid librarians in journal subscription decisions, the impact factor measures the frequency with which the average article in a journal has been cited in a particular year. It has since become a controversial yet influential metric in the evaluation of journals and, by extension, the researchers who publish in them.
- **Hirsch's h-index (2005):** Physicist Jorge Hirsch proposed the h-index as a way to quantify both the productivity and impact of a researcher's work. The h-index is defined as the number of a researcher's papers (h) that have at least h citations. This metric gained popularity for providing a more comprehensive view of a researcher's output and impact.
- **Altmetrics (2010s):** As digital communication and social media became pervasive, there was a growing recognition of the limitations of traditional metrics. Altmetrics, or alternative metrics, emerged as a response to capture the broader impact of research beyond citations. Altmetrics include measures such as social media mentions, downloads, and online discussions.
- **Declaration on Research Assessment (DORA) (2012):** In response to concerns about the misuse of metrics in academic evaluation, a group of researchers and organizations drafted the Declaration on Research Assessment (DORA). DORA emphasizes the need for a responsible use of metrics, discourages the reliance on a single metric, and encourages a more holistic approach to evaluating research impact.

- Open Science and Transparency (ongoing): The 21st century has witnessed a shift towards open science and transparency in research. Initiatives like the San Francisco Declaration on Research Assessment (DORA) and the Leiden Manifesto have called for the responsible use of metrics, highlighting the importance of considering various indicators and qualitative assessments in evaluating research.

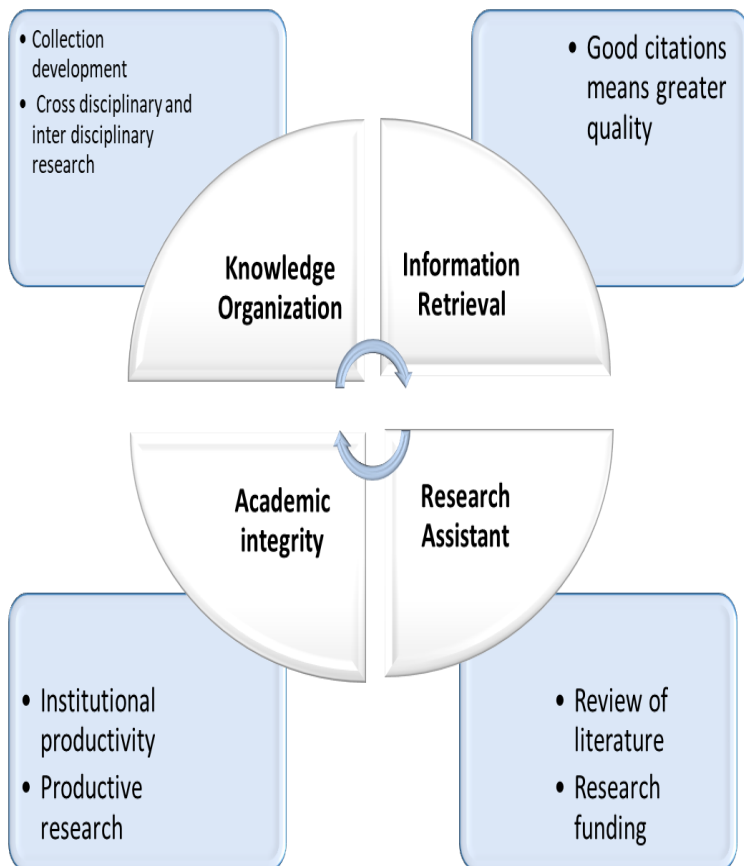


Figure 1: Importance of research metrics

The history of research metrics reflects a continuous effort to develop more comprehensive and fair methods for evaluating scholarly impact. Ongoing discussions and initiatives seek to balance the quantitative aspects of metrics with qualitative assessments, aiming to create a more inclusive and accurate representation of the diverse contributions of researchers. Fig 1 presents a brief idea about the importance of research metrics in current academia.

III. Citation Databases: The Basis of Any Research Metrics

Citation databases are specialized repositories that organize, index, and provide access to scholarly publications along with information about how these publications are cited by other works. (Roemer & Borchardt, 2015) These databases play a crucial role in academic research by facilitating the discovery of relevant literature, tracking citation patterns, and assessing the impact and influence of scholarly works. Examples of well-known citation databases include Web of Science, Scopus, PubMed, Google Scholar, and others. Each database may have its unique features, strengths, and coverage areas, catering to different disciplines and research needs. Researchers often use multiple databases to ensure comprehensive coverage and access to diverse scholarly literature. Some key characteristics and functions of citation databases are:

- **Indexing and Abstracting:** Citation databases index and abstract scholarly articles, books, conference proceedings, and other types of publications. They provide essential metadata, including titles, authors, abstracts, keywords, and affiliations.
- **Citation Counts:** One of the primary features of citation databases is the recording of citation counts. They track how many times a particular scholarly work has been

cited by other researchers, which can be indicative of its influence and impact within the academic community.

