

## Ethics As An Ultimate Prerequisite For Scientific Research

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**Abstract:** The purpose of this paper is to combine and explain the two concepts that are crucial in this scientific research work, namely, ethics and science, incorporated in scientific research. How scientific research work acquires an ethical context which researchers must observe. Science and scientific thinking are the most progressive human cognitive potential that culminates in human mind evolution. So, cognitive processes are a series of chemical and electrical signals that occur in the brain that allow you to comprehend your environment and gain knowledge. Consequently the knowledge is produced by science and scientific research. Therefore, in order to generate knowledge, we need scientific research work. In that context, we come to the importance of ethics in scientific research work and ethical codes and regulations that researchers should follow. Also, it will be explained how scientific misconduct leads to plagiarism. According to the subject and objectives of the research, it was necessary to use those specific methods that correspond to this problem. By using the analytical method, we will come to numerous conclusions that will result from this research paper.

**Key Words:** Ethics, Science, Scientific research, Plagiarism

### 1. INTRODUCTION

Philosophy is one of the oldest sciences in history that has a general approach to the study of all issues related to human life and existence. The development of civilization implies that special scientific branches and disciplines, such as ethics, should be separated from philosophy as a general science. Ancient philosophical thought has a great contribution to the development of ethics as a special philosophical science, so the word ethics was created by the ancient philosopher Aristotle (384-322 BC), when he wrote his book *Nicomachean Ethics*. German classical idealism also contributed in this sphere, so did the German philosopher Immanuel Kant, who wrote his famous work "Critique of the Practical Mind", which is considered the most famous and the most significant ethical work in history. Ethics, also known as philosophical ethics, ethical theory, moral theory, and moral philosophy, is a branch of philosophy that involves systematizing, defending and recommending concepts of right and wrong conduct, often addressing disputes of moral diversity. The term comes from the Greek word *ethos*, which means "character" or conduct. Philosophical ethics investigates what is the best way for humans to live, and what kinds of actions are right or wrong in particular circumstances. Ethics may be divided into four major areas of study: Philosophers nowadays tend to divide ethical theories into three areas: meta ethics, normative ethics and applied ethics.

**Meta-ethics** deals with the nature of moral judgment. It looks at the origins and meaning of ethical principles.

**Normative ethics** is concerned with the content of moral judgments and the criteria for what is right or wrong.

**Applied ethics** looks at controversial issues like war, animal rights and capital punishment. According to Sudan (2020), ethics is the philosophical study of morality. It is one of the main branches of philosophy which corresponds to the traditional division of philosophy into formal, natural and moral philosophy. It can be turned into a general study of goodness, right action, applied ethics, meta-ethics, moral psychology and metaphysics of moral responsibility. There are so many theoreticians that discuss ethics in relation to human behavior and fields that ethics cover. Butts & Rich (2020), stated that Aristotle believed that ideal behaviors were practices that led to the end goal of *Eudaimonia*, which is synonymous with a high level of happiness or well-being; on the other hand, Immanuel Kant, an 18th-century philosopher and ethicist, believed that ideal behavior was acting in accordance with one's duty. For Kant, well-being meant having the freedom to exercise autonomy (self-determination), not being used as a means to an end, being treated with dignity, and having the capability to think rationally. For the purpose of this paper as we mentioned in the abstract there are two main elements that are important to be discussed, so we can understand the fundamental meaning of scientific research. The first element is ethics and the second one is science as the essential

element of scientific research. According to Bhagat (2020), „ Science (L., scientia or scire, knowledge) – systematic knowledge based on facts, observations and experimentations. On the basis of fields it occupies, science is divided into three main categories – abstract science, social science, and natural science.

**Abstract science** – study of relationship of magnitude and numbers, e.g., mathematics, statistics, etc.

**Social science** – study of the social activities of man based on traditions and reasoning, e.g., sociology, political science, economics, geography, and so on.

