

Unit 1: Philosophy and Ethics

1. Meaning & Definition of Philosophy

The term 'philosophy' literally means 'love of wisdom' or pursuit of knowledge. Hence any branch of study was formerly called philosophy. As men were in the lowest stage of their intellectual development they could not differentiate the different departments of the universe and consequently the different branches of knowledge.

But with the advance of knowledge they came to distinguish different sciences from one another, and philosophy from sciences, and regarded philosophy as the knowledge of the eternal and essential nature of things. Thus at first, philosophy was not distinguished from special sciences; then it was altogether divorced from them.

But now philosophy, in its restricted sense, means neither the study of any particular department of the universe, nor the knowledge of the eternal and essential nature of things and alone, but that highest branch of knowledge which aims at harmonizing and systematizing all truths and arriving at a rational conception of the reality as a whole, both in its eternal and temporal aspects. Philosophy is the criticism of life and experience.

Philosophy has three parts:

(1) Epistemology, Ontology and Axiology, Epistemology is the theory of knowledge. Ontology is the theory of reality. Axiology is the theory of values. Ontology deals with matter, life, mind, and God. It deals with their essences and qualities and activities.

But some philosophers lay undue emphasis on epistemology; some lay undue stress on ontology; some lay undue emphasis on the study of the phenomena of matter, life, and mind.

Definitions

"Philosophy is the science and criticism of cognition" (Kant).

"Philosophy is the science of knowledge" (Fichte).

"Philosophy aims at the knowledge of the eternal, of the essential nature of things" (Plato).

"Philosophy is the science which investigates the nature of Being as it is in itself, and the attributes which belong to it in virtue of its own nature" (Aristotle).

"Philosophy is the science of sciences" (Gomte).

“Philosophy is the sum total of all scientific knowledge” (Paulsen).

“Philosophy is the unification of all knowledge obtained by the special sciences in a consistent whole” (Wundt).

“Philosophy is completely unified knowledge—the generalizations of philosophy comprehending and consolidating the widest generalizations of science” (Herbert Spencer).

Even if they adequately explain all, physical, biological, and mental phenomena, yet an unexplained residue will be left behind, which is beyond their grasp. Besides, philosophy is, concerned with intellectual, moral, aesthetic, and religious values, which satisfy our deepest aspiration. Sciences are not concerned with values but with facts, events, or phenomena only.

Therefore, philosophy cannot be defined as the sum total of sciences or as the completely unified scientific knowledge. Philosophy goes beyond facts and values, and seeks to explain them, and interrelate them by an all-comprehending reality, which is impenetrable to the sciences.

It estimates their value, worth, meaning and significance. It evaluates facts, and probes into the meaning of the universe. Logical, Positivists seem to regard philosophy as the sum total of Sciences and deny the possibility of metaphysics.

Nature of Philosophy:

Philosophy literally means ‘**love of wisdom**’. It is an attempt to arrive at a rational conception of the reality as a whole. It enquires into the nature of the universe in which we live, the nature of the human soul, and its destiny, and the nature of God or the Absolute, and their relation to one another.

It enquires into the nature of matter, time, space, causality, evolution, life, and mind, and their relation to one another. It is the art of thinking all things logically, systematically, and persistently. It is the art of thinking rationally and systematically of the reality as a whole.

Plato rightly conceived of philosophy as the persistent attempt to seek clear notions. It examines, clarifies, and explains popular and scientific concepts of matter, space, time, causality, evolution, mechanism, teleology, life, mind or soul, God or the Absolute, right and wrong, good and evil, beauty and ugliness, and the like, and arrives at a rational conception of the reality. Clarification of concepts is the task of philosophy.

Philosophy is the critical analysis of the popular and scientific concepts, and the discovery of their relations to one another. It is a rational attempt to integrate our knowledge and interpret and unify our experiences.

It systematizes our scientific knowledge, and moral, aesthetic and religious experiences. It analyses the popular and scientific concepts, examines their validity in the light of reason, and interrelates them to one another. Its method is logical and rational. Its chief instrument is logic. Its method is rational speculation—logical analysis and synthesis.

Philosophy is the rational attempt to have a world-view. It endeavors to reach a conception of the entire universe with all its elements and aspects and their interrelations to one another. It is not contented with a partial view of the world. It seeks to have a synoptic view of the whole reality it tries to have a vision, of the whole. The different sciences deal with different departments of the world.

Mathematical sciences deal with numbers and figures. Physics deals with heat, light, motion, sound, electricity and magnetism. Chemistry deals with chemical phenomena. Astronomy deals with the phenomena of heavenly bodies. Botany deals with Phenomena of plant life. Zoology deals with the phenomena of animal life.

Physiology deals with the functions of the various organs of the animal and human organisms. Psychology deals with the phenomena, of mental life. Sociology deals with the structure and growth of the society and its institutions. Economics deals with wealth and welfare of man. Politics deals with the structure and functions of the State and its various organs.

Ethics deals with nature of the highest good, rights, duties, and virtues. Logic deals with truth and the conditions of its attainment. AEsthetics deals with beauty and its appreciation. The positive or natural sciences deal with facts, events or phenomena by the laws of nature.

Mathematics, physics, chemistry, astronomy, botany, zoology, physiology, sociology and psychology are positive or ideals. Ethics, Logic and AEsthetics are normative sciences, which seek to explain certain mental phenomena by norms or ideals.

Truth is the ideal of Logic. Good is the ideal of Ethics. Beauty is the ideal of AEsthetics. Logic deals with the intellectual ideal of Truth. Ethics deals with the volitional ideal of Good. AEsthetics deals with the emotional ideal of Beauty. They

are normative or regulative sciences which seek to determine the nature of the norms or ideals which regulate our life.

Thus sciences give us a sectional view of the world. But philosophy harmonizes the highest conclusions of the different sciences, co-ordinates them with one another, and gives a rational conception of the whole world.

It investigates the nature of the fundamental concepts of matter, time, space, life, mind, and the like and interrelates them to one another. It enquires into the nature of the universe, its stuff or material, its creator or God, its purpose, and its relation to man and his soul.

Is the universe material or spiritual?

Is it made of brute matter?

