Hawassa University

College Law And Governance

LOGIC AND CRITICAL THINKING

PHIL101

3crh

Course Description

- This course aims
  - To cultivate a critical attitude, both personally and professionally
  - Introduce the nature and concepts of philosophy in general and logic in particular.
  - Nurturing the skills required to construct good arguments and ability to critically evaluate the arguments of others
  - Cultivate the habits of critical thinking and develop sensitivity to the clear and accurate use of language.

Learning Objectives

- On successful completion of this course, the students will be able to:
  - Understand the main concern of philosophy and the necessity of learning it;
  - Recognize the components and types of arguments;
  - Develop the skill to construct and evaluate arguments;
  - Understand the relationship between logic and language;
  - Recognize the forms of meanings of words and terms;
  - Comprehend the types, purposes and techniques of definitions;
  - Understand the concept, principles, and criteria of critical thinking

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Teaching and Learning Methods

- Presentation
  - lecture,
  - question and answer,
  - group discussion
- Independent learning (Reading assignment)
- Collaborative learning (group discussion, and debates)

Methods of Assessment

- Mid-term Examination: 40% (it will cover chapter one and two at the end of week five)
- Final-term Examination: 60% (it will cover from chapter three to chapter six) Total: 100%

COURSE INTRODUCTION

- This course is
  - a **philosophical inquiry** that takes **argumentation** and **reasoning** as its basic objects of investigation and
  - attempts to introduce the
    - **fundamental concepts of logic** and
    - **methods of logical argumentation and reasoning** and **critical thinking**
  - **critical thinking** is the reasonable, reflective, responsible, and skillful thinking that focuses on deciding what to believe or do.

- Critical thinking helps to
  - Ask appropriate questions,
  - Gather relevant information,
  - Efficiently and creatively sort through this information,
  - Reason logically from this information, and
  - Come to reliable and trustworthy conclusions
- Generally, this course is designed to help you develop
  - The ability to **construct** reliable and logically defendable **arguments** and
  - Rationally **evaluate the arguments** of others

CHAPTER ONE

INTRODUCING PHILOSOPHY

- Philosophy is the **study of general and fundamental problems**
  - concerning matters such as existence, knowledge, truth, beauty, law, justice, validity, mind, and language.
- Logic is a **branch of philosophy** which treated simultaneously as a field of **study** and as an **instrument**.
- It study **arguments** and the **principles** and methods of right reasoning
- As an instrument, it help us **to formulate our own rational arguments** and critically **evaluate the soundness of others' arguments**.

Meaning and Nature of Philosophy

- It is difficult to define philosophy because philosophy **has no a specific** subject but it primarily deals with **issues**
- Etymologically, the word philosophy comes from two Greek words: **philo** and **sophia**, which mean love and wisdom, respectively.
- Thus, the literal definition of philosophy is "**love of wisdom".** But this is not sufficient to understand philosophy
- **Pythagoras** was the first to use the word **philosopher** to call a person who clearly shows a marked curiosity in the things he experiences and analysis.

- Philosophy refers to **the development of critical habits**, the **continuous search for truth**, and the **questioning of the apparent**.
- The best way to learn and understand philosophy is to **philosophize**; i.e.
  - To be confronted with philosophical questions, to use philosophical language,
  - To become acquainted with differing philosophical positions and maneuvers,
  - To read the philosophers themselves, and
  - To grapple with the issues for oneself.

- The wisdom that philosophers seek **is not the wisdom of the expertise or technical skills of professionals**
- Philosophy involves **reason**, **rational criticism, examination**,
- For Socrates philosophy is a pursuit of wisdom, i.e.
  - The development of critical habits,
  - The continuous search for truth, and
  - The questioning of the apparent
- Therefore, philosophy is **a rational and critical enterprise** that tries to formulate and answer fundamental questions through:-
  - an intensive application of reason
  - an application that draws on **analysis**, **comparison**, and **evaluation**.

- Philosophy has a ***constructive and critical side***,
  - **constructive side:- it attempts to formulate rational answers** to certain fundamental questions concerning
    - ✓ the nature of reality,
    - ✓ the nature of value, and
    - ✓ the nature of knowledge and truth.
  - **critical side**-it deals with **giving a rational critic**, **analysis, clarification, and evaluation** of answers given to basic metaphysical, epistemological, and axiological questions.
- Philosophy is **an activity**. It is not something that can be easily mastered or learned in schools

Basic Features of Philosophy

1) Philosophy is **a set of views or beliefs about life and the universe**, (informal sense of philosophy or —**having a philosophy**)
2) Philosophy is a **process of reflecting on and criticizing** our most deeply held conceptions and belief(the formal sense of – **doing philosophy**)

❖ These two senses of philosophy-having and doing cannot be treated entirely independent of each other

3) Philosophy is **a rational attempt to look at the world as a whole**.

- Philosophy seeks to combine the conclusions of the various sciences and human experience into some kind of consistent worldview

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

5) Philosophy is **a group of perennial/constant problems** that interest people and for which philosophers always have sought answers.

➢ Philosophy **presses its inquiry into the deepest problems of human existence.**

e.g. -What is life and why am I here?

-Where does knowledge come from, and can we have any assurances that anything is true?

- Philosophy is better seen as **asking the right questions rather than providing the correct answers.**

❖ Generally, Philosophy is **the various theories or systems of thought** developed by the great philosophers, such as Socrates, Plato and Aristotle,

Core Fields of Philosophy

- Philosophy has different primary and secondary branches.
- This course deals only with the primary ones, namely
  - Metaphysics,
  - Epistemology,
  - Axiology, and
  - Logic.

Metaphysics

- Metaphysics is derived from the Greek words "**meta**" means **beyond, upon or after** and **physika**, means **physics**.
- Metaphysics **studies the ultimate nature of reality** or **existence**.
- It deal with **issues of reality, cause and effect relationship**, and other related issues.
- Some of the questions that Metaphysics primarily deals with includes:
  - What is reality? life? Time?
  - What is mind, and what is its relation to the body?
  - Is there a cause and effect relationship between reality and appearance?
  - Are human actions free, or predetermined by a supernatural force?

- Metaphysical questions may be divided into four subsets or aspects.

i) Cosmological Aspect:

- It deals about the **origin, nature, and development of the universe** as an orderly system.
- E.g. How did the universe originate and develop? Does its existence have any purpose?

ii) Theological Aspect:

- Theology is that part of **religious theory** that deals with conceptions of and about God.
  - what is God's relationship to human?‖

iii) **Anthropological Aspect**:

- Anthropology deals with **the study of human beings** and asks questions like:-
  - What is the relation between mind and body?
  - Is mind more fundamental than body, with body depending on mind, or vice versa?
  - Are people born good, evil, or morally neutral?
  - Do they have free will, or are their thoughts and actions determined by their environment, inheritance, or a divine being?

iv) **Ontological Aspect**:

- Ontology is the **study of the nature of existence**, or **what it means for anything to exist.**
  - Is reality orderly and lawful in itself, or is it merely orderable by the human mind?
  - Is it fixed and stable, or is change its central feature?
  - Is this reality friendly, unfriendly, or neutral toward humanity?‖

Epistemology

- Etymologically, epistemology — Greek words **episteme**, meaning **—knowledge, understanding**, and **logos**, meaning **—study of**.
- **Epistemology** is referred to as **—theory of knowledge**
- Epistemology studies about the nature, scope, meaning, source, and validity and possibility of knowledge. It deals with issues of knowledge, opinion, truth, falsity, reason, experience, and faith.
- Thus, epistemology covers two areas: the **content of thought** and **thought itself.**
  - What is knowledge? What does it mean to know?
  - What is the source of knowledge? Experience? Reason? Or both?
  - How can we be sure that what we perceive through our senses is correct?
  - What makes knowledge different from belief or opinion?
  - What is truth, and how can we know a statement is true?