- **Citation Linkages:** Citation databases establish linkages between citing and cited works. Users can navigate these linkages to explore the academic lineage of a publication and understand its influence on subsequent research.
- **Bibliographic Information:** Citation databases offer comprehensive bibliographic information about publications, enabling researchers to cite and reference works accurately.
- **Search and Retrieval:** Researchers can search for specific topics, authors, or keywords within the database, making it easier to locate relevant literature for their research.
- **Author and Affiliation Information:** Citation databases often include information about authors and their affiliations. This feature helps researchers identify prolific authors, track their research output, and assess the scholarly impact of individuals or institutions.
- **Research Metrics:** Many citation databases provide metrics for journals, such as impact factors. These metrics offer insights into the overall influence and prestige of a journal within a specific field.

IV. Types of Research Metrics

Research metrics are quantitative measures used to assess various aspects of scholarly output, impact, and productivity. These metrics help researchers, institutions, and policymakers evaluate the influence and significance of research contributions. There are several types of research metrics, broadly categorized into traditional metrics and alternative metrics (altmetrics).

A. Traditional Metrics:

i) Citation Metrics:

- **Citation Count:** The number of times a research paper or author has been cited by other scholarly works.
- **h-index:** A metric that combines both the number of publications and their citation impact. An author with an h-index of 10 has at least 10 publications that have been cited at least 10 times each.
- **Impact Factor:** Journal-level metric that indicates the average number of citations received by articles in a particular journal over a specific time period.

ii) Publication Metrics:

- **Publication Count:** The total number of publications by a researcher, institution, or journal.
- **Journal Metrics:** Assessing the quality and impact of a journal based on factors like impact factor, Eigenfactor, or SCImago Journal Rank.

iii) Usage Metrics:

- **Downloads and Views:** The number of times a publication has been downloaded or viewed.
- **Full-text Downloads:** The number of times the full text of a publication has been accessed.

iv) Collaboration Metrics:

Collaboration Networks: Analyzing the extent and impact of collaboration between researchers, institutions, or countries.

B. Alternative Metrics (Altmetrics):

i) Social Media metrics

Social Media Metrics: Tweets, Likes, and Shares: The number of times a research paper is mentioned, shared, or liked on platforms like Twitter, Facebook, or LinkedIn.

Social Media Presence: Assessing the visibility and engagement of researchers or institutions on social media.

ii) Online Attention Metrics:

Blog Mentions: The number of times a research paper is discussed in blogs or online forums.

News Coverage: Media mentions and coverage of research in news articles and online publications.

iii) Altmetric Score:

Altmetric Score: An aggregated score that reflects the overall online attention and engagement a research output receives across various altmetric sources.

iv) Reference Manager Metrics:

Bookmarking: The number of times a publication is bookmarked or saved on reference management platforms like Mendeley or Zotero.

These research metrics provide a multifaceted view of the impact and significance of scholarly work. It's important to note that while metrics can be valuable, they should be used thoughtfully, considering the specific context of the research and potential biases associated with different metrics. Researchers

and institutions often use a combination of traditional and alternative metrics to gain a comprehensive understanding of the impact of their work.

V. Details of Some Popular Research Metrics with Their Formulation, Benefits and Limitations

A. Impact Factor:

The Impact Factor (IF) (Garfield, 1998) is a metric that quantifies the average number of citations received by articles published in a specific scholarly journal during a particular time period. It is calculated by dividing the total number of citations a journal's articles received in a given year by the total number of citable articles published by the journal during the preceding two years. The Impact Factor is often used as a measure of the relative importance or prestige of a journal within its field. It is only supplied by the Web of Science and no other agency in the world can provide impact factor to journals. Therefore, researchers should be cautious enough to check from where a journal is declaring its impact factor.

i) Benefits of impact factor:

Journal Evaluation: Impact Factors are widely used by researchers, institutions, and publishers to assess the relative influence and reputation of academic journals. Journals with higher Impact Factors are generally considered to have a greater impact on their respective fields.

Decision-Making for Authors: Authors may consider the Impact Factor when choosing journals for manuscript submissions. Publishing in a journal with a higher Impact Factor may enhance the visibility and perceived impact of their research.

Resource Allocation: Institutions and funding agencies may use Impact Factors to allocate resources, such as research funding or faculty promotions, based on the perceived quality and impact of the journals in which researchers publish.

Benchmarking: The Impact Factor provides a benchmark for comparing journals within the same discipline. Researchers and institutions use it as a reference point to gauge the standing of a journal in comparison to others in the field.

ii) Limitations of IF:

Journal-Centric: The Impact Factor is a journal-level metric and does not provide insights into the individual impact of specific articles or researchers. A high Impact Factor for a journal does not necessarily mean that all articles within that journal are highly cited.

Discipline Variability: Impact Factors vary across different academic disciplines. Comparing Impact Factors between journals from different fields may not be meaningful, as citation practices differ among disciplines.

Citation Patterns: The metric is based on citations received in the preceding two years, which may not capture the long-term impact of research. Some groundbreaking studies may take time to accumulate citations.