**Natural science** – also called basic science – studies the facts of nature. Based on the nature of study, natural science is divided into two fields – physical science and biological science. As Cassirer (1944), will conclude that science is the last rate in the mental development of man and it can be considered the highest and most characteristic achievement of human culture. There is no other force in our modern world that can be compared to the force of scientific opinion. It is science that convinces us of the existence of the world. Science is the ultimate way of seeing facts and is the last proof that something exists in the world.

## 2. SCIENTIFIC RESEARCH

Scientific clarification uses observations and measurements to explain something we see in the natural world. Scientific clarifications should match the evidence and be logical, or they should at least match as much of the evidence as possible. Science is any system of knowledge that is concerned with the physical world and its phenomena and that entails unbiased observations and systematic experimentation. In general, a science involves a pursuit of knowledge covering general truths or the operations of fundamental laws.

The scientific approach is a very special hybrid approach to generating and qualifying knowledge statements and to accruing this knowledge over time.

### Intuition

Intuition is the first approach to attaining knowledge that we observe. An approach to acquiring knowledge that is not based on an acknowledged cognitive process

### Authority

Authority as an approach to obtaining facts represents an acceptance of information or facts

stated by another because that person is a highly appreciated source.

### Rationalism

A third approach to gaining knowledge is rationalism. This approach uses reasoning to arrive at a knowledge and accepts that valid knowledge is developed if the correct reasoning process is used.

### Empiricism

A fourth approach to gaining knowledge is through empiricism. In its native form, this approach would say, “If I have experienced something, then it is valid and true.”

### Induction and Deduction

Induction is a reasoning process that includes going from the specific to the general. Deduction, as classically defined by Aristotle, refers to going from the general to the specific.

Science is a very exceptional combination of the approaches just mentioned, and it is the most reliable way to acquire reliable and valid knowledge about the natural world. There are more approaches in the science that we would not mention such as: Hypotheses testing, Positivism, Naturalism etc. So, science discipline is the study of the natural world through reflection and experimentation. Silva (2022) will acknowledge that the implementation of the scientific method to produce knowledge is carried out by scientific research:

- **Scientific research** is the process of investigating natural phenomena using the scientific method for the purpose of discovering new facts and developing scientific theory.

Scientific research also aims at the review of facts, laws and theories in view of newly discovered facts, and the practical applications of such facts, laws and theories. Therefore, scientific research is the continuous search for knowledge and understanding of reality carried out through the scientific method. Its result is scientific knowledge. Scientific research can have a purely cognitive objective, that is, the generation of scientific knowledge without an immediate application purpose, or a practical objective, that is, the generation of knowledge for immediate application:

- **Scientific research** with purely cognitive objective is called **pure research** or **basic research**, and with practical objective, **applied research** or **technological research**.

The progress of scientific knowledge basically consists of the permanent and progressive deepening of knowledge of the complex interconnection of natural phenomena, which, in turn, generally comprise an extremely complex set of other more elementary phenomena, also closely related.

**3. ETHICAL PRINCIPLES**

The concept of "research ethics" discusses an extensive set of principles, standards, and official actions that contribute to creating and regulating research accomplishments. These contain the obligation of honesty in research as well as responsibility to coworkers, other people, animals, the environment, and society in the widest sense. According to Weinbaum, &al.(2019) as a result of their analysis, they identified ten ethical principles that cross scientific and technical disciplines that belong to three main categories that are present in Table 1 with their definitions for each term. Each ethical principle applies to one or more of the following categories:

Table 1

Ethical scientific inquiry	The research inquiry itself must benefit society	<ul style="list-style-type: none"> <li>• Duty to society</li> </ul>
Ethical conduct and behaviors of researchers	Researchers should conduct themselves in certain manners, and they are responsible for their knowledge and awareness of ethics and appropriate research methods.	<ul style="list-style-type: none"> <li>• Conflict of interest</li> <li>• Integrity</li> <li>• Nondiscrimination</li> <li>• Professional competence</li> <li>• Professional discipline</li> </ul>
Ethical treatment of research participants	Research participants should be treated according to certain guidelines and treated humanely, and the environmental or secondary effects of the research should be considered.	<ul style="list-style-type: none"> <li>• Informed consent</li> <li>• Beneficence</li> <li>• Nondiscrimination</li> <li>• Non Exploitation</li> <li>• Privacy and confidentiality</li> </ul>