- The first issue in epistemology is asking whether reality can even be known.
- *In this regard*, ***Skepticism****(agnosticism)* claiming that **people cannot acquire reliable knowledge** and that any search for truth is in vain.
- A second issue foundational to epistemology is whether all truth is **relative**, or whether some truths are **absolute**.
  - Is all truth subject to change?
  - Is it possible that what is true today may be false tomorrow?
- If the answer is “Yes” to the above questions, such truths are relative

- A major aspect of epistemology relates to the **sources of human knowledge.**
- Central to most people‘s answer to that question is ***empiricism*** (Empirical knowledge i.e. knowledge obtained through the **senses**).
- However, data obtained from the human senses could be both **incomplete** and **undependable**.
- **Fatigue**, **frustration**, and **illness** could distort and limit sensory perception. In addition, there are sound and light waves that are inaudible and invisible to unaided human perception.
- In general, **sensory knowledge is built upon assumptions** that must be accepted by faith in the dependability of human sensory mechanisms.
- The advantage of empirical knowledge is that many **sensory experiences and experiments are open to both replication and public examination**.

- A second important source of human knowledge is **Reason**(***rationalism)***.*it* claim that the **senses alone cannot provide universal, valid judgments** that are consistent with one another
- Also rationalism claims that humans are capable of arriving at certain knowledge independently of sensory experience
- A third source of human knowledge is ***Intuition***- i.e. the direct apprehension of knowledge that is not derived from conscious reasoning or immediate sense perception
- The weakness of intuition is that **it is not a safe method when used alone**. But it's distinct advantage is **helps to bypass the limitations of human experience.**

- A fourth influential source of knowledge is **Revelation**. It is the prime importance in the field of religion.
- It differs from all other sources of knowledge because **it presupposes a transcendent supernatural reality that breaks into the natural order.**
- Some people assert that a major disadvantage of revealed knowledge is that **it must be accepted by faith and cannot be proved or disproved empirically**.
- A fifth source of human knowledge, though not a philosophical position, is **Authority**. It comes from experts or has been sanctified over time as tradition. E.g. textbook, teacher, or reference work.
- If authoritative knowledge is built upon a foundation of incorrect assumptions, then such knowledge will surely be distorted(one sided).

Axiology

- The term Axiology stems from two Greek words-
  - Axios, meaning —value, worth,
  - Logos, meaning —reason/ theory/ symbol / science /study of.
- Axiology is the philosophical study of value(the worth of something).
  - What is a value?
  - Where do values come from?
  - How do we justify our values?
  - What is the relationship between values and knowledge?

❖Axiology deals three areas, namely ***Ethics***, ***Aesthetics***, *and* ***Social/Political*** *Philosophy*.

1.Ethics

- It is also known as **Moral Philosophy**, and it deals with the philosophical study of moral principles, values, codes, and rules,
- It used as standards for determining **what kind of human conduct/action is said to be good or bad, right or wrong**.
- Ethics raises various questions including:

➢ What is good/bad? right/wrong?

➢ Is an action right because of its good end, or its right principle?

➢ Are moral principles universal, conditional or unconditional?

➢ What is the ultimate foundation of moral principles? The supernatural God? Human reason? Mutual social contract?

➢ Why we honor and obey moral rules? For the sake of our own individual benefits?, or for the sake of others?

- Ethics can be grouped into three broad categories: Normative ethics, Meta-ethics, and Applied Ethics.

Normative Ethics

- It deals with moral rules, principles, standards and goals **to evaluate conducts, actions and decisions**.
- **Consequentialism** or **Teleological Ethics**, **Deontological Ethics**, and **Virtue Ethics** are the major examples of normative ethical studies.

Meta-ethics

- It deals with **investigation of the meaning of ethical terms**, as good or bad and right or wrong than with what we think is good or bad and right or wrong.
- Moral Intuitionism/awareness, Moral Emotive, Moral Prescriptivism, Moral Nihilism, and Ethical Relativism are the main examples of meta-ethical studies

Applied Ethics

- It attempts to **explain, justify, apply moral rules, principles, standards**, and positions to specific moral problems, such as capital punishment, euthanasia, abortion, adultery, animal right, and so on.

Aesthetics

- ***Aesthetics*** is the **theory of beauty**. It studies about the particular value of our artistic and aesthetic experiences. It deals with beauty, art, enjoyment, sensory/emotional values, perception, and matters of taste and sentiment.
- The following are typical Aesthetic questions:
  - What is art? beauty? the relation between art and beauty and truth?
  - What is artistic creativity and how does it differ from scientific creativity?
  - Does art have any moral value, and obligations or constraints?

Social/Political Philosophy

- It studies about the **value judgments** operating in a civil society, be it social or political.
- It primarily deal with:
  - What form of government is best?
  - What economic system is best?
  - What makes an action/judgment just/unjust?
  - Does society exist? If it does, how does it come to existence?
  - How are civil society and government come to exist?
  - Are we obligated to obey all laws of the State?
  - What is the purpose of government?

Logic

- *Logic* is the study or **theory of principles of right reasoning**.
- It deals with formulating the right principles of reasoning; and developing scientific methods of evaluating the validity and soundness of arguments. The following are among the various questions raised by Logic:

❖What is an argument; What does it mean to argue?

❖What makes an argument valid or invalid

❖What is a sound argument?

❖What relation do premise and conclusion have in argument?

❖How can we formulate and evaluate an argument?

❖What is a fallacy?; What makes an argument fallacious*?*

Importance of Learning Philosophy

❖ ***"The unexamined life is not worth living".***

- ➢ philosophy provides us with the **tools we need** to critically examine our own lives as well as the world in which we live.
- ➢ philosophy can assist us **to actualize ourselves** by promoting the ideal of self-actualization.
  - ✓ self-actualization is associated with self-fulfillment, creativity, self-expression, realization of one's potential, and being everything one can be. Although philosophy may not necessarily lead to this

- There are many characteristics of self-actualization to whose achievement studying philosophy has a primordial contribution.

1) ***Intellectual and Behavioral Independence***

  – we can learn how to develop and integrate our experiences, thoughts, feelings, and actions for ourselves, and thus how to be intellectually and behaviorally independent.

2) ***Reflective Self-Awareness***

  – Philosophy helps critically examine the essential intellectual grounds of our lives

3) **Flexibility, Tolerance, and Open-Mindedness**:

- we become more tolerant, open-minded, more receptive, and more sympathetic to views that contend or clash with ours.

4) **Creative and Critical Thinking**

- we can learn how to refine our powers of analysis, our abilities to think critically, to reason, to evaluate, to theorize, and to justify.

5) **Conceptualized and well-thought-out value systems in morality, art, politics, and the like**:

- studying philosophy provides us with an opportunity to formulate feasible evaluations of value; and thereby to find meaning in our lives.

CHAPTER TWO

BASIC CONCEPTS OF LOGIC

- The word logic comes from Greek word *logos*, which means sentence, discourse, reason, truth and rule.
- Logic in its broader meaning is the science, which evaluates arguments and the study of correct reasoning.
- It could be also defined as the study of methods and principles of correct reasoning or the art of correct reasoning.