Focus on Citations: The Impact Factor emphasizes citation count as a measure of impact, potentially neglecting other important aspects of scholarly influence, such as societal impact, policy impact, or contributions to interdisciplinary research.

Manipulable: Some argue that the Impact Factor can be manipulated or influenced by editorial policies, self-citations, or

the publication of review articles, potentially compromising its accuracy as a measure of quality.

Bias Towards English-Language Journals: Since the Impact Factor relies on citations, it may favor journals published in English, potentially marginalizing non-English language publications.

While the Impact Factor is a widely used metric, it is important to interpret it alongside other indicators and consider its limitations. The academic community has recognized the need for a more nuanced and comprehensive approach to journal and research assessment, leading to the development and promotion of alternative metrics and responsible research evaluation practices.

B. h-index: The h-index, or Hirsch index (Hirsch, 2005), is a metric that quantifies both the productivity and impact of a researcher's scholarly output. It is defined as the maximum value of h such that the researcher has published h papers that have each been cited at least h times. In simpler terms, an h-index of 10 means that a researcher has published 10 papers, each of which has been cited at least 10 times. The h-index attempts to capture both the quantity and impact of a researcher's work.

i) Benefits of h-index:

Quantifying Impact: The h-index provides a single numerical value that reflects both the quantity and impact of a researcher's publications. It offers a quick and easy way to assess a researcher's overall influence in their field.

Comparative Analysis: The h-index allows for the comparison of researchers within the same discipline. It provides a

benchmark for evaluating the relative impact of researchers and their scholarly contributions.

Researcher Evaluation: Institutions, funding agencies, and hiring committees may use the h-index as a tool for evaluating the research impact and productivity of scholars. It can inform decisions related to promotions, grants, and academic appointments.

Career Tracking: Researchers can use their own h-index to track the progression of their impact over time. It serves as a quantitative measure of the growth and influence of their body of work.

ii) Limitations of h-index:

Discipline Dependency: The h-index is discipline-dependent, meaning that citation practices vary among different fields. Comparing h-indices between researchers from diverse disciplines may not provide an accurate reflection of their relative impact.

Citation Practices: The h-index relies on the number of citations, and citation practices can vary widely. Some fields may have higher average citation rates than others, affecting the interpretation of the h-index.

Publication Age: The h-index does not account for the age of publications. Older publications may have had more time to accumulate citations, potentially biasing the h-index towards researchers with longer careers.

Single Metric Limitation: Like any single metric, the h-index provides a simplified view of a researcher's impact. It may not capture other important dimensions of research, such as

interdisciplinary contributions, collaboration, or societal impact.

Vulnerability to Self-Citations: Researchers can potentially influence their h-index by strategically self-citing their work. This practice may inflate the h-index but could compromise the metric's reliability as an indicator of genuine impact.

Exclusion of Negative Citations: The h-index does not distinguish between positive and negative citations. It considers only whether a paper has been cited, not the sentiment or impact of the citation.

While the h-index is a widely used metric, it is often recommended to use it in conjunction with other indicators and qualitative assessments to provide a more comprehensive evaluation of a researcher's impact and contributions. Researchers and evaluators should be aware of its limitations and interpret the h-index within the context of a researcher's specific field and career stage.

C. Scimago Journal Rank (SJR): The Scimago Journal Rank (SJR) (Scimago Lab, 2012) is a metric that assesses the scientific influence of scholarly journals. It is calculated based on the citation data from the Scopus database. SJR takes into account not only the number of citations a journal receives but also the importance or prestige of the journals citing it. The SJR metric is designed to provide a more nuanced view of a journal's impact by considering the quality and relevance of citations.

i) Benefits of SJR:

Weighted Citations: SJR uses a weighted citation approach, where citations from more prestigious journals are given greater importance. This helps in distinguishing between citations from highly regarded sources and those from less influential ones.

Field-Normalized Impact: SJR attempts to normalize impact by considering the citation practices within specific scientific fields. This makes it suitable for comparing journals across different disciplines.

Citation Window: SJR considers a three-year citation window, providing a more current assessment of a journal's impact compared to some other metrics with longer citation windows.

Open Access Journals: SJR is not biased against open access journals, as it takes into account the quality and impact of citations rather than just the number.

Transparency: The calculation methodology for SJR is transparent and publicly available, allowing users to understand how the metric is derived.

ii) Limitations of SJR:

Subject to Manipulation: Like any metric, SJR is not immune to potential manipulation. Journals may engage in practices to boost their SJR, such as strategic self-citations or collaboration with highly cited authors.

Discipline-Specific: SJR may be more appropriate for certain disciplines and less applicable to others. Different fields have distinct citation practices, and a single metric might not capture the diversity of impact patterns across disciplines.

Citation Database Dependence: SJR relies on the Scopus database for citation data. Journals not indexed in Scopus are not included in SJR calculations, potentially leading to the omission of important publications.