A large number of eminent authors dealing with this issue have their own attitude regarding ethical principles in scientific and research work. However, during the review of literature in this area ethical principles vary from one author to another, the same principles overlap somewhere, and have added more ethical principles somewhere. However, the basic conclusion would be given to the ethical principles of universal and vary from author to author, in terms of their explanation. So, according to Shamoo (2009), the following is a rough and general summary of some ethical principles that various codes address

**Honesty**

Strive for honesty in all scientific communications. Honestly report data, results, methods and procedures, and publication status. Do not fabricate, falsify, or misrepresent data. Do not deceive colleagues, granting agencies, or the public.

**Objectivity**

Strive to avoid bias in experimental design, data analysis, data interpretation, peer review, 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.

**Integrity**

Keep your promises and agreements; act with sincerity; strive for consistency of thought and action.

**Carefulness**

Avoid careless errors and negligence; carefully and critically examine your own work and the work of your peers. Keep good records of research activities, such as data collection, research design, and correspondence with agencies or journals.

**Openness**

Share data, results, ideas, tools, resources. Be open to criticism and new ideas.

**Respect for Intellectual Property**

Honor 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.

**Confidentiality**

Protect confidential communications, such as papers or grants submitted for publication,

personnel records, trade or military secrets, and patient records.

#### Responsible Publication

Publish in order to advance research and scholarship, not to advance just your own career. Avoid wasteful and duplicative publication.

#### Responsible Mentoring

Help to educate, mentor, and advise students. Promote their welfare and allow them to make their own decisions.

#### Respect for colleagues

Respect your colleagues and treat them fairly.

#### Social Responsibility

Strive to promote social good and prevent or mitigate social harms through research, public education, and advocacy.

#### Non-Discrimination

Avoid discrimination against colleagues or students on the basis of sex, race, ethnicity, or other factors that are not related to their scientific competence and integrity.

#### Competence

Maintain and improve your own professional competence and expertise through lifelong education and learning; take steps to promote competence in science as a whole.

#### Legality

Know and obey relevant laws and institutional and governmental policies.

#### Animal Care

Show proper respect and care for animals when using them in research. Do not conduct unnecessary or poorly designed animal experiments.

#### Human Subjects Protection

When conducting research on human subjects minimize harms and 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.

### 4. SCIENTIFIC MISCONDUCT

What constitutes scientific misconduct?

Scientific misconduct is the manipulation of the typical codes of academic behavior and ethical behavior in the publication of professional scientific research. In other words, scientific misconduct is an Intended falsification of the research process by

fabrication of data, text, hypothesis, or methods from another researcher's manuscript form or publication. Actions that would be considered scientific misconduct could happen at all points in a research procedure. We could encounter different types of scientific research misconduct at different stages. Sometimes the reasons for scientific misconduct are: career pressures, publishing more scientific papers, pressure from institutions, Inadequate training etc. D'Angelo (2012) stated that motivations are different for each "crime," and you simply cannot determine why people do something wrong or how to prevent it if you do not know what they are doing wrong. Ethical violations can be committed in many ways. Several specific violations are presented below. They are:

- Intentional negligence in the acknowledgment of previous work (including work *you* did)
- Deliberate fabrication of data you have collected
- Deliberate omission of known data that does not agree with the hypothesis
- Passing another researcher's data as one's own
- Publication of results without the consent of all of the researchers
- Failure to acknowledge all of the researchers who performed the work
- Conflict of interest
- Repeated publication of too-similar results or reviews
- Breach of confidentiality
- Misrepresenting others' previous work