- Logic can be defined in different ways.
  - It is **a science that evaluates arguments.**
  - It is the study of methods for **evaluating whether the premises adequately support** or provide a good evidence for the **conclusions**.
  - It is **a science that helps** to develop the method and principles **to evaluate the arguments of others and construct arguments of own.**

✓ **Logic is the attempt to codify/organize the rules of rational thought**.

- **Logicians explore the structure of arguments** that preserve truth or allow the optimal extraction of knowledge from evidence.
- In logic, as an academic discipline, we study
  - Reasoning itself:
  - Forms of argument,
  - General principles and
  - Particular errors,
  - Methods of arguing.
- **Logic can help us understand what is wrong** or why someone is arguing in a particular way. **Logic** is the organized body of knowledge, or science that evaluates arguments.

❖ **The aim of logic is to develop a system of methods and principles** that we may use as

- ➢ criteria for evaluating the arguments of others and
- ➢ guides in constructing arguments of our own.

Benefit of Studying Logic

"***Logic sharpens and refines our natural gifts to think, reason and argue***" (***C. S. Layman***)

- The study of logic is one of the best ways **to refine one's natural ability to think, reason and argue.**
- The following are some of the major benefits that we can gain from the study of logic:
  - ➢ It helps us **to develop the skill** needed **to construct** sound (good) and fallacy-free arguments of one's own and to **evaluate** the arguments of others
  - ➢ It **provides a fundamental defense** against the prejudiced and uncivilized attitudes

- It helps us **to distinguish** good **arguments** from bad arguments
- It helps us **to understand** and **identify the common logical errors in reasoning;**
- It helps us to understand and identify the **common confusions** that often happen **due to misuse of language**
- It enables us **to disclose ill-conceived policies** in the political sphere, to be careful of disguises, and **to distinguish the rational from irrational**

- Thus, by studying logic, we able **to increase our confidence** when we criticize the arguments of others and when we advance arguments of our own.
- Generally, the **goal of logic** is **to produce individuals who are critical, rational and reasonable both in the sphere of public and private life.**

What is an Argument?

- **Argument** is a systematic combination of two or more statements, which are classified as a **premise/premises** and **conclusion**.
- From logical point of view, arguments is **a group of statements**(premise), which are claimed to provide support for, one of the other, the (conclusion).
- But an argument has a very specific meaning in logic. It does not mean, a mere verbal fight, as one might have with one‘s parent. Because :-
- **First**, ***an argument is a group of statements***. That is, the first requirement for a passage to be qualified as an argument is to combine two or more statements.
- A **statement** is a declarative sentence that has a truth-value of either true or false

Example:-

a. Haile G/Selase is an Ethiopian athlete.
b. Ethiopia was colonized by Germany.
c. Ethiopia is a landlocked country

- Statement (a) and (c) are true, because they describe things as they are and “Truth” is their truth-value. Whereas statement (b) is false because it asserts what is not, and “Falsity” its truth-value.
- However, **there are sentences that are not statements**, and hence should be used to construct an argument. E.g.

A. Would you close the window? (Question)
B. Right on! (Exclamation)
C. Give me your ID Card, Now! (Command)
D. I suggest that you read philosophy texts. (Suggestion)
E. Let us study together. (Proposal)

- Unlike statements, none of the above sentences can be either true or false. Hence, none of them can be classified as statement. As a result, none of them can make up an argument.
- **Second,** the statements that make up an argument are divided into premise(s) and conclusion. That means, **the mere fact that a passage contains two or more statements cannot guarantee the existence of an argument.**
- Hence, an argument is a group statement, which contains **at least one premise and one and only one conclusion.**
- In other word an argument may contain more than one premise but only one conclusion.

- Argument always attempts to justify a claim. Therefore:-
  - The claim that the **statement attempts to justify is known as a *conclusion* of an argument**; and
  - **the statement or statements that supposedly justify the claim is/are known as the *premises* of the argument.**
- An argument can be **good** or **bad depending on the logical and real ability of the premise(s) to support the conclusion.**
- Arguments can be divided into **deductive** and **inductive** arguments.
- A **deductive argument** is thought that the premises provide a ***guarantee*** of the truth of the conclusion.

- In a deductive argument, the premises are intended to provide support for the conclusion that is so strong that, if the premises are true, it would be *impossible* for the conclusion to be false.
- A **deductive argument** is an argument in which the premises are claimed to support the conclusion in such a way that **it is impossible for the premises to be true** and the **conclusion false**.

- An **inductive argument** is a thought that the premises provide reasons supporting the **probable** truth of the conclusion.
- In an inductive argument, the premises are intended only to be so strong that, if they are true, then it is unlikely that the conclusion is false.

- An **inductive argument** is an argument in which the premises are claimed to support the conclusion in such a way that **it is improbable that the premises be true** and **the conclusion false**.

- The difference between the two comes from the **sort of relation** the author or expositor of the argument takes there to be between the premises and the conclusion.
- If the author of the argument believes that the truth of the premises definitely establishes the truth of the conclusion due to definition, logical entailment or mathematical necessity, then the argument is deductive.
- If the author of the argument does not think that the truth of the premises definitely establishes the truth of the conclusion, but nonetheless believes that their truth provides good reason to believe the conclusion true, then the argument is inductive.

- The deductiveness or inductiveness of an argument can be determined by
  - The particular **indicator word** it might use,
  - The actual strength of the inferential relationship between its component statements
  - Its argumentative form or structure.
- A deductive argument can be evaluated by its **validity** and **soundness**.
- An inductive argument can be evaluated by its **strength** and **cogency**
- Deductive argument can be **valid** if it is impossible for the premises to be true and the conclusion false.
- Deductive argument can be **invalid** if it is possible for the premises to be true and the conclusion false

- Inductive argument can be **strong** , if it is improbable for the premises to be true and the conclusion false.
- Inductive argument can be **weak**, if it is probable for the premises to be true and the conclusion false.
- A deductive argument can be **sound** if it is valid and true.
- A deductive argument can be **unsound** if it fails to be valid and true.
- An inductive argument can be **cogent/convincing** if it is strong and probably true,
- An inductive argument can be **uncogent** if it fails to be strong and probably true.

What is premise

- **Premise** refers to the **statement**, which is claimed to provide a **logical support or evidence** to the main point of the argument, which is known as conclusion.
- It is a statement that set forth the reason or evidence, which is given for accepting the conclusion of an argument.
- Generally premise is **claimed evidence**.

What is conclusion

- **It** is a statement, which is claimed to follow from the given evidence (premise). In other words, the conclusion is **the claim that an argument is trying to establish.**
- **Example-1:**
  - All Ethiopians are Africans. (Premise 1)
  - Tsionawit is Ethiopian. (Premise2)
  - Therefore, Tsionawit is African. (Conclusion)

Example-2:

- Some Africans are black.(Premise1)
- Zelalem is an African. (Premise-2)
- Therefore, Zelalem is black. (Conclusion)

- In the above arguments, the first two statements are premises, because they are claimed to provide evidence for the third statement, whereas the third statement is a conclusion because it is claimed to follow from the given evidences.
- The claim that the premises support the conclusion, (and/or that the conclusion follow from the premises), is indicated by the word "**therefore**"

- All arguments may be placed in one of two basic groups:
  - those in which the premises really do support the conclusion (**good** or well-supported arguments)
  - those in which they do not, even though they are claimed to. **(bad** or poorly-supported arguments)
- For example, in the above two examples in the first argument, the premises really do support the conclusion, they give good reason for believing that the conclusion is true, and therefore, the argument is a good one.
- But the premises of the second argument fail to support the conclusion adequately. Even if they may be true, they do not provide good reason to believe that the conclusion is true. Therefore, it is bad argument, but it is still an argument.