Is it made of mind or spirit?

Is it mechanical or teleological?

Or is it governed by mechanical laws of nature, without any purpose?

Or does it realize an end or purpose?

Is it made of matter and energy?

Or is it created and sustained by God?

Is life a by-product of matter?

Or is it a new entity different from matter?

Is mind or soul a function, or a by-product of the brain?

Or is it something different from matter?

Is it free or determined by heredity and environment?

Is it mortal or immortal?

Are Truth, Good and Beauty mere subjective creations of the human mind?

Are they mere phantoms?

Are they mere projections of the human heart with no counterparts in reality?

Are they mere hopes and aspirations of man?

Are they mere figments of the imagination?

Are they merely subjective ideals with no foothold in reality?

Or are they real and objective?

Are they firmly rooted in reality?

Are they realized in God already, who exists as an eternal embodiment of the ideals?

Are they imperfect revelations of the nature of God to the finite intellect of man to be gradually realized in life beyond?

Philosophy seeks to answer these questions by logical thought and rational reflection. Philosophy is the criticism of life. It enquires into the nature, meaning, purpose, origin, and destiny of human life. It is the interpretation of life, its value, and meaning.

It is an enquiry into its source and destiny. It investigates the nature of the supreme norms, ideals, or values of life. It investigates the relation of values to reality. In this sense, philosophy is the interpretation of life.

The humanistic aspect of philosophy is emphasized in recent years. Philosophy is regarded now more as an interpretation of human life, its source, value, meaning, and destiny, than as an enquiry into the nature of the world, soul, and God. It tries to understand the universe in relation to man.

It seeks to give a rational conception of the reality as a whole, which satisfies man's deepest intellectual, moral, aesthetic, and religious aspirations.

Man is a rational being. He lives in the physical and social environment. He reacts upon his environment and adjusts himself to it. He is a free centre of activity. He is moulded by the environment, and moulds it according to his ideal. He reflects upon the environment and himself, and their relation to each other.

He reflects upon the meaning, value, and purpose of his life. He reflects upon the nature, value, and purpose of the world and society in which he lives. He reflects upon the deepest mystery of the universe, the real nature of his own soul, the innermost core of reality, the nature and meaning of God in relation to human experience.

Man, as a rational being, cannot but philosophize. Philosophy is a rational reflection on life it is a criticism of life and experience.

Man is a rational animal. He lives and reflects upon his life. He thinks how he lives and why he lives. He reflects upon the nature, meaning and destiny of life. He unconsciously forms a world-view. This unconscious world-view is the germ of philosophy.

When man consciously reflects upon his life and experience, and makes an intellectual effort to harmonize the various aspects of his experience, intellectual, aesthetic, moral and religious, with one another by a rational conception of the reality as whole, he philosophizes.

His very life and existence presuppose an unconscious world-view. To make it conscious is to philosophize. Thinking is a hard job. Rational thinking is harder still. Rational speculation on the whole of human life and experience, the totality of the various aspects of human have a synoptic view of the universe, is the task, of a philosopher.

Philosophy seeks to have a complete view, a vision of the whole. It cannot be satisfied with a partial, fragmentary, sectional view. Philosophy is a synoptic view of the universe.

Life and philosophy react upon each other. A superficial life of mere pursuit of sensual pleasures and material comforts yields a superficial philosophy of materialism. A deeper life of sense restraint, control of emotions and passions, and pursuit of human good, truth, beauty, and the Holy yields a deeper philosophy of idealism.

Life is never complete, perfect, and harmonious. So philosophy also, which is a reflection upon life, can never be complete and all-embracing.

Different facets of reality influence the human mind in different ages in the history of mankind. They are emphasized by the philosophical systems which are formulated at

the time. Different systems emphasize different aspects of reality, and underestimate the importance of its other aspects.

Thus arises a conflict among the various types of philosophy. Some are materialistic; others are idealistic, some are monistic; some are dualistic; others are pluralistic; some are atheistic; some are theistic; others are agnostic. But all types of philosophy seek to explain the reality as a whole by their fundamental concepts. They are various types of world-views.

Scope of Philosophy:

Philosophy consists of three parts:

- (1) Epistemology;
- (2) Ontology and Metaphysics, and
- (3) Axiology.

Epistemology is the theory of Knowledge. Ontology or Metaphysics is the theory of Being or Reality. Axiology is the theory of Values. Modern philosophy is not dogmatic. It does not plunge into metaphysical investigation of the nature of reality without a prior criticism of the organ of knowledge. It is based on epistemology. Epistemology enquires into the nature, origin, validity and extent of knowledge.

Is experience or reason the source of knowledge?

Does knowledge represent the reality?

What is the nature of valid knowledge?

What are the tests of truth?

What are the conditions of valid knowledge?

What are the limits of human knowledge?

Can man know the world, soul, and God?

Can the finite mind know the Infinite?

Epistemology seeks to answer these questions. It has a dominant place in contemporary philosophy. It is a preliminary to metaphysical speculation. It is a prior criticism of the organ of knowledge. Ontology or Metaphysics is the theory of Being. It enquires into the nature of the reality. It investigates the nature of the world including matter and life, of the soul, and of God or the Absolute.

Ontology of Nature, Ontology of the Soul or Mind, and Ontology of the Absolute are the three essential parts of metaphysics. Ontology of Nature investigates the nature of matter, time, space, causality, life, evolution, mechanism, and teleology.

Ontology of the soul investigates the nature, origin and destiny of the soul, and its relation to body. Ontology of God investigates, the nature and attributes of God and his relation to the world and the souls. It discusses and examines proofs for the existence of God.

Ontology investigates the nature of reality. It discusses the theories of monism, dualism, and pluralism. Monism recognizes one type of reality. It assumes the form of materialism or idealism. Materialism regards matter as the ultimate reality, and reduces mind to matter.

Idealism regards mind or spirit as the fundamental reality and reduces matter to mind. Dualism recognizes matter and mind both as irreducible realities. Matter is unconscious and extended, while mind is conscious and un-extended.

They are radically different from each other and cannot be reduced to each other. This doctrine is dualism. Pluralism recognizes many realities independent of one another, which are not derived from one reality, and which cannot be reduced to one reality. They are either material or spiritual. Innumerable material atoms constitute the world.