Citation Practices: Like other citation-based metrics, SJR is influenced by citation practices that may vary across scientific

disciplines. Different fields have different norms for citation behaviour, and SJR might not fully account for these variations.

Journal Focus: SJR, like other journal-level metrics, does not assess the impact of individual articles or researchers. It focuses on the overall influence of the journal, which may not fully represent the quality of every publication within it.

As with any metric, it is crucial to use SJR in conjunction with other evaluation tools and consider the specific characteristics of the field being assessed. Additionally, it's important to be aware of potential biases and limitations inherent in citation-based metrics. Researchers and institutions often use a combination of metrics to gain a more comprehensive understanding of journal and research impact.

VI. Science 2.0: Open Citation Practices

Open citation practices (Peroni & Shotton, 2020) refer to the transparent and accessible sharing of citation data associated with scholarly publications. This involves making citation information openly available for analysis, reuse, and integration into various research tools and platforms. Open citation practices contribute to the principles of open science by fostering transparency, collaboration, and innovation in scholarly communication. Some key aspects of open citation practices:

Open Citation Databases: Initiatives like OpenCitations aim to create open and freely accessible citation databases. These databases provide citation data for scholarly works, enabling researchers to explore citation networks, assess impact, and conduct bibliometric analyses.

Citation Metadata: Open citation practices involve providing detailed metadata about citations, including information about

the citing and cited documents. This metadata may include the title, authors, publication date, and other relevant details.

Citation Identifier Standards: The use of persistent and unique identifiers, such as Digital Object Identifiers (DOIs), for both publications and citations enhances the reliability and interoperability of citation data. These identifiers make it easier to link and reference specific works.

Open Access Publications: Open access publishing contributes to open citation practices by making research articles freely accessible to the public. Openly accessible publications facilitate the discovery and retrieval of citation data by a broader audience.

Open Citations in Research Articles: Some publishers and journals are adopting policies that encourage or mandate authors to include open citations in their research articles. This involves providing citation information in a structured and machine-readable format, making it easier for automated tools to extract and analyze the data.

Open Source Tools and Platforms: Open-source tools and platforms that support citation analysis and visualization contribute to open citation practices. These tools allow researchers to explore citation networks, understand scholarly impact, and develop new ways of assessing research contributions.

Linked Open Data: The concept of linked open data involves interconnecting and linking datasets in a standardized and open manner. Applying linked open data principles to citation information enables seamless integration and interoperability between different datasets and platforms.

Community Collaboration: Open citation practices benefit from community collaboration. Academic institutions, publishers, researchers, and developers can work together to promote the adoption of open citation standards, share best practices, and contribute to the development of open citation infrastructure.

Research Evaluation and Metrics: Open citation practices support transparent research evaluation and the development of alternative metrics (altmetrics). By making citation data openly available, researchers can explore new ways of assessing the impact and influence of scholarly works.

Machine Readability and Accessibility: Making citation data machine-readable and easily accessible encourages its use in various applications, from building citation databases to creating visualization tools and conducting large-scale bibliometric studies.

Open citation practices contribute to the broader goals of open science, facilitating collaboration, reproducibility, and innovation in scholarly research. As the scholarly community embraces openness, initiatives promoting open citations play a crucial role in advancing the transparency and accessibility of scholarly communication. Fig 2 presents the institutional role for the science 2.0 era.

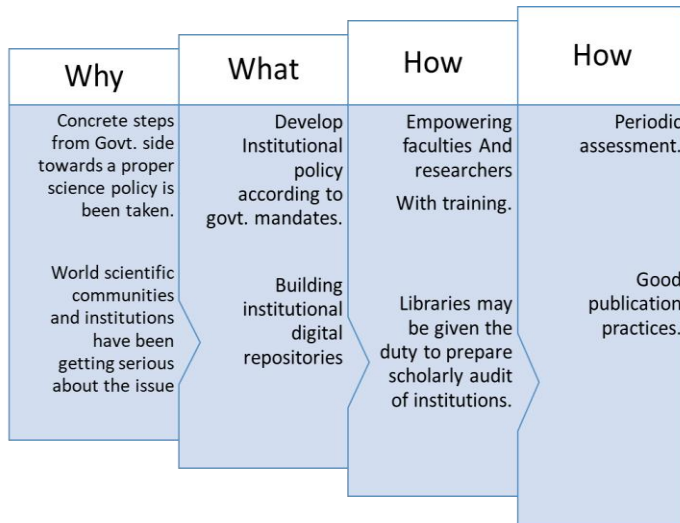


Fig 2: Institutional focus for meaningful Science 2.0

VII. Comparison of Traditional Citation Model to Open Citation Model

The comparison between open citation practices and traditional citation practices involves examining how these approaches differ in terms of accessibility, transparency, collaboration, and overall impact on scholarly communication. Some key points of comparison:

A. Accessibility:

- **Open Citation Practices:**
 - **Pro:** Open citation practices make citation data freely accessible to the public. Anyone can access, reuse, and analyze citation information without paywalls or restrictions.
 - **Pro:** Promotes inclusivity by providing access to citation data for researchers, institutions, and the general public.