How Can We Distinguish Premises From Conclusion And Vice Versa?

- Sometimes identifying a conclusion from premises is very difficult
- The first technique that can be used to identify premises from a conclusion and vice versa is **looking at an indicator word**.
- Arguments contain certain indicator words that provide clues in identifying premises and conclusion.
- Some of conclusion indicators includes**:**
  - ***Therefore*** ,***Wherefore***, ***Accordingly***, ***Provided that***, ***It must be that***, ***We may conclude***, ***Entails that***, ***Hence***, ***It shows that***, ***Thus*** , ***Consequently*** ,***We may infer*** ,***It implies that*** ,***As a result*** ,***So*** ,***It follows that***

- In an argument, the statement that follows the indicator word can usually be identified as the conclusion. **Example:**
  - Women are mammals.
  - Zenebech is a woman.
  - Therefore, Zenebech is a mammal.
- Based on the above rule, the conclusion of this argument is *"Zenebech is a mammal"*. Because it follows the conclusion indicator word i.e. "**therefore**" and the other two statements are premises.
- If an argument does not contain a conclusion indicator, it may contain a premise indicator.

- Here are some typical Premise Indicators**: Since** ,**As indicated by**, **Because** , **wing to**, **Seeing that**, **Given that** , **As** , **For** , **In that** ,**May be inferred from** , **In**, **as much as** , **For the reason that**
- In argument that contains any of the premise indicator words, a statement that follows the indicator word can usually be identified as a premise. **Example:**
  - You should avoid any form of cheating on exams **because** cheating on exams is punishable by the Senate Legislation of the University.
- Based on the above rule, the premise of this argument is "cheating on exams is punishable by the Senate Legislation of the University" because it follows the premise indicator word "because",

- One premise indicator not included in the above list is "**for this reason**". This indicator is special in that it comes immediately after the premise it indicates and before the conclusion.
- In the middle place between the premise and the conclusion, "**for this reason**" can be both premise and conclusion indicator.
- The statement that comes before "**for this reason**" is the premise of an argument and the statement that comes after "**for this reason**" is the conclusion.

- **Sometimes a single indicator can be used to identify more than one premise**. Consider the following argument:
  - Tsionawit is a faithful wife, for Ethiopian women are faithful wives and Tsionawit an Ethiopian.
- The premise indicator "**for**" goes with both premises "Ethiopian women are faithful wives" and "Tsionawit is an Ethiopian". By process of elimination, "Tsionawit is a faithful wife" is the conclusion.

- Sometimes you may have **an argument without conclusion and premise indicator word**. When this occurs, the reader/ listener must ask himself or herself such questions as:
  - What single statement is claimed (implicitly) to follow from the others?
  - What is the arguer trying to prove?
  - What is the main point in the passage?
- The answers to these questions should point to the conclusion.
- **Example:**
  - Our country should increase the quality and quantity of its military. Ethnic conflicts are recently intensified; boarder conflicts are escalating; international terrorist activities are increasing.

- The main point of this argument is to show that the country should increase the size and quality of its military. The following is the standard form of this argument:
  - Ethnic conflicts are recently intensified. (P-1)
  - Boarder conflicts are escalating. (P-2)
  - International terrorist activities are increasing. (P-3)
  - Thus, the country should increase the quality and quantity of its military. (C)

- **If a statement has nothing to do with the conclusion** or, for example, simply makes a passing comment, **it should not be included within the context of the argument**. **Example:**
  - Socialized medicine is not recommended because it would result in a reduction in the overall quality of medical care available to the average citizen. In addition, it might very well bankrupt the federal treasury. **This is the whole case against socialized medicine in a nutshell**.
- The conclusion of this argument is “Socialized medicine is not recommended” and the two statements following the word, “because“” are the premises
- The last statement makes only a passing comment about the argument itself and is therefore neither a premise nor a conclusion.

Techniques of Recognizing Arguments

- Not all passages that contain two or more statements are argumentative. There are various passages that contain two or more statements but are not argumentative.
- Argumentative passages are distinguished from such kind of passages by their primary goal: proving something.

Recognizing Argumentative Passages

- In order to evaluate arguments we need to
  - understand the **nature of arguments**
  - understand **what argument is not**, because not all passages contain argument.

- Two conditions must be fulfilled for a passage to purport to prove something:

1. At least **one of the statements** must claim to present **evidence or reasons**.
2. **There must be a claim** that the alleged evidence or reasons supports or implies something- that is, a claim that something follows from the alleged evidence.

❖ The **first condition refers to premises** as it tries to provide or claim to provide reasons or evidences for the conclusion; and the **second condition refers to a conclusion**

- The first condition expresses a **factual claim,** and deciding whether it is fulfilled often falls outside the domain of logic.
- Thus, most of **our attention will be concentrated on whether the second condition is fulfilled**. The second condition expresses what is called an **inferential claim** The **Inferential Claim** is a passage that expresses a certain kind of reasoning process- that **something supports or implies something or that something follows from something.**
- It is an objective feature of an argument **grounded in its language or structure**.

❖An inferential claim can be either **explicit** or **implicit**.

An explicit inferential claim

– **It exists if there is an indicator word** that asserts an explicit relationship between the premises and the conclusions. e.g.

- Gemechu is my biological father, because my mother told so.

❖the word "**because**" expresses the claim that evidence supports something.

An implicit inferential claim

- It exists if there is an inferential **relationship** between the statements in a passage, but the passage **contains no indicator words**. e.g.
  - The genetic modification of food is risky business. Genetic engineering can introduce unintended changes into the DNA of the food-producing organism, and these changes can be toxic to the consumer.
- The **mere occurrence of an indicator word is by no means a guarantee** for the presence of an argument.
- Thus, we need to make sure that the existing indicator word is used to indicate a premise or a conclusion

❖ . **Example:**

- Since Edison invented the phonograph, there have been many technological developments.
- Since Edison invented the phonograph, he deserves credit for a major technological development.

- In the first passage the word "since" is used in a **temporal sense**. It means "**from the time that**." Thus, the 1st passage is not an argument. In the second passage "since" is used in a **logical sense**, and so the passage is an argument.
- Therefore, in deciding whether a passage contains an argument **one should try to insert mentally some indicators** words among the statements **to see whether there is a flow of ideas among the statements**.

Recognizing Non-argumentative Passages

- Non-argumentative passages are **passages, which lack an inferential claim.**
- for a passage to be an argument, it should contain not only premises and a conclusion but also an inferential claim or a reasoning process.
- Some of the most important forms of non-argumentative passages includes the following.

1. Simple Non-inferential Passages

- It contain statements that could be premises or conclusions (or both), but **what is missing is a claim** that any potential premise supports a conclusion or that any potential conclusion is supported by premises.
- It include statements of **warnings**, **advice**, **belief** **or opinion, loosely associated statements, and reports**.

2. Expository Passages

- It **begins with a topic sentence** followed by one or more sentences that develop the topic sentence. If the objective is not to prove the topic sentence but only to expand it or elaborate it, then there is no argument.
- Expository passages differ from simple non-inferential passages (such as warnings and pieces of advice) in that **many of them can also be taken as arguments.**
- If the purpose of the subsequent sentences in the passage is not only to flesh out the topic sentence but also to prove it, then the passage is an argument.
- If the topic sentence makes a claim that many people do not accept or have never thought about, then the purpose of the remaining sentences may be both to prove the topic sentence is true as well as to develop it, then the passage is an argument.