Atomism is materialistic pluralism. Or an infinite number; of monads or spiritual atoms constitute the world, there being no unconscious matter. Monadism is spiritualistic pluralism. Leibnitz was an advocate of monadism.

But he recognized the existence of God, and Monad or monads, who created the monads and adjusted them to one another. Therefore, he combined spiritualistic pluralism or monadism with monism or theism.

Ontology of the cosmos is called cosmology. It investigates the nature and origin of the universe, its creation or evolution, and mechanical or teleological character of its evolution. Thus cosmology is included in ontology.

Axiology is the theory of values or ideals. Values are the supreme norms of life. Logic investigates the nature of Truth. Ethics investigates the nature of Good. AEsthetics investigates the nature of Beauty. Theology investigates the nature of the Holy.

Axiology enquires into the nature of intellectual, moral, esthetic, and religious values. It investigates the relation of values to reality. It enquires into their subjectivity or objectivity. It is a very important branch of contemporary philosophy. The problem of values is in the forefront of recent philosophy.

Formerly a difference was made between cosmology and cosmogony. Cosmology dealt with the number of the fundamental principles that constitute the world. It dealt with the doctrines of monism and pluralism. Cosmogony dealt with the origin of the world.

It dealt with the following questions?

Is the world created or evolved?

If it is evolved, is it evolved mechanically or ideologically?

Is it devoid of an end or purpose?

Or does it realize a purpose?

Does it realize an external end?

Or does it realize an end immanent in it?

Formerly a distinction was drawn between ontology and cosmology. Ontology dealt with the nature of the ultimate reality. Is the reality material or spiritual?

Is matter the fundamental reality?

Or is mind or spirit the ultimate reality?

Or are matter and mind both irreducible and ultimate realities?

Ontology dealt with materialism, idealism or spiritualism, and dualism.

Cosmology dealt with the number of the fundamental principles or realities. It dealt with the constitution and organization of the universe. It dealt with the problems of monism and pluralism. But at present all these problems are regarded as the problems of ontology.

Ontology deals with the nature-of the reality, the number of the fundamental principle or principles and the creation or evolution of the world. Cosmology and cosmogony are included in ontology. Ontology has three parts Ontology of Nature, Ontology of the Mind or Soul, and Ontology of God or the Absolute.

Branches of Philosophy

Western philosophy can be divided into six branches that have assumed various importance over time. Traditionally metaphysics sets the questions for philosophy. Epistemology asks how do we know? Ethics and politics have to do with action and quality of life. Aesthetics or value theory has to do with beauty, balance, and harmony. Logic has to do with the relations of things. Epistemology sometimes replaces metaphysics these days, because it has fewer religious overtones. Among Eastern European and continental philosophers, philosophy tends to be the study of politics. Logic is critical for analytic philosophers, who are deeply suspicious of ethics, politics, and metaphysics.

Understanding philosophy in the 6th century B.C. involves taking into account different priorities than those of the 19th century A.D. However, these divisions remain helpful for identifying what's at stake. Metaphysics, which studies the nature of existence, is closely related to Epistemology, the study of knowledge and how we know what we do about the world around us. Ethics, the study of how individuals should act, depends on Epistemology, because we need knowledge to make good choices. Politics studies human interaction. Aesthetics studies the value of things. Logic is about the symbolic representation of language and thought processes. Once the domain of Aristotle, the foundation of the exact sciences must now take into account relativity, uncertainty and incompleteness.

(1) Epistemology

The theory of knowledge, from the Greek words episteme (knowledge) and logos (word/speech/study), is the branch of philosophy that deals with the nature, origin, scope and (possibility/study) of knowledge. Dealing with nature is one of the branches of philosophy. But before anything is done, the meaning of philosophy should be

understood. A philosopher of religion must be objective. Anyone who is ready to study philosophy should be able to attack and defend. In other definition logic is the study of reasoning. It can also be described as the study of strength of the evident links between the premises and the conclusion. Logic is further divided into deductive reasoning and inductive reasoning. Deductive reasoning proceeds from a general statement to a particular statement. It is mostly a valid argument given that is tautological in nature. This means that the conclusion bares no new knowledge that it (conclusion) is missing in the premises. Inductive argument: This reasoning perceives from a particular statement to a general statement. This reasoning is mostly utilized in the scientific researches.

(2) Metaphysics

Metaphysics however (derived from the Greek words "meta & physika") - meaning 'after physics'. It was the way students referred to a specific book in the works of Aristotle, and it was a book on First Philosophy. (The assumption that the word means "beyond physics" is misleading) Metaphysics is the branch of philosophy concerned with the study of "first principles" and "being" (ontology). In other words, Metaphysics is the study of the most general aspects of reality, pertaining to subjects such as substance, identity, the nature of the mind, and free will. It is a study of nature, the nature of reality, and the nature of the world in which humans live.

(3) Logic

Logic (from Classical Greek λόγος (logos), originally meaning the word, or what is spoken, but coming to mean thought or reason is most often said to be the study of arguments. Logic is the study of correct reasoning. However the subject is grounded, the task of the logician is the same: to advance an account of valid and fallacious inference to allow one to distinguish.

(4) Ethics

Ethics is a general term for what is often described as the "science (study) of morality". In philosophy, ethical behaviour is that which is "good" or "right". The Western tradition of ethics is sometimes called moral philosophy. It's the study of right and wrong in human endeavors.

(5) Aesthetics

Aesthetics is a branch of philosophy that explores the creation and appreciation of beauty through critical analysis and reflection.

Ethics

At its simplest, ethics is a system of moral principles. They affect how people make decisions and lead their lives.

Ethics is concerned with what is good for individuals and society and is also described as moral philosophy.

The term is derived from the Greek word *ethos* which can mean custom, habit, character or disposition.

Ethics covers the following dilemmas:

- how to live a good life
- our rights and responsibilities
- the language of right and wrong
- moral decisions - what is good and bad?

Our concepts of ethics have been derived from religions, philosophies and cultures. They infuse debates on topics like abortion, human rights and professional conduct.