- **Con:** May require infrastructure and resources to establish and maintain open citation databases.
- **Traditional Citation Practices:**
 - **Pro:** Traditional citation practices involve citations published in academic journals, which are accessible to subscribers or through institutional access.
 - **Con:** Accessibility barriers exist for those without access to subscription-based journals or databases.

B. Transparency:

- **Open Citation Practices:**
 - **Pro:** Promotes transparency by providing detailed citation metadata, including information about citing and cited documents.
 - **Pro:** Supports transparency in research evaluation, as citation data can be independently verified and analyzed.
- **Traditional Citation Practices:**
 - **Pro:** Citations in traditional publications contribute to the transparency of the scholarly record.
 - **Con:** Full citation information may not always be available, and metadata may vary across journals.

C. Collaboration:

- **Open Citation Practices:**

- **Pro:** Encourages collaboration by providing a common, openly accessible dataset for researchers and developers.
- **Pro:** Enables the development of collaborative tools and platforms for citation analysis.

- **Traditional Citation Practices:**

- **Pro:** Researchers can collaborate based on citations in traditional publications.
- **Con:** Collaboration may be hindered by subscription barriers, limiting access to citation data.

D. Citation Identifier Standards:

- **Open Citation Practices:**

- **Pro:** Emphasizes the use of persistent identifiers (e.g., DOIs) for both publications and citations, enhancing reliability and interoperability.

- **Traditional Citation Practices:**

- **Pro:** Citations in traditional publications often include standard citation formats but may not consistently use persistent identifiers.

E. Impact on Research Evaluation:

- **Open Citation Practices:**

- **Pro:** Facilitates transparent research evaluation by providing openly accessible citation metrics.

- **Pro:** Supports the development of alternative metrics (altmetrics) and new ways of assessing scholarly impact.
- **Traditional Citation Practices:**
 - **Pro:** Traditional citation metrics (e.g., Impact Factor) are widely used in research evaluation.
 - **Con:** Some traditional metrics have limitations and may not fully capture the impact of research.

F. Linked Open Data:

- **Open Citation Practices:**
 - **Pro:** Supports the principles of linked open data, allowing for the seamless integration and interoperability of citation datasets.
- **Traditional Citation Practices:**
 - **Con:** Traditional citation practices may not consistently follow linked open data principles.

In summary, open citation practices emphasize openness, transparency, and accessibility of citation data. While traditional citation practices contribute to the scholarly record, they may be limited by access barriers and a lack of standardization. The ongoing development and adoption of open citation practices represent a move towards a more inclusive and transparent scholarly communication ecosystem.

8. Conclusion

Research metrics are the fundamental tools used across the publishing industry and science communication process to measure performance, both at journal- and author-level. Research Metrics is a full-fledged domain of research now. The

processes and methods have been always subjected to criticism. These metrics are totally empirical in nature and highly sensitive to the citation database used. Moreover, a single metrics might not always give the actual use case scenario of research evaluation and therefore, a combination of metrics has to be used to get a larger picture of research impact. But the fruitful and productive results of the procedures been realized many times. Open citation data brings the aspect of compatibility in this regard. With the dynamism of science and expansion of universe of knowledge, research metrics have a great potential as a “Watcher of Science.”

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Chapter - 18

**RESEARCH METRICS FOR RESEARCH VALUE: ITS
APPLICABILITY AND DOWNSIDES**

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I. Introduction

Research metrics are the quantitative tools used to evaluate the effectiveness and value of research outputs. At the journal, article, and even researcher level, metrics are usable. Metrics inform us of how many people have viewed the work, how many people have downloaded the journal, what number of citations is there, Etc. The Impact Factor, which is discussed further, was formerly the only measure available for evaluating journal performance. At present a variety of research measures are accessible, including the Impact Factor, altmetrics, h-index, and others.

Scopus and Web of Science are the most prestigious multidisciplinary bibliographic databases at present providing data for a complete evaluation of research production across a wide range of academic disciplines. Notably, Scopus is the world's largest multidisciplinary database, indexing not only English but also a wide range of non-English scholarly sources. Individuals can access an essential number of Scopus-indexed sources, which reflect scientific development and influence in their fields of study. To maintain the list of ethically sound and influential journals the database has used difficult indexing and re-evaluation procedures, and sources that fail to

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fulfill publication ethics and bibliometric requirements have been delisted.

Universities and government research organizations are some examples of research institutions that utilize a variety of methodologies to assess the value of the work they produce where peer review can evaluate quality, and metrics can reveal engagement. (Espeland & Sauder, 2016)

II. Use of Metrics in Measuring Research Value

A variety of tools are used by research organizations, groups of scholars, and research agencies to assess the worth of the work they conduct. Like that, metrics can give an engagement overview with statistics. The market for value has been mostly taken over by measures, particularly bibliometrics. Citations are foremost among them since they are predicated on the notion that acknowledging earlier work is essential to knowledge growth (Garfield 1979).