3. Illustrations

- It is an expression involving one or more examples that is **intended to show what something means or how it is done.**
- Illustrations are often confused with arguments because many **illustrations contain indicator words such as "thus". Example:**
  - Chemical elements, as well as compounds, can be represented by molecular formulas. Thus, oxygen is represented by "O_2", water by "H_2O", and sodium chloride by "NaCl".
- This passage is not an argument, because it makes no claim that anything is being proved. The word "thus" indicates how something is done - namely, how chemical elements and compounds can be represented by formulas.

- Illustrations can be taken as arguments. Such arguments are often called **arguments from example.** Here is an instance of one:
  - Although most forms of cancer, if untreated, can cause death, not all cancers are life-threatening. For example, basal cell carcinoma, the most common of all skin cancers, can produce disfigurement, but it almost never results in death.

4. Explanations

- It is an expression that attempts to clarify, or describe such alike why something is happen that way or why something is what it is.
- **Example:**
  - Cows digest grass while humans cannot, because their digestive systems contain enzyme not found in humans.

- Every explanation is composed of two distinct components:
  - **Explanandum:-** it is the statement that describes the event or phenomenon to be explained,
  - **Explanans:-** is the statement or group of statements that purports to do the explaining.
- In the above example, the explanandum is the statement "Cows digest grass while humans cannot" and the explanans is "their [cows'] digestive systems contain enzyme not found in humans."
- The purpose of explanans is **to show why something is the case**, whereas in an argument, the purpose of the premises is **to prove that something is the case.**

- Moreover, in explanation, we precede backward from fact to the cause whereas in argument we move from premise to the conclusion.
- Thus, to distinguish explanations from arguments, first identify the statement that is either the explanandum or the conclusion
- However, some passages can be interpreted as both explanations and arguments.

- **Example:**
  - Women become intoxicated by drinking a smaller amount of alcohol than men because men metabolize part of the alcohol before it reaches the bloodstream, whereas women do not.

Conditional Statements

- They are an “if . . . then . . .” statements.
- Every conditional statement is made up of two component statements.
  - **antecedent (if-clause)**, The component statement immediately following the “if”
  - **consequent (then-clause)** the one following the “then”
- However, there is an occasion that the order of antecedent and consequent is reversed.
- Conditional statements are not arguments, because **in a conditional statement there is no claim** that either the antecedent or the consequent presents evidence
- Also conditional statements are not evaluated as true or false without separately evaluating the antecedent and the consequent.

- A conditional statement may serve as either the premise or the conclusion (or both) of an argument. examples:
  - If he is selling our national secretes to enemies, then he is a traitor.
  - He is selling our national secretes to enemies.
  - Therefore, he is a traitor.
- The relation between conditional statements and arguments may now be summarized as follows:

I. A single conditional statement is not an argument.

II. A conditional statement may serve as either the premise or the conclusion (or both) of an argument.

III. The inferential content of a conditional statement may be re-expressed to form an argument.

- Conditional statements are especially important in logic (and many other fields) because they express the relationship between **necessary** and **sufficient conditions. example**
  - If X is a dog, then X is an animal.
  - If X is not an animal, then X is not a dog.
- The first statement says that being a dog is a sufficient condition for being an animal, and the second that being an animal is a necessary condition for being a dog.
- However, a little reflection reveals that these two statements say exactly the same thing.
- Generally, non-argumentative passages may contain components that resemble the premises and conclusions of arguments, but they do not have an inferential claim.

- However, some passages like expository passages, illustrations, and explanations can be interpreted as arguments; and the inferential contents of conditional statements may be re-expressed to form arguments.
- Therefore, in deciding whether a passage contains an argument, you should look for three things:
  a) Indicator words such as “therefore,” “since,” “because,” and so on;
  b) An inferential relationship between the statements; and
  c) Typical kinds of non-arguments.
- But the mere occurrence of an indicator word does not guarantee the presence of an argument. You must check that the conclusion is supported by one or more of the premises.
- Also keep in mind that in many arguments that lack indicator words, the conclusion is the first statement.

Differentiating Deductive and Inductive Arguments

- There are three factors that influence the decision about the deductiveness or inductiveness of an argument‘s inferential claim. These are:
  1) The occurrence of special indicator words,
  2) The actual strength of the inferential link between premises and conclusion, and
  3) The character or form of argumentation the arguers use.
- Words like “certainly", 'necessarily”, “absolutely”, and “definitely” indicate that the argument should be taken as deductive.
- words like, “probable”, “improbable” “plausible” “implausible”, “likely", “unlikely” and “reasonable to conclude” suggest that an argument is inductive.
- The occurrence of an indicator word is not a certain guarantee for the deductiveness or inductiveness of an argument unless it is supported by the other features

- If the conclusion actually does follow with **strict necessity** from the premises, the argument is clearly **deductive**
- If the conclusion of an argument does not follow with strict necessity but does follow **probably**, it is usually best to interpret it as **inductive argument.**

- **Example-1:**
  - All Ethiopian people love their country.
  - Debebe is an Ethiopian.
  - Therefore, Debebe loves his country
- **Example-2:**
  - The majority of Ethiopian people are poor.
  - Alamudin is an Ethiopian.
  - Therefore, Alamudin is poor.

- The character or form of argumentation the arguers use refers looking at some deductive or inductive argumentative forms.

Instances of Deductive Argumentative Forms

- Five examples of such forms or kinds of argumentation are arguments based on **mathematics**, arguments from **definition**, and **syllogisms**.

Argument based on mathematics

- Arguments in **pure mathematics** are **deductive** and arguments that depend on **statistics** are usually best interpreted as **inductive**.
- Statistical arguments are based on **random sampling** of data gathering, it is impossible to arrive at absolutely certain conclusion.

Arguments based on definition

- It is an argument in which the conclusion is claimed to depend merely up on the **definition of some words or phrase** used in the premise or conclusion. example,
  - Angel is **honest**; therefore, Angel tells the truth.
  - Kebede is a physician; therefore, he is a doctor.

Arguments based on Syllogisms

- ***Syllogisms*** are arguments consisting of exactly two premises and one conclusion.
- Syllogisms can be categorized into three groups; **categorical**, **hypothetical**, and **disjunctive** syllogism.

- **Categorical syllogism**: It is consisting of exactly two premises and one conclusion and the statement begins with words like "**all**"," "**no**" and "**some**". **Example:**
    - All Egyptians are Muslims.
    - No Muslim is a Christian.
    - Hence, no Egyptian is a Christian
- **Hypothetical syllogism:** It has a conditional statement for one or both of its premises. **Example:**
    - If you study hard, then you will graduate with Distinction.
- **Disjunctive syllogism**: it is a syllogism having a disjunctive statement. (i.e. an "either … or" statement.)
- e.g. Rewina is either Ethiopian or Eritrean.

  Rewina is not Eritrean.

  Therefore, Rewina is Ethiopian.

Instances of Inductive Argumentative Forms

- Some examples of such forms or kinds of argumentation are arguments based on **predictions**, **analogy** **generalizations** , **authority**, **signs**, and **causal inferences**
- **In Prediction** the premises deals with some known event in the present or the past and the conclusions moves beyond this event to some event to relative future. For example,
  - Certain clouds develop in the center of the highland, therefore, rain will fall within twenty-four hours.
- **An argument from analogy** is an argument that depends on the existence of an analogy or **similarity between two things** or state of affairs. **Example:**
  - The Encyclopedia Britannica has an article on culture. The Encyclopedia Americana, like Britannica, is an excellent work. Therefore, the Americana probably also has an article on culture.