Definition

- The discipline dealing with what is good and bad and with moral duty and obligation.
- A set of moral principles: a theory or system of moral values
- The principles of conduct governing an individual or a group
- The branch of knowledge that deals with moral principles.

Moral Philosophy

Moral philosophy is the branch of philosophy that contemplates what is right and wrong. It explores the nature of morality and examines how people should live their lives in relation to others.

Moral philosophy has three branches.

One branch, meta-ethics, investigates big picture questions such as, “What is morality?” “What is justice?” “Is there truth?” and “How can I justify my beliefs as better than conflicting beliefs held by others?”

Another branch of moral philosophy is normative ethics. It answers the question of what we *ought* to do. Normative ethics focuses on providing a framework for deciding what is right and wrong. Three common frameworks are deontology, utilitarianism, and virtue ethics.

The last branch is applied ethics. It addresses specific, practical issues of moral importance such as war and capital punishment. Applied ethics also tackles specific moral challenges that people face daily, such as whether they should lie to help a friend or co-worker.

So, whether our moral focus is big picture questions, a practical framework, or applied to specific dilemmas, moral philosophy can provide the tools we need to examine and live an ethical life.

Nature of moral judgements and reactions

Ethics is a science of morality and it discusses the contents of moral consciousness and the various problems of moral consciousness. Moral consciousness is the consciousness of right and wrong. It involves three factors

1. Cognitive or intellectual,
2. Affective or emotional,
3. Conative or volitional

The moral judgement is the judgement which deals with the moral value or quality of an action. It is a judgement of value and it evaluates the rightness or wrongness of our actions. When we analyse a moral judgement then we find that it contains a) a subject which will judge, b) an object whose action will be judged, c) a standard

in conformity to which the action of the subject will be judged and d) a power of judging the action as required. Moral judgment is the judgment of moral quality of voluntary habitual actions. Generally, a moral judgment is given on the voluntary and habitual actions of a rational being. The voluntary actions of a rational person which involve deliberation, choice, and resolution, have the moral quality of rightness and wrongness. They are considered to be right or wrong with the reference to the moral standard. And on the basis of this standard, moral judgment is given. If the voluntary actions have conformity with the standard or the ideal, then the moral judgment will express it as the right action. If the action has conflict with the standard or norms, then the moral judgment will express it as wrong. So, moral judgment involves comparison of voluntary acts with the moral standard.

- Moral judgment is active in nature. Because moral judgment is given upon voluntary and habitual acts of persons and not upon their passive experiences.
- Moral judgment is social in character. Because, as we know, voluntary acts of a person are right or wrong, because they more or less affect the of interest of others. Man is a social being. His rights and duties of actions rise out of his relation to other persons in society. So, moral judgment, apart from society is inconceivable. Moral judgment can be said to be obligatory in character. Because a judgment can be given as right, while we feel the moral obligation to do it. Similarly, moral judgment is given on an act as wrong, when we feel the moral obligation to refrain from it. Thus, moral judgment is always accompanied by the sense of duty or moral obligation. And this moral obligation is essentially self-imposed. In this way, we can find out the meaning of moral judgment.

Unit 02: Scientific conduct

Ethics with respect to science and research

When most people think of ethics (or morals), they think of rules for distinguishing between right and wrong, such as the Golden Rule ("Do unto others as you would have them do unto you"), a code of professional conduct like the Hippocratic Oath ("First of all, do no harm"), a religious creed like the Ten Commandments ("Thou Shalt not kill..."), or a wise aphorisms like the sayings of Confucius. This is the most common way of defining "ethics": **norms for conduct** that distinguish between acceptable and unacceptable behavior.

Most people learn ethical norms at home, at school, in church, or in other social settings. Although most people acquire their sense of right and wrong during childhood, moral development occurs throughout life and human beings pass through different stages of growth as they mature. Ethical norms are so ubiquitous that one might be tempted to regard them as simple common sense. On the other hand, if morality were nothing more than common sense, then why are there so many ethical disputes and issues in our society?

There are several reasons why it is important to adhere to ethical norms in research. First, norms **promote the** aims of research, such as knowledge, truth, and avoidance of error. For example, prohibitions against fabricating, falsifying, or misrepresenting research data promote the truth and minimize error.

Second, since research often involves a great deal of cooperation and coordination among many different people in different disciplines and institutions, ethical standards promote the **values that are essential to collaborative work**, such as trust, accountability, mutual respect, and fairness. For example, many ethical norms in

research, such as guidelines for authorship, copyright and patenting policies, data sharing policies, and confidentiality rules in peer review, are designed to protect intellectual property interests while encouraging collaboration. Most researchers want to receive credit for their contributions and do not want to have their ideas stolen or disclosed prematurely.

Third, many of the ethical norms help to ensure that researchers can be held **accountable to the public**. For instance, federal policies on research misconduct, conflicts of interest, the human subjects protections, and animal care and use are necessary in order to make sure that researchers who are funded by public money can be held accountable to the public.

Fourth, ethical norms in research also help to build **public support** for research. People are more likely to fund a research project if they can trust the quality and integrity of research.

Finally, many of the norms of research promote a variety of other important **moral and social values**, such as social responsibility, human rights, animal welfare, compliance with the law, and public health and safety. Ethical lapses in research can significantly harm human and animal subjects, students, and the public. For example, a researcher who fabricates data in a clinical trial may harm or even kill patients, and a researcher who fails to abide by regulations and guidelines relating to radiation or biological safety may jeopardize his health and safety or the health and safety of staff and students.

Intellectual honesty and research integrity

We have a moral duty to be honest. This duty is especially important when we share ideas that can inform or persuade others.

Intellectual honesty is honesty in the acquisition, analysis, and transmission of ideas. A person is being intellectually honest when he or she, knowing the truth, states that truth.^[1] Intellectual honesty pertains to any communication intended to inform or persuade. This includes all forms of scholarship, consequential conversations such as dialogue, debate, negotiations, product and service descriptions, various forms of persuasion, and public communications such as announcements, speeches, lectures, instruction, presentations, publications, declarations, briefings, news releases, policy statements, reports, religious instructions, social media posts, and journalism including not only prose and speech, but graphs, photographs, and other means of expression. Intellectual Honesty combines good faith with a primary motivation toward seeking true beliefs.