III. Applicability

Metrics for measuring the quality, impact, and visibility of scientific research are known as research metrics. They can be used in a variety of settings and for variety of purposes, including:

- i) **Evaluating Research Impact:** Metrics like citation counts, h-index, and field-weighted citation impact can be used to evaluate the significance and impact of a researcher's work. When deciding whether to promote someone, offer them a grant or give them an award, institutions, and funding organizations may consider these indicators to gauge the impact of research.
- ii) **Assessing Journal Quality:** Journal metrics like the Journal Impact Factor (JIF) and Cite Score are used by

researchers and institutions to find high-quality journals to publish their work in and to gauge an overall reputation.

- iii) **Field-specific Differences:** The applicability of metrics across disciplines may be impacted by the different publication and citation patterns that exist within research domains. Some measures that are effective in one area might not be as applicable or significant in another. As a result, it's critical to consider norms and standards unique to the profession.
- iv) **Comparing Researchers and Institutions:** Comparing Researchers and Institutions: Within a given topic or discipline, metrics can be used to compare researchers or institutions. This comparison can be used to pinpoint areas for research enhancement, as well as prospective topics for collaboration.
- v) **Tracking Research Performance:** Research production, citation impact, and collaboration trends can all be tracked over time using metrics by researchers and institutions. Setting objectives and measuring progress may benefit from this information.
- vi) **Identifying Research Trends:** A field's growing research trends and areas of interest can be found through bibliometric analysis. This can help academics find topics for more investigation and potential gaps in the literature.
- vii) **Benchmarking and Improvement:** Institutions can utilize metrics as benchmarks to track improvements in research performance over time and to develop and implement plans to increase research output and impact.
- viii) **Public Policy and Decision Making:** Decisions about the distribution of resources and investments in particular research topics can be made by governments and funding organizations with the use of research metrics.
- ix) **Open Science and Transparency:** Metrics can be used to promote open science by providing transparent and

quantifiable measures of research impact, helping to reduce bias and favoritism.

- x) **Scientific Collaboration:** Collaboration metrics, such as co-authorship networks and collaboration indices, can help identify potential collaborators and assess the strength of research networks.

IV. Types of Research Metrics

A. Journal Level Metrics: Quantitative indicators are used to evaluate the importance, calibre, and influence of academic journals in the field of research. These metrics are known as journal-level research metrics. With the use of these criteria, researchers, publishers, and institutions will be better able to assess the importance of journals and decide where to focus their efforts or spend money. Here are some typical research measures at the journal level.

Metrics	Strengths	Limitations
Journal impact factor (JIF)	The Journal Impact Factor (JIF) gives scholars and institutions a rapid and uniform way to assess a journal's influence within its area, assisting them in determining relative relevance and directing publication decisions.	It doesn't evaluate the quality of individual publications, can be biased by a few highly cited articles, is prone to differences in citation styles depending on the topic, and can promote "citation chasing" rather than original research.
Eigen factor Score	By taking into account both the quantity and quality of citations, Eigen factor provides a	Database coverage and citation standards are taken into consideration by Eigen factor. The

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	<p>complex picture of journal influence. It reflects genuine influence and explains the prestige of citing publications. It's helpful for contrasting periodicals from various academic fields.</p>	<p>impact of a journal might vary gradually. It emphasises journal-level influence rather than the calibre of each individual piece. It might not adequately represent cutting-edge or trans disciplinary research.</p>
Cite Score	<p>Cite Score considers all indexed document categories to give a complete picture of journal impact. It provides a more comprehensive assessment of a journal's impact, taking into account articles, reviews, conference papers, and more. Its openness and simplicity make it a user-friendly statistic for institutions and academics.</p>	<p>Cite Score's emphasis on citations may favour larger journals, older journals, and fields with slower citation trends. It might not accurately reflect the value or uniqueness of particular items. Additionally, it may not reflect societal influence or internet attention and does not take into account the prestige of citing sources. Therefore, relying solely on Cite Score may overstate a journal's actual influence.</p>
H-index of journal	<p>A journal's h-index provides a succinct evaluation of its influence by identifying the</p>	<p>It favours older journals, ignores the depth of influence per publication, and is field-specific. Due of</p>

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	<p>number of articles (h) that have attracted at least h citations. This offers a window into how influential articles are dispersed.</p>	<p>their high level of specialisation, prestigious journals may have low h-indices. The h-index disregards uncited articles and does not take into consideration highly cited papers. It provides a rapid indication, but lacks context and granularity regarding the breadth and diversity of a journal's contributions.</p>
<p>SNIP (Source-Normalised per- paper)</p>	<p>Source-Normalized influence per Paper (SNIP) provides a contextualised estimate of influence by accounting for the peculiarities of a journal's topic area. It mitigates field-specific citation behaviours by taking into account citation patterns within the field. In particular, SNIP is helpful for comparing publications from various academic fields.</p>	<p>The subtleties of extremely specialised or developing fields might not be captured by SNIP. It doesn't take into account differences in journal quality, and subject bias may still be present despite normalisation. The source of citations may also have an impact on SNIP levels, possibly favouring publications from areas with diverse citation styles.</p>