- **An inductive generalization (An argument based on statistics)** is an argument that proceeds **from the knowledge of selected sample to some claim about the whole group**. Example**:**
  - There are 45 students in this class. I have evaluated the answer sheets of 20 students and all of them scored above 85%. It implies that all students of this class are smart.

- **An argument from authority** is argument based on **citation, interview, or witness of a person who has a better position** or access to the required qualification. **Example:**
  - According to Ato Tewodros who is a lawyer in Hawassa city, Kebede committed murder because an eye witness testified to that effect under oath.

- **An argument based on signs** is an argument that proceeds from the knowledge of a **certain sign** (may be it is a traffic sign, a trademark, a cautionary mark, a symbol,) to a knowledge of the thing or situation symbolized by the sign. **Example:**
  - The package material says that "keep it out of the reach of children." Therefore, this package must consist of some sort of medicine
- **An argument based on causation** is an argument that proceeds from **the knowledge of a cause to knowledge of the effect**, or **conversely**, from the **knowledge of an effect to the knowledge of a cause**. **Example:**
  - The cloud is becoming dark and the thunder is roaming. So, let us go home quickly, the rain is inevitable.

- From the knowledge that a bottle of water had been accidentally left in the freezer overnight, someone might conclude that it had frozen (cause to effect).
- Conversely, after tasting a piece of chicken and finding it dry and tough, one might conclude that it had been overcooked (effect to cause).
- Because specific instances of cause and effect can never be known with absolute certainty, one may usually interpret such an argument as inductive.

- We have to take into consideration that deductive argument not always proceeds from the general to the particular and inductive arguments proceed from the particular to the general.
- This is because there are some deductive or inductive arguments that proceed from the general to the general or from the particular to the particular or even from the particular to the general.
- For example, here is a deductive argument that proceeds from the particular to the general:
  - Three is a prime number. Five is a prime number. Seven is a prime number. Therefore, all odd numbers between two and eight are prime numbers.

- Here is an inductive argument that proceeds from the general to the particular:
  - All emeralds previously found have been green. Therefore, the next emerald to be found will be green.
- Here is an deductive argument that proceeds from particular to general
  - The members of Mohammed's family are Kedija, Kemal and Leyla. Kedija wears glasses. Kemal wears glasses. Leyla wears glasses. Therefore, all members of Mohammed's family wear glasses.

CHAPTER THREE
LOGIC AND LANGUAGE

Philosophy of Language

- According to **Semiotics**(the study of sign processes in communication), language is the **manipulation and use of symbols** in order to draw attention to signified content.
- **Philosophy of language is the reasoned inquiry into the nature, origins, and usage of language.**
- Philosophy of language has been concerned with four central problems: the **nature of meaning**, **language use**, **language cognition**, and the **relationship between language, logic and reality**.
- It poses questions like
  - What is meaning? How does language refer to the real world?
  - Is language learned or is it innate?
  - How does the meaning of a sentence emerge out of its parts?

- **Ordinary language serves** various functions in our day-to-day life. These functions are almost unlimited. Thus, among other things, individuals use language:
  - To tell stories,
  - to ask questions,
  - to guess at answers,
  - to form hypotheses,
  - to launch verbal assaults,
  - to tell jokes,
  - to give directions,
  - to sing songs,
  - to issue commands and to greet someone and so on.

- In general, language has three linguistic functions namely, **expressive** (emotive), **directive** and **cognitive** (informative) function.
- Of these functions of language, the **cognitive function of language is a relevant and an important for logic**

A. Expressive (Emotive) Function

- It is a function of language which is important for individuals **to express their feelings or emotions**. Both positive and negative feelings. examples
  - ✓ She is smart —
  - ✓ I like my English teacher
  - ✓ I hate him.
  - ✓ I dislike Abebe.

B. Directive Function

- It gives direction to the speaker or writer in order **to pass orders**, commands or instructions to others.

Examples:

- ✓ What is your name? —
- ✓ Leave me alone!
- ✓ Do not close that door! —
- ✓Give me your pen!

C. Cognitive (Informative) Function

- It used **to convey information** about the world's objective realities. For Example:
  - ✓Ethiopia has its own prestigious airlines. (True)
  - ✓The capital city of the regional state of Afar is Hawassa. (False)
  - ✓Lake Tana is found in Amhara region. (True)

- The reason why we study about definitions is
  - ✓ words have meanings.
  - ✓ Meanings are conveyed through definitions
  - ✓ Some times the meaning of certain words in the argument is **vague or ambiguous**.
- On the other hand logic evaluates arguments, and an argument consists of a group of statements, and statements are made up of words.
- Meaning of **term**
  - Term is any word or arrangement of words that may serve as the **subject of a statement**.
  - Terms consist of **proper names**, **common names**, and **descriptive phrases**.

Proper Names	Common Names	Descriptive Phrases
• Ayele	house	The first president of Ethiopia
• John	Person	The king of England
• South Ethiopia	Animal	Those who study hard

- Words that are not terms include verbs, non-substantive adjectives, adverbs, prepositions, conjunctions, and all non-syntactic arrangements of words. Examples
  - dictatorial, run quickly, above and beyond, moreover, craves, cabbages, into again, the forest.

The Intension and Extension meaning of Terms

- The **intentional meaning**, is also known as **connotation**, refers to **the qualities or attributes that the term connotes.**
- The **extensional meaning**, is also called **denotation**, consists of the **members of the class** that the term denotes. **Examples:**
  - **"Inventor"** means a person who is, clever, intuitive, creative and imaginative.
  - **"Inventor"** means such as Thomas Edison, Alexander Graham Bell, and Samuel F.B. Morse.
- The meaning of the first example is based on its attributes, qualities or essential characteristics.
- The meaning of the second example is based on its **class members.** This is because this sentence provides lists of individuals who are the member of the class of the term being defined - inventor

- **The denotation of a term remains the same from person to person**. For example,
  - The denotation (extensional meaning) of human being refers to all human being in the universe, on which everybody agrees.
- This term either constantly fluctuating as some human beings die and others are born or it is presumably constant because it denotes all human beings, past, present, or future.
- **Denotation of a term doesn't remain the same from time to time**? For example,
  - 'the current king of Ethiopia. Is there any king in Ethiopia now? No. Therefore, this term denotes an **empty extension**.