Intellectual honesty is an applied method of problem solving, characterized by an unbiased, honest attitude, which can be demonstrated in a number of different ways including:

- Ensuring support for chosen ideologies does not interfere with the pursuit of truth;
- Relevant facts and information are not purposefully omitted even when such things may contradict one's hypothesis;
- Facts are presented in an unbiased manner, and not twisted to give misleading impressions or to support one view over another;
- References, or earlier work, are acknowledged where possible, and plagiarism is avoided.

Research integrity may be defined as active adherence to the ethical principles and professional standards essential for the responsible practice of research. By active adherence we mean adoption of the principles and practices as a personal credo, not simply accepting them as impositions by rulemakers. By ethical principles we mean honesty, the golden rule, trustworthiness, and high regard for the scientific record.

NAS report definition: "For individuals research integrity is an aspect of moral character and experience. It involves above all a commitment to intellectual honesty and personal responsibility for ones actions and to a range of practices that characterize responsible research conduct." These practices include:

Honesty and fairness in proposing, performing, and reporting research;

1. Accuracy and fairness in representing contributions to research proposals and reports;
2. Proficiency and fairness in peer review;
3. Collegiality in scientific interactions, communications and sharing of resources;
4. Disclosure of conflicts of interest;
5. Protection of human subjects in the conduct of research;
6. Humane care of animals in the conduct of research;
7. Adherence to the mutual responsibilities of mentors and trainees."

While science encourages (no, requires) vigorous defense of one's ideas and work, ultimately research integrity means examining the data with objectivity and being guided by the results rather than by preconceived notions.

Scientific misconducts

Known as the three "cardinal sins" of research conduct, falsification, fabrication, and plagiarism (FFP) are the primary concerns in avoiding research misconduct. Any divergence from these norms undermines the integrity of research for that individual, lab, university/corporation, and the field as a whole.

Falsification

Falsification is the changing or omission of research results (data) to support claims, hypotheses, other data, etc. Falsification can include the manipulation of research instrumentation, materials, or processes. Manipulation of images or representations in

a manner that distorts the data or “reads too much between the lines” can also be considered falsification.

Fabrication

Fabrication is the construction and/or addition of data, observations, or characterizations that never occurred in the gathering of data or running of experiments. Fabrication can occur when “filling out” the rest of experiment runs, for example. Claims about results need to be made on complete data sets (as is normally assumed), where claims made based on incomplete or assumed results is a form of fabrication.

Plagiarism

Plagiarism is, perhaps, the most common form of research misconduct. Researchers must be aware to cite all sources and take careful notes. Using or representing the work of others as your own work constitutes plagiarism, even if committed unintentionally. When reviewing privileged information, such as when reviewing grants or journal article manuscripts for peer review, researchers must recognize that what they are reading cannot be used for their own purposes because it cannot be cited until the work is published or publicly available.

Redundant publications: duplicate and overlapping publications

Duplicate or redundant publication has been defined as publication of a paper that overlaps substantially with one already published.

One of the landmark events relating to duplicate publication is the publication of the 1969 editorial in the *New England Journal of Medicine* by Franz Joseph Ingelfinger. Now known for the Ingelfinger rule, he proposed that manuscripts should only be considered for publication in his journal if they were not submitted or published elsewhere. Since that time, many journals have adopted the same policy. However, there are some who suggest that the evolving publications environment may change

the way we address these issues, including the Ingelfinger rule. Redundant, duplicate, or repetitive publications occur when there is representation of 2 or more studies, data sets, or publications in either electronic or print media.

The publications may overlap partially or completely, such that a similar portion, major component(s), or complete representation of a previously/simultaneously or future published study is duplicated. These publications may share the same, similar, or overlapping data, hypotheses, discussion, methods, results, and/or conclusions. Typically, one or more of the publications do not have full cross-references to others and may have similar or identical authors in various orders.

In some cases, redundancy may include salami slicing of the data into subsets instead of representing the study as a whole (eg, using data collected from one group of patients but carving out different data subsets instead of appropriately combining them into 1 study), or the authors may add new data and make a study appear new.

Bailey and von Elm et al. used classification systems to analyze the practices of duplicate publication in their respective fields. Each method offers an interesting insight on the variations and intricacies of duplicate publication. Bailey separated his classification system of similarity into 5 levels: level I, 10% or more of the contents are identical; level II, highly similar contents without exact duplication; level III, subsets (salami slicing) of the same study; level IV, number of subjects in the study increases without new conclusions or changes in the intervention; and level V, the same message is published for different readerships. von Elm et al produced an algorithm with 6 endpoints to categorize various patterns of duplicate publications: pattern 1A, identical study sample and identical outcomes; pattern 1B, identical study sample and identical outcomes but 2 or more articles are combined to produce a different article; pattern 2, identical study sample but different outcomes; pattern 3A, different study samples with new data added to a preliminary article with similar outcomes; pattern 3B, different study samples with similar outcomes, part of a larger trial published in

separate pieces; and pattern 4, duplication with different study samples and different outcomes. Upon review of these classification systems, it is evident that duplicate publication is a complex issue.

Embedded in the definition of authorship is the fact that authors are ultimately the ones responsible for presenting, publishing, and defending their work. Therefore, the ultimate burden of integrity falls upon the authors. Although some authors may claim ignorance to publication guidelines, many journals clearly publish what is or is not acceptable with regard to duplicate publication. Thus, authors must read the journal instructions and must be aware of these issues.

Editors have a different but equally tasking responsibility in relation to duplicate publication. Editors must clearly define and implement the ethical standards of their journals.

Although editors are responsible for following up on ethical misconduct issues when they come to light, they are not solely responsible for investigating and/or punishing the authors. The structure of the greater scientific community, including authors' institutions, ethics boards, licensing boards, and funding agencies, should also be involved.

Although challenging to define, it is even more difficult to identify duplicate publication. Thus, the responsibility to recognize and report duplication rests with all who come in contact with the study, including colleagues aware of one's work, peer reviewers, editors, and the readership of the journal. At times, clandestine duplicate publications are divulged when someone reads a journal article and informs the editor of the journal or an official of the authors' institution.