B. Author Level Metrics: Author-level metrics evaluate the value of a particular researcher's scholarly production. Author-level metrics are intended to assist researchers in evaluating the overall significance of their work rather than the significance of a single publication. Article-level metrics, which aggregate or summarize the impact of an author's publications, are the basis of all author-level metrics. Citation metrics that evaluate the bibliometric significance of specific authors are known as author-level metrics. The most well-known author-level statistic is H-index. Since JE Hirsch proposed it in 2005, it has become very popular among researchers, and bibliometrics scholars have suggested a few variations to adjust for its shortcomings.

A scientist's index is h if h of their N_p articles have at least h citations each, and the remaining $(N_p - h)$ papers have no more than h citations each. In other words, for an author to have an h -index of 5, they must have 5 publications, each of which has received at least 5 citations. A variation of the h -index known as the g -index which rewards papers that have received the most citations within a data set. Leo Egghe, its creator, stated that highly cited publications were crucial for determining the h -index's value. In order to account for neglected citations, the e -index, which is the square root of excess citations for the h -set beyond h^2 , complements the h -index. As a result, it is particularly helpful for comparing scientists who have received high citation counts.

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Metrics	Strengths	Limitations
h-index	A simple, bi-dimensional metric for quantifying the impact of highly productive scholars' publications and citations.	It is not appropriate for early-career researchers or those with a modest number of publications; it can be influenced through self-citations; and it is stable.
g-index	When the h-index score and total citations are low, this method gives more weight to highly cited things and aids in visualizing an individual's effect.	The g-index, unlike the h-index, is determined by the average number of citations for all published publications.
e-index	Identifies highly prolific authors with similar h-index scores but different total citation counts by focusing on highly cited things.	Unsuitable for the low number of publications and citations.
Page rank index	When citation value is considered, it does not increase with more (self) citations from low-impact sources.	Calculations are based on a variation of the PageRank algorithm that is difficult for non-experts to understand; index values are largely dependent on the visibility and promotion of referenced articles.

C. Article Level Metrics: Quantitative measures are used to evaluate the significance, value, and visibility of individual research papers published in scholarly publications. These

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measurements are known as article-level research metrics. These metrics reveal information on how frequently an article is shared, cited, and debated both within and outside of the scientific community. They assist scientists, organisations, and publishers in assessing the importance of a particular research output and in making defensible choices about research funding, tenure, promotion, and journal rankings. The following list includes some of the most popular article-level research metrics.

Metrics	Strengths	Limitations
Citation Count metrics	A quantifiable indicator of an article's influence and scholarly impact is provided by citation count metrics, which show that the paper has been acknowledged and is still relevant in the academic world. They are commonly used and simple to comprehend, which helps in determining how much an article has contributed to its field.	Self-citations, field-specific citation norms, and time can all have an impact on citation count metrics. They might not take into account a piece of writing's qualitative significance or its influence outside of academics. Additionally, works that contribute to developing fields or have an impact in unconventional ways may be missed if one only concentrates on citations.
Citation Velocity	Citation velocity measurements provide a real-time perspective on the significance and level of popularity of a publication, facilitating the quick	They may, however, be swayed by brief citation spikes or oscillations and fail to recognise persistent relevance. Additionally, fields with longer publication cycles can have less

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	<p>detection of new trends.</p>	<p>applicability, and different citation patterns throughout disciplines might make it difficult to do cross-comparisons.</p>
<p>Article Usage Metrics</p>	<p>Article usage metrics, including downloads and page views, offer real-time insights into an article's online visibility and readership trends. They provide a quick gauge of initial interest and accessibility, helping authors and publishers understand the immediate reach of their work</p>	<p>Promotional efforts or unintentional clicks are just two examples of factors unrelated to scholarly impact that can affect usage metrics. Comparisons may not be accurate because of changes in platform usage and the article's potential influence or quality over time. Furthermore, extensive engagement or a significant impact within the academic community is not necessarily ensured by high usage.</p>
<p>Reader Engagement Metrics</p>	<p>Metrics of reader engagement offer a dynamic view of an article's relevancy and influence by providing real-time information into how readers connect with it. In addition to passive measures like citations, they also record active involvement like</p>	<p>These measures may not accurately reflect the overall impact and are unable to determine the quality or depth of interaction. They are platform-specific and may be modified by marketing initiatives. Tracking user interactions can raise privacy issues. Overall, they are important but should be used in</p>

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	highlighting and annotating.	conjunction with other indicators to provide a thorough evaluation of article impact.
Citation Network Analysis	Metrics from citation network analysis reveal the connections between papers and provide a visual depiction of scholarly influence. They help with locating important works, monitoring research trends, and comprehending intellectual development.	These measurements may favour established subjects while ignoring developing ones. Results may be skewed by self-citations, co-authorship networks, and disciplinary differences. They might also miss effect in non-traditional ways or fail to take citation quality into consideration.