- An empty extension is said to denote: the empty or "null" class - the class that has no members.
- You may recognize from the above example that emperor Haile Sillasie was the king of Ethiopia in the past.
- Therefore, 'the current king of Ethiopia', changed over the passage of time.
- Thereby, things that do not have current objective reference include myth, spiritual realities, extinct (died out) creatures, historical events, and so on do not have extension. For instance, **Dinosaur**, **Dragon, Satan, fictional and mythical stories**, etc.
- **They do not have objective references that could serve as a living testimony for their existence.**

- Our knowledge of these things is based on their properties and but not based on their living class members' characteristics.
- However, the intentional meaning of a term serves as the criteria for deciding what the extension consists of. That is why **intentional meaning determines extensional meaning**.
- **Example:**
  - Satan is an evil sprit that causes people to suffer.
  - Dinosaur is an extinct reptile of the Mesozoic era.
- **Terms** may be put in the order of depending on the **increase** or **decrease** of attributes and sets of things added to the term being defined.
- **Increasing intension, increasing extension, decreasing intension, and decreasing extension**

- If the member of a class of things decrease, then the attribute of particular objects increase. The order of **decreasing intension** is the reverse of that of increasing intension but not always.
- If the member of a class size gets larger with each consecutive term, then the attribute of the particular object decreases. **Decreasing extension** is the reverse of this order. **Example:**
  - ***Increasing Intension:*** *Africa, East Africa, Ethiopia, Addis Ababa.*
  - ***Decreasing Intension:*** *Addis Ababa, Ethiopia, East Africa, Africa.*
  - ***Increasing Extension:*** *Addis Ababa, Ethiopia, East Africa, Africa.*
  - ***Decreasing Extension:*** *Africa, East Africa, Ethiopia, Addis Ababa.*

- **Definitions and Their Purposes**

➢ Many logicians define the term ‘definition’ as **a group of words that assigns a meaning to some words or group of words.**

➢ Accordingly, every definition consists of two parts: the **definiendum** and the **definiens.**

➢ The Latin term **definiendum** is the word or group of words that is supposed to be defined, and the Latin term **definiens** is the word or group of words that does the defining or gives a meaning to the definiendum.

- **Example:**
  - ➢ **diffident** means lacking confidence in oneself.

➢ In this definition, the term “diffident” is the **definiendum**, and everything that comes the word “means” (lacking confidence in oneself; characterized by modest reserve) is the **definiens.**

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- The most important **objective of definition** is to **provide meaning for the terms that are not clearly understood** in the context of other terms.

- **Purposes of Definitions in logic**

- Definition helps us
  - ✓To **avoid confusion** or **misleading use of words** and phrases;
  - ✓To **avoid obscurity**(insignificance),**unintelligibility**(un clearness), subjectivity(bias) , and complexity of words;
  - ✓To **introduce new words** and to persuade(ecourage) others;
  - ✓To **avoid useless controversies**, disputes, disagreements and conflicts over the meaning of terms ,words, phrases and passages which considered as an argument;
  - ✓To **prevent incorrect reasoning**; and to develop the ability to reason logically.

- There are five different types of definitions, namely, **Stipulative, Lexical, Précising, Theoretical, and Persuasive Definitions.**

A. Stipulative Definition

- Stipulative definition **assigns a meaning to a word for the first time.** This may involve either **creating a new word or giving a new meaning to an old word**.
- The **purpose of a stipulative definition** is to **introduce unusual or unfamiliar words,** which have **no pervious meaning** in the language.

- Stipulative definition is used **to introduce new meanings to some newly discovered phenomenon or things** in the area of archeological findings, and innovations, such as new modes of behaviors, new kinds of fashion clothes, new dances, new food inventions, etc

- **Example:**

  - A few years ago the attempt was made at a certain zoo to crossbreed male tiger and female lion by biologists. As a result of this, the offspring was born from male **Tiger** and female **lion**. Thus, this suggests a need for assigning a new name.
  - So, they may call the new offspring "**Tigon**" taking the first three letters from tiger (tig) and the last two letters from lion (on).

- Another use of stipulative definitions is **to set up Secret Codes.** It was (and still is) common to give a secret code for the military invasion.

- **Examples:**
  - "**Operation Barbarosa**" was the name the code Germans gave to the invasion of Russia;
  - "**Operation Desert Storm**" was the code name given to the military invasion of Iraq.
  - "**Operation Sun Set**" was the code name given to the military victory of Ethiopia armed force against Eritrea, which is the most recently.

B. Lexical Definition

- A lexical definition is used **to report the meaning that a word already has in a language**. **Dictionary definitions** are all the best examples of lexical definitions.
- The **purpose** of a lexical definition is **to eliminate ambiguity** that would arise over the improper use of word to its context.
- A word is **ambiguous** if it has more than one meaning.
- Some words that are subjected to ambiguous usage are: "**light**", "**bank**", "**sound**", "**right**" , "**race**", "**mad**", "**defuse**" , "**humanity**" ,etc. **Examples:**
  - "**Light**," can mean light in weight or radiant energy.
  - "**Bank**" can mean a finical institution or the edge of river.

- A word is **vague**
  - **If it is so imprecise and unclear**, that is, it is impossible to tell about the applicability of the word.
  - If it is impossible to tell whether the word applies to them or not.
- Words such as "**love**", "**happiness**", "**peace**", "**fresh**", "**normal**", "**rich**", "**poor**", "**polluted**" etc are vague words.
- It is difficult to draw a line or a boundary between the things to which those words apply or do not apply.
- We can not tell with any degree of precision who rich is or how we counted as rich.

C. Précising Definition

- A précising definition provides a more **precise, specific, exact and restricting meaning to a term**.
- Its use is **to reduce vagueness** of the term.
- For example, the word **'poor'** is a vague word. Suppose you are an administrator of one humanitarian organization and want to give a direct financial assistance to the poor.
- Therefore, we may define Poor as: **"Poor"** means a person having a monthly income of less than Birr 150 . This is an example of a précising definition.

- Précising definition used to clarify a highly systematic context such as science, mathematics, medicine or law. Examples:-
  - “force”, “energy”, “acid”, “element”, “number” “equality”, “contract”, and “agent”
- A précising definition differs from a stipulative definition in that
  - Stipulative definition involves a purely **arbitrary assignment of meaning**
    - The assignment of meaning in a précising definition is not at all arbitrary.
- Care must be taken that the meaning in a précising definition is **appropriate and legitimate for the context** within which the term is to be employed.

- **D. Theoretical Definition**

➢A **theoretical definition** assigns a meaning to a word **by suggesting a theory** that gives a certain characterization to the entities that the term denotes.

➢In other words, it gives us the way of seeing or conceiving (imagining) theoretical (that is, **non-experimental** or **non- practical**) entity.

➢Fore example there is no any way to see or view "heat" except in theoretical way.

➢Not all theoretical definitions are associated with science. Many terms in philosophy, such as "substance", "form", "cause", "change", "idea", "good", and "mind", have been given theoretical definitions.

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- Most of the major philosophers in history have given these terms their own peculiar theoretical definitions, examples:
  - ✓ **“Good”** means the greatest happiness of the greatest number provided the underpinnings for his utilitarian theory of ethics.
  - ✓ **“Substance”** means something that up supports different qualities.
  - ✓ **“Justice”** means to give each individual what he or she deserves his or her due.

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E. Persuasive Definition

- The purpose of Persuasive definition is:
  - ✓ **persuading or convincing** listeners or readers over a certain issue;
  - ✓ **changing or influencing the attitude** of others towards one's own point of view and to win the acceptance of audience.
- The method employed to develop persuasive definition is to **use emotionally charged or value laden words** and phrases for the purpose of inciting, striving or arousing the emotion of audiences to make them to accept the definition.

- This definition may **exaggerate** or **diminish** the definiendum.
- Here are some examples of opposing pairs of persuasive definitions:
  - **"Abortion"** means the ruthless murdering of innocent human beings.
  - **"Abortion"** means a safe and established surgical procedure whereby a woman is relieved of an unwanted burden.

Techniques of Definition and Their Relation with Kinds of Definitions

1. Techniques of Extension (Denotative) Definitions

- Extensional definitions provide meaning to a term **by listing examples** to the term which is being defined - definiendum. It is indicating the members of the class
- There are at least three ways of indicating the members of a class:
  - ✓ **by pointing physically** to them,
  - ✓ by **naming them individually**, and
  - ✓ **by naming them in groups**.