Salami slicing

If you are a researcher investigating a drug's effect on the body, after gathering data you have a choice: should you publish all the data and conclusions in one paper? Probably so, because of the inter-relation of the data and its significant implications.

However, there is a possibility that you may want to segregate the data and publish it in multiple papers depending on the type of data and its importance, e.g., one study could be published in a journal that publishes medicine-related research, whereas another study could be published in a journal that publishes research related to biochemistry. In this manner, an individual research program can yield several publications instead of having few published studies. This process of publishing a research study into many small studies is known as “salami slicing” and it is considered to be ethically incorrect though for researchers, such segregation could help attract more citations and improve their resumes.

Dividing a manuscript into several small papers is considered a bad practice for several reasons. First, readers may not grasp the significance of the work if the results are widely scattered in multiple papers. In fact, the visibility of your research program could be diluted as many of your studies would have been published by journals having a lower impact factor. If you want the research to be visible to a wide audience, selection of journal and the content that would be published is definitely very important. Moreover, by creating multiple studies, many researchers would not be able to arrive at a study’s significance, and thus would avoid citing the study in their literature reviews. Also, if the data is published in multiple studies with different conclusions, it makes it complicated for researchers to have complete visibility, which a single publication would have given. Thus, this practice of publishing data in staggered studies is believed to have ethical implications because it encourages fabrication of data and unnecessary extrapolations of results.

When is Salami Slicing Justified?

If a major research project is so extensive that it involves several research groups across disciplines, then it is justified that there are multiple publications to convey the overall impact of the research. For example, from a program that studies the impact of a drug, multiple studies could be published detailing with the synthesis of

the drug, biochemical mechanisms, side effects of the drug on different animal models, effects of the clinical trials, and so on. Thus, dividing the data into multiple studies would help you convey the implications to the right audience. In fact, rather than implying that you are encouraging “salami slicing,” your research could indeed be published in high impact factor journals because of its impact!

Selective reporting

Reporting biases is an umbrella term that covers a range of different types of biases. It is described as the most significant form of scientific misconduct (Al-Marzouki et al. 2005). Reporting biases have been recognised for hundreds of years, dating back to the 17th century (Dickersin & Chambers, 2010). Since then, various definitions of reporting biases have been proposed:

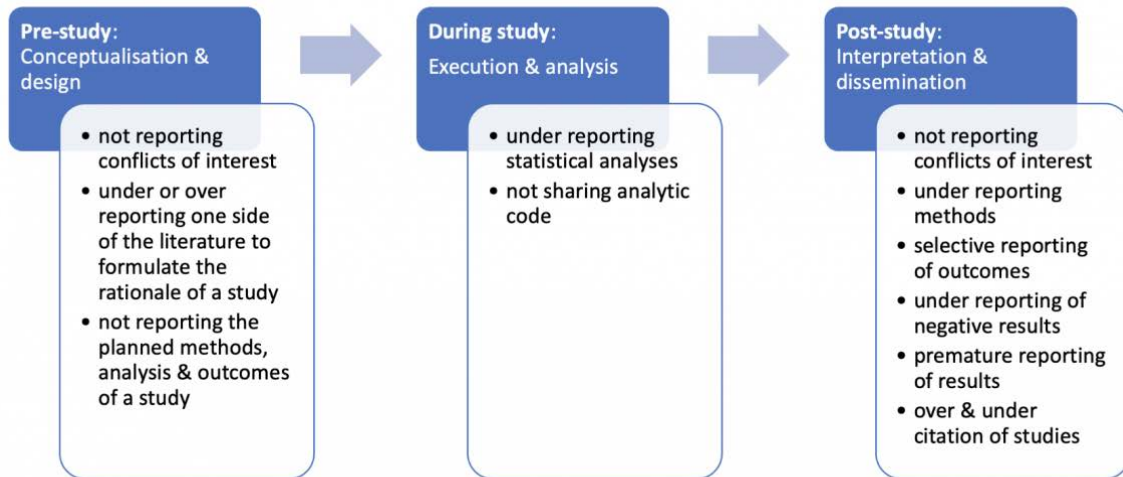
The Dictionary of Epidemiology defines reporting bias as the “selective revelation or suppression of information (e.g., about past medical history, smoking, sexual experiences) or of study results.”

The Cochrane Handbook states it arises “when the dissemination of research findings is influenced by the nature and direction of results.”

The James Lind Library states “biased reporting of research occurs when the direction or statistical significance of results influence whether and how research is reported.”

It is a distortion of presented information from research due to the selective disclosure or withholding of information by parties involved with regards to the topic selected for study and the design, conduct, analysis, or dissemination of study methods, findings or both. Researchers have previously described seven types of reporting biases, including publication bias, time-lag bias, multiple (duplicate) publication bias, location bias, citation bias, language bias and outcome reporting bias. Figure illustrates where

reporting biases can occur in the lifecycle of research and provides several examples of reporting biases.



Misrepresentation of data

The concept of 'misrepresentation,' unlike 'fabrication' and 'falsification,' is neither clear nor uncontroversial. Most scientists will agree that fabrication is making up data and falsification is changing data. But what does it mean to misrepresent data? As a minimal answer to this question, one can define 'misrepresentation of data' as 'communicating honestly reported data in a deceptive manner.' But what is deceptive communication? The use of statistics presents researchers with numerous opportunities to misrepresent data. For example, one might use a statistical technique, such as multiple regression or the analysis of variance, to make one's results appear more significant or convincing than they really are. Or one might eliminate (or trim) outliers when 'cleaning up' raw data. Other ways of misrepresenting data include drawing unwarranted inference from data, creating deceptive graphs of figures, and using suggestive language for rhetorical effect.

However, since researchers often disagree about the proper use of statistical techniques and other means of representing data, the line between misrepresentation of data and 'disagreement about research methods' is often blurry. Since 'misrepresentation' is difficult to define, many organizations have refused to characterize misrepresenting data as a form of scientific misconduct. On the other hand, it is important to call attention to the problem of misrepresenting data, if one is concerned about promoting objectivity in research, since many of science's errors and biases result from the misrepresentation of data.