### 5. PLAGIARISM

Plagiarism in the research profession means captivating the work of another academic and giving it as one's own work, without quoting the source. Ongaya et al. (2024) defined plagiarism as a "repeat of a process, events or phenomenon which had existed or happened before". Academic plagiarism is defined by Meuschke (2023) by building upon the definitions of Fishman and Gipp such as "The use of ideas, words, or other work without appropriately acknowledging the source to benefit in a setting where originality is expected". In academics, in its literal meaning, plagiarism is detested, for it breeds dishonesty in the scientific process, and it undermines the contributions of other scholars in the academic community when not properly recognized (Wahyuni, 2018). Plagiarism is intolerable and is a severe harm of research ethics. It damages the status of the

researcher, the research organization and, in general, the credibility of the research. Plagiarism is a violation of the standards of, originality, honesty, independence and integrity in research work. The most obvious form of plagiarism is copying, but it can also have other forms such as: using ideas, hypotheses, concepts, theories, interpretations, results, etc. Citing clearly, using references and footnotes, or emphasizing when the text is paraphrased are ways to avoid plagiarism. References and citations must be accurate whether they are primary or secondary literature. Pecijareski (2020) would give several pieces of advice to young researchers that they should be extremely careful about the trap called plagiarism, fraud and forgery, quite in short, he would recommend the following suggestions:

- to make an attempt to recognize in advance the possible ethical dilemmas related to the specific research;
- special attention should be paid to the research code, which is based on international scientific standards;
- respecting the rules that apply in the research team with clearly defined rights and obligations as the head to the team, as well as to all its members;
- any colleague who is researching a similar problem;
- respecting the basic epistemological principles during the design and realization of the research;
- when collecting the data, the respondents must be fully informed about the goals, intentions, methods and use of the data obtained with the research;
- the inclusion of respondents in the research should be voluntary, while at the same time it should guarantee their anonymity, protection of the integrity of the person, mutual trust and information cooperation;
- the researcher in all stages of the research should strive for responsibility, transparency and fairness; and
- the data obtained from the research should be characterized by truthfulness and their analysis by competence and criticality.

The notion of originality is one of the most controversial notions of copyright work, thus neither legislator tries to define it. The theory indicates that the work i.e. the creation must represent something new, original which refers to subjective originality i.e., novelty in subjective sense (Dabovik, Pepeljugin 2012, p. 154). Some

theorists consider that the creation or copyright work presents an incarnation of the author's personality. That does not mean that the copyright work should not rely on existing copyright work, but on a new creation, inspired by some existing work, and it must also contain a significant change that reflects the personality of the author, so sometimes nuances are enough for the author's work to be original, and to give the readers and spectators a feeling of something new and a work never seen before (Damjanović, Marić, 2012, p.46). According to Gjorgjioska (2023), one of the grossest ethical injuries in academic fields is plagiarism. The most widely accepted is the definition of plagiarism where plagiarism is defined as presenting work or ideas from another source as your own, with or without consent of the original author by incorporating it into your work without full acknowledgment. By publishing plagiarism, the most important element of the copyright work - the originality of the work is not respected.

## 6. CONCLUSION

As we initially concluded that two concepts are important for this paper, i.e. for scientific research. Ethics as the basis for scientific research is fundamental in the preparation of scientific papers. Ethics is the foundation, and thus the ethical principles applied to the scientific work of an author are crucial to become what we call science. The top of scientific knowledge is projected by human cognitive processes, but in accordance with ethical codes and rules. The misconduct of authors who do not accept ethics as a basis for work contributes to plagiarism which is a highest form of misconduct. The conclusion is that science could not exist without ethical principles to come to the knowledge we are constantly looking for. Only proper credit and recognition of someone else's work, even if the work is inspired or based on it, will increase the authors' influence in science. That is not a case if the authors accept committing an academic steal. With this paper we do not exhaust the idea we have, that is, to deepen our views on this topic in a subsequent subject of scientific paper, where they would be kept in concrete issues regarding the misconduct of the authors.

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