V. Factors That Affect Value of a Metric

Selecting ethical, publicly visible, and professionally relevant sources for publishing research work is the first step for qualified researchers to make a global effect. The selection of target journals is crucial in an era when fraudulent journals are proliferating, increasing their number of articles at the price of quality, visibility, and citability. It is also critical to comprehend the worth and usefulness of the current evaluation metrics, which can be displayed on individual profiles by sourcing data from various bibliographic databases, search engines, and social networking platforms.

Concentrating too much on one metric is a major downside. For instance, if one published more highly cited papers to increase their Impact Factor, one may be ignoring

low-cited sources. As a result, if one decides to just publish highly referenced content to achieve a higher Impact Factor, one risks decreasing the value of the publication for a certain group of readers.

- i) **Size:** Scholarly Output, which reflects an entity's productivity, and Citation Count, which sums the citations received by an entity across all publications, are two measures whose value tends to increase with entity size. When analyzing performance, it is often necessary to account for variances in the size of an entity; Citations per Publication, for example, acknowledge differences in the size of an entity's Scholarly Output and are beneficial in revealing the efficiency of citations received per publication.
- ii) **Time:** The passage of time is crucial for obtaining relevant information from various measures. Citation Impact metrics are the most evident, because it takes time for published work to be cited. The h-indices are another example of metrics that are not very useful when applied to the output of an early-career researcher because the necessity for the passage of time to gather citations is linked with the need for a reasonably-sized body of work to offer accurate information.
- iii) **Manipulation:** Some conditions are reasonably easy to manipulate in order to manipulate metrics data. One example is the artificially increasing size of research units for reporting purposes, which improves perceived performance when utilizing "Power Metrics.
- iv) **Self-citation:** it is another example. Self-citation is not intrinsically wrong; it is a standard academic practice to build on earlier published work, and it is an author's job to link a reader to older material that would support their understanding. This practice, however, is vulnerable to

abuse by unethical academics who may choose to cite irrelevant past papers in order to boost their citation counts, as well as journal editors who may occasionally force authors of submitted papers to include too many additional citations to publications within their journal in their reference lists.

VI. Responsible Use of Metrics

According to the Universities UK Forum for the Responsible Use of Metrics, "responsible use of metrics" is defined as "framing appropriate uses of quantitative indicators in the governance, management, and assessment of research" (The Metric Tide, 2005). The following principles can be used to determine responsible metrics-

- i) **Robustness:** basing metrics on most accurate and comprehensive facts available
- ii) **Humility:** recognizing that expert qualitative assessment should always be supported by quantitative analysis but should not replace it
- iii) **Transparency:** the results can be tested and validated by the people being examined
- iv) **Diversity:** Utilizing a variety of indicators to represent and encourage a diversity of research and researcher career trajectories across the system, take into account variation by research field.
- v) **Re-flexibility:** Identify and predict the systemic and possible impacts of indicators, and update them when necessary

Responsible Use of Research Metrics is primarily about treating others fairly throughout the evaluation of research and making sure that the evaluation of research takes into account the value of metrics. Since the wrong application of research metrics can have serious consequences, it is crucial that they

be used efficiently and ethically. Discipline-specific distinctions in publication and citation procedures must be taken into account when employing research metrics. Some considerations for the responsible use of metrics include:

- The highest quality data is required for metrics to be supported, both in terms of accuracy and scope.
- Reviewers should be aware that quantitative analysis should supplement expert qualitative judgment, not replace it.
- The techniques for data collection and data analyses must be open and transparent so that people who will be evaluating the findings can test and validate the findings.
- Variation for field of expertise and discipline should be taken into account, utilizing a variety of indicators to support plurality of research and researchers at different phases of their careers, in order to ensure that the assessment processes are appropriate.
- Those who are in charge of evaluating research should be aware of and prepare for changes in how metrics are created. As a result, they should keep an eye on and frequently examine the metrics they have chosen to make sure they are still relevant.

VII. Conclusion

Undoubtedly, we are moving towards a metric world where each work product is measured and subject to measurement science. Today, a wide range of promising new online metrics, including download counts, altmetrics, and publication counts, are emerging as potential bibliometric and scientometric predictors of the quality and significance of research performance. However, each metric must be weighted according to its contribution to the overall predictive power of the metrics, and they must all be jointly evaluated and validated against the thing they claim to measure and prediction.

Metrics by themselves cannot fully convey the impact of research. Each metrics has benefits as well as drawbacks. Aside than examining an issue from multiple angles, there aren't really any clear guidelines for choosing which metrics to employ. The user's specific question will always determine the most appropriate metrics. The best strategy is to draw attention to a few crucial considerations and urge the user to use common sense. One method to utilize metrics responsibly for research assessment is to be aware of their context and constraints. In fact, funders, research institutions, and publications all acknowledge the value of utilizing metrics properly.

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