Unit 03: Publication Ethics

Publication Ethics

Ethical standards for publication exist to ensure high-quality scientific publications, public trust in scientific findings, and that people receive credit for their ideas. It is important to avoid:

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.

Plagiarism

Taking the ideas and work of others without giving them credit is unfair and dishonest. Copying even one sentence from someone else's manuscript, or even one of your own that has previously been published, without proper citation is considered plagiarism- use your own words instead.

Multiple submissions

It is unethical to submit the same manuscript to more than one journal at the same time. Doing this wastes the time of editors and peer reviewers, and can damage the reputation of journals if published in more than one.

Redundant publications (or 'salami' publications)

This means publishing many very similar manuscripts based on the same experiment. It can make readers less likely to pay attention to your manuscripts.

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, including students and laboratory technicians. The International Committee of Medical Journal Editors has detailed guidelines on authorship that are useful for scientists in all fields.

COPE (Committee on Publication Ethics),

Is a charity registered in the UK. It is concerned with the integrity of peer-reviewed publications in science, particularly biomedicine.

COPE provides leadership in thinking on publication ethics and practical resources to educate and support members, and offers a professional voice in current debates.

The COPE Core Practices were developed in 2017, replacing the Code of Conduct. They are applicable to all involved in publishing scholarly literature: editors and their journals, publishers, and institutions. The Core Practices should be considered alongside specific national and international codes of conduct for research and are not intended to replace these.

Journals and publishers should have robust and well described, publicly documented practices in all of the following areas for their journals:

1. Allegations of misconduct

Journals should have a clearly described process for handling allegations, however they are brought to the journal's or publisher's attention. Journals must take seriously allegations of misconduct pre-publication and post-publication. Policies should include how to handle allegations from whistleblowers.

2. Authorship and contributorship

Clear policies (that allow for transparency around who contributed to the work and in what capacity) should be in place for requirements for authorship and contributorship as well as processes for managing potential disputes

3. Complaints and appeals

Journals should have a clearly described process for handling complaints against the journal, its staff, editorial board or publisher

4. Conflicts of interest / Competing interests

There must be clear definitions of conflicts of interest and processes for handling conflicts of interest of authors, reviewers, editors, journals and publishers, whether identified before or after publication

5. Data and reproducibility

Journals should include policies on data availability and encourage the use of reporting guidelines and registration of clinical trials and other study designs according to standard practice in their discipline

6. Ethical oversight

Ethical oversight should include, but is not limited to, policies on consent to publication, publication on vulnerable populations, ethical conduct of research using animals, ethical conduct of research using human subjects, handling confidential data and ethical business/marketing practices

7. Intellectual property

All policies on intellectual property, including copyright and publishing licenses, should be clearly described. In addition, any costs associated with publishing should be obvious to authors and readers. Policies should be clear on what counts as prepublication that will preclude consideration. What constitutes plagiarism and redundant/overlapping publication should be specified

8. Journal management

A well-described and implemented infrastructure is essential, including the business model, policies, processes and software for efficient running of an editorially independent journal, as well as the efficient management and training of editorial boards and editorial and publishing staff

9. Peer review processes

All peer review processes must be transparently described and well managed. Journals should provide training for editors and reviewers and have policies on diverse aspects of peer review, especially with respect to adoption of appropriate models of review and processes for handling conflicts of interest, appeals and disputes that may arise in peer review

10. Post-publication discussions and corrections

Journals must allow debate post publication either on their site, through letters to the editor, or on an external moderated site, such as PubPeer. They must have mechanisms for correcting, revising or retracting articles after publication

World Association of Medical Editors

Established in 1995, WAME (pronounced “whammy”) is a 501(c)(3) nonprofit voluntary association of editors of peer-reviewed medical journals from countries throughout the world who seek to foster international cooperation among and education of medical journal editors. Membership in WAME is free and all decision-making editors of peer-reviewed medical journals are eligible to join. Membership is also available to selected

scholars in journal editorial policy and peer review. WAME has more than 1830 members representing more than 1000 journals from 92 countries .

WAME has the following goals:

- to facilitate worldwide cooperation and communication among editors of peer-reviewed medical journals;
- to improve editorial standards, to promote professionalism in medical editing through education, self-criticism and self-regulation;
- to encourage research on the principles and practice of medical editing.

WAME's founding members also agreed that members of WAME shall be dedicated to high ethical and scientific principles in the pursuit of the following common goals:

- to publish original, important, well-documented peer-reviewed articles on clinical and laboratory research;
- to provide continuing education in basic and clinical sciences to support informed clinical decision making;
- to enable physicians to remain informed in one or more areas of medicine;
- to improve public health internationally by improving the quality of medical care, disease prevention and medical research;
- to foster responsible and balanced debate on controversial issues and policies affecting medicine and health care;
- to promote peer review as a vehicle for scientific discourse and quality assurance in medicine and to support efforts to improve peer review;
- to achieve the highest level of ethical medical journalism;
- to promote self-audit and scientifically supported improvement in the editing process;
- to produce publications that are timely, credible and enjoyable to read;
- to forecast important issues, problems and trends in medicine and health care;
- to inform readers about non-clinical aspects of medicine and public health, including political, philosophic, ethical, environmental, economic, historical and cultural issues;

- to recognize that, in addition to these specific objectives, a medical journal has a social responsibility to improve the human condition and safeguard the integrity of sciences.

Conflicting Interests

A competing interest, also known as a 'conflict of interest', can occur when you (or your employer or sponsor) have a financial, commercial, legal, or professional relationship with other organizations, or with the people working with them, that could influence your research.

Full disclosure is required when you **submit your paper to a journal**. The journal editor will firstly use this information to inform his or her editorial decisions. They may then publish such disclosures to assist readers in evaluating the article. Or, instead, the editor may decide not to publish your article on the basis of any declared competing interest. You can declare the competing interest in **your cover letter** or on the manuscript submission form in the journal's online peer-review system.

Competing interests can be financial or non-financial in nature. To ensure transparency, any associations which can be **perceived** by others as a competing interest must also be declared.

Examples of financial competing interests include (but are not limited to):

- Employment or voluntary involvement
- Collaborations with advocacy groups relating to the content of the article
- Grants from an entity paid to the author or organization
- Personal fees received by the author/s as honoraria, royalties, consulting fees, lecture fees, testimonies, etc

- Patents held or pending by the authors, their institutions or funding organizations, or licensed to an entity whether earning royalties or not
- Royalties being received by the authors or their institutions
- Stock or share ownership
- Benefits related to the development of products as an outcome of the work

Examples of non-financial competing interests include (but are not limited to):

- Receipt of drugs, specialist equipment, tools, computer programs, digital applications, etc or access to data repositories, archival resources, museum collections, etc by an entity that might benefit or be at a disadvantage financially or reputationally from the published findings.
- Holding a position on the boards of industry bodies or private companies that might benefit or be at a disadvantage financially or reputationally from the published findings.
- Writing assistance or administrative support from a person or organization that might benefit or be at a disadvantage from the published findings.
- Personal, political, religious, ideological, academic and intellectual competing interests which are perceived to be relevant to the published content.
- Involvement in legal action related to the work.

If there are no competing interests to declare, authors should include a statement to the article to confirm that there are no relevant financial or non-financial competing interests to report.

Publication Misconduct

Publishing research studies has become an important aspect of career advancement and promotion. With this desire to further professional aspirations, misconduct has crept into research in different forms.

1 Plagiarism: Plagiarism is the appropriation of another person's thoughts, ideas, data, figures, research methods, or words without giving appropriate credit, or the over-citation of another person's published work.

2 Fabrication: Fabrication is the practice of making up data or results without having performed relevant research.

3 Falsification: Falsification is the practice of changing data or results intentionally such that misleading conclusion is drawn.

4 Inappropriate authorship: Authorship is not appropriately assigned based on the author's contributions.

5 Duplicate submission/multiple submissions: Duplicate submission/multiple submissions refers to practice of submitting the same manuscript or several manuscripts with minor differences (e.g., differences only in title, keywords, abstract, author order, author affiliations, or a small amount of text) to two or more journals at the same time, or submitting to another journal within an agreed or stipulated period.

6 Overlapping publication: Overlapping publication refers to the practice of publishing a paper overlaps substantially with one already published.

7 Salami publication: Salami publication refers to the practice of slicing data from a large study, could have been reported in a single paper, into different pieces and publishing them in two or more articles, all of which cover the same population, methods, and question.

8 Inappropriate authorship: Authorship is not appropriately assigned based on the author's contributions.

Predatory journals

The number of predatory journals is increasing day-by-day and also getting more difficult to identify. Jeffrey Beall, a librarian at the University of Colorado in

Denver, first coined the term “predatory journals” and maintained a listing of predatory journals which was later taken down. Cabell’s International launched a revised version of the list called Cabell’s Blacklist, which can be accessed for a fee at the company’s website.

With over 4,000 predatory journals (according to Cabell’s Blacklist), here are a few things to look out for and signs that give away a bogus journal.

What is a predatory journal?

A predatory journal is a publication that actively asks researchers for manuscripts. They have no peer review system and no true editorial board and are often found to publish mediocre or even worthless papers. They also ask for huge publication charges.

Why do academics publish in such journals?

In research environments, there is usually more value for quantity over quality. Hiring and promotion of academics is based largely on their number of publications. Predatory journals has helped many pseudo-researchers to prosper.

What is the harm caused by predatory journals?

Predatory and low-quality journals corrupt the literature. Medical science has been particularly hit hard, with journals now devoted to unscientific medicine. “Peer review is at the heart of academic evaluation. Publishing without peer review [while pretending that peer review was done] gives poor and mediocre academics a chance for jobs and promotions which should go to better qualified researchers,” says Prof. Sunil Mukhi, J.C. Bose Fellow and Chair, Physics Programme, IISER Pune.

How does one find out if a given journal is predatory or not?

“It requires a bit of work. If one is lazy about this, it is easy to come to the wrong conclusion. For example, some people think any journal from an unknown publisher, or a journal that charges for publication, is necessarily predatory. That is not necessarily correct. The important thing is to dig deeper and findthe quality of submitted manuscripts....and its standards,” he adds.

Here is a curated list of Beall’s criteria for identification of predatory journals and publishers

- No single individual is identified as specific journal’s editor with no formal editorial/review board or the same editorial board for more than one journal.
- The editor and/or review board members do not have academic expertise in the journal’s field.
- Provides insufficient information or hides information about author fees, offering to publish an author’s paper and later sending an unanticipated ‘surprise’ invoice.
- No proper indexing.
- The name of a journal is unrelated with the journal’s mission.
- The name of a journal does not adequately reflect its origin (e.g. a journal with the word ‘Canadian’ or ‘Swiss’ in its name when neither the publisher, editor, nor any purported institutional affiliate relates whatsoever to Canada or Switzerland).
- The publisher has poorly maintained websites, including dead links, prominent misspellings and grammatical errors on the website.
- The publisher makes unauthorised use of licensed images on their website, taken from the open web, without permission or licensing from the copyright owners.

- Re-publish papers already published in other venues/outlets without providing appropriate credits.
- Use boastful language claiming to be a 'leading publisher' even though the publisher may only be a start-up or a novice organisation.
- Provide minimal or no copyediting or proofreading of submissions.
- Publish papers that are not academic at all, e.g. essays by lay people, polemical editorials, or pseudo-science.
- Have a 'contact us' page that only includes a web form or an email address, and the publisher hides or does not reveal its location.
- The publisher publishes journals that are excessively broad (e.g. Journal of Education) or combine two or more fields not normally treated together (e.g. International Journal of Business, Humanities and Technology) in order to attract more articles and gain more revenue from author fees.

Before you submit your work to a journal, use this checklist (from *Think.Check.Submit.Initiative*) to find out if it is a genuine one.

1. Do you or your colleagues know the journal?
2. Can you easily identify and contact the publisher?
3. Is the journal clear about the type of peer review it uses?
4. Are articles indexed in services that you use?
5. Is it clear what fees will be charged?
6. Do you recognise the editorial board?
7. Is the publisher a member of a recognised industry initiative (COPE,DOAJ,OASPA)?