- Thus, based on this we identify three different kinds of definitions, namely, **demonstrative** or **ostensive** definitions, **enumerative** definitions, and definition by **subclass** respectively

- **Demonstrative (Ostensive) Definition**

- It assigns a meaning to a term **by pointing physically** to the thing or object to be defined.
- It is probably **the most primitive** form of definition. This definition might be either partial in a sense that when we point to only some part of things or complete
- Therefore, ostensive definition attempts to define a term by **showing the object physically**.

- **Examples:**
  - ✓**“Chair”** means this and this and this—as you point to a number of chairs, one after the other.
  - ✓ **“House”** means this one—using a picture demonstrating a house.

➢ Demonstrative definitions differ from the other kinds of definitions in that **the definiens is constituted at least in part by a gesture**—the gesture of pointing.

➢ Since the definiens in any definition is a group of words, however, **a gesture, such as pointing, must count as a word**.

➢ While this conclusion may appear strange at first, it is supported by the fact that the “words” in many sign languages consist exclusively of gestures.

Enumerative Definition

- It the members of the class that the definiendum denotes individually.
- **It** assigns a meaning to a term **by naming individually the members of the class** the term denotes. Like demonstrative definitions, they may also be either partial or complete.
- It is **carried out through listing some or all of the objects or entities** symbolized by the definiendum. **Examples:**
  - ✓ **"Actor"** means a person such as Nick Nolte, Al Pacino, or Richard Gere.
  - ✓ **"Athlete"** means a person such as Hail G/sillassie, Kenensia Bekele, Derartu Tulu, etc.

Definition by Subclass

- A **definition by subclass** assigns a meaning to a term **by naming subclasses of the class** denoted by the term.
- Definition by subclass assigns a meaning to a term by naming either partial or complete.

- **Examples:**
  - ✓ **“Tree”** means an oak, pine, elm, spruce, maple, and the like.
  - ✓ **“Flower”** means a rose, lily, daisy, geranium, zinnia, and the like.
  - ✓ **“Professional person”** means a person such as a doctor, or an architect.

2. Techniques of Intentional (Connotative) Definitions

- Intentional or connotative definition provides a meaning to a term by describing the essential characteristics or features possessed by the term being defined.

- Kinds of intentional definitions includes:
  - **Synonymous Definition,**
  - **Etymological Definition,**
  - **Operational Definition, and**
  - **Definition by Genus and Difference.**

- **A. Synonymous Definition**
- A **synonymous definition** is one in which
  - ➢ The definiens is a single word that connotes the same attributes as the definiendum.
  - ➢ The **definiens connotes exactly the same attributes as the definiendum**.
- **Examples:**
  - ✓ **"Physician"** means doctor.
  - ✓ **"Intentional"** means willful.
  - ✓ **"Observe"** means see.

➢ Therefore, we can interchangeably use the definiens and the definiendum of synonymous definitions.

B. Etymological Definition

- An etymological definition assigns a meaning to a word **by revealing the word's root or ancestry** in both its own language and other languages.
- That is why most ordinary English words have ancestors either in Old or Middle English as well as are derived or come from some other language such as Greek, Latin, or French, etc.

- **Examples:**
  - The word **"Democracy"** is derived from the two Greek words, *'demos'* and *'crates'*, which means people and power respectively.
  - The English word **"License"** is derived from the Latin verb *licere*, which means to be permitted, and
  - The English word **"Captain"** derives from the Latin noun *caput* which means head.

C. Operational Definition

- It assigns a meaning to a word **by specifying certain experimental procedures** and it is carried out **by performing the actions, operations, activities and procedures** that the word implies .
- It can be identified by words "**if and only if**" which is equivalent to '**necessary** and **sufficient** condition.'

- **Examples:**

✓ One substance is **"Harder than"** another if and only if one scratches the other when the two are rubbed together.

✓ A solution is an "Acid" if and only if litmus paper turns red when dipped into it.

D. Definition by Genus and Difference

- It assigns a meaning to a term **by identifying two things**: one ‘genus’ term and one or more ‘difference’ words.
- In logic, “**genus**” means **a relatively larger class**, and “**species**” means **a relatively smaller subclass** or smaller of the genus.
- For instance, if you may speak ‘animal’ as a genus, and ‘mammal’ as species or if you take ‘mammal’ as genus and ‘feline’ can be species.
- Again, if you take ‘feline’ as genus, ‘tiger’ (which is the subclass of the class of cat family), can be the species.

- Where as the "specific difference," or **"difference" is the attribute or attributes that distinguish the various species within a genus**.
- For example, the specific difference that distinguishes tigers from other species in the genus feline (a cat family) would include the attributes of being large, striped, ferocious (aggressive), and so on.
- Therefore, these aforementioned qualities of tiger are called the 'specific difference' or simply 'difference' of tiger.
- **When the genus is qualified, we get the 'species'** (that is, the word to be defined).

- A definition by genus and difference is easy to construct.
- The step is Simply select a term that is more general than the term to be defined, and then narrow it down so that it means the same thing as the term being defined. Example

Species	Difference	Genus
• Ice	means	frozen water.
• Husband	means	married man.
• Mother	means	female parent
• Tiger	means	a large, stripped and ferocious feline

- **Lexical definitions are typically definitions by genus and difference**, but they also often include etymological definitions.
- **Operational definition** can serve as the method for **constructing stipulative, lexical, précising, and persuasive definitions**, but it could not be used to produce a complete lexical definition.
- Synonymous definition may be used to produce only lexical definitions.

- Synonymous definition cannot be used to produce stipulative definitions because the definiendum must have a meaning before a synonymous definition.
- Also Synonymous can not be used to construct précising, theoretical, and persuasive definitions because the definiens of synonymous definitions contains no more information than the definiendum.
- In other words, the definiens of a synonymous definition adds nothing new to the definiendum.

- **Criteria for Lexical Definitions**

Rule1:A Lexical definition should match to the standards of proper grammar.

- A definition should be **grammatically correct**. Definitions that are grammatically incorrect create disagreements and disputes among individuals over the meaning of terms.
- **Examples:** Consider the following definitions that are grammatically *incorrect* are as follows:
  - ✓ **Vacation** is when you don't have to go to work or school.
  - ✓ **Furious** means if you're angry at someone.
- **The corrected versions are:**
  - ✓ **"Vacation"** means a period during which activity is suspended from work or school.
  - ✓ **"Furious"** means a condition of being angry.

Rule 2:A lexical definition should convey or communicate the essential meaning or characteristics of the word being defined.

- Thus, a correct definition attempts to **point out the attributes that are essential** to the designation of things as the members of the relevant group. **Example:**
  - **"Human being"** means a featherless biped.
  - This definition fails to says nothing about the important attributes that distinguish human beings from the other.
  - A correct and adequate definition would be "Human being" means "the rational animal that has the capacity to reason and to speak" and not as a featherless biped.

- **Rule 3*:* A lexical definition should be neither too broad nor narrow.**

➢If a definition is too broad, the definiens includes too much; if it is too narrow, the definiens includes too little.

➢In other words, **a good or correct definition should be proportionate**, that is, the extent of the defining word (definiens) should be equal to the extent of word to be defined (definiendum),

➢ A definition is too broad if the definiens applies to things to which the definiendum does not. In a too broad definition, the definiendum is less than the definiens.

- A definition is too narrow if the definiendum applies to things to which the definiens does not.
- In a too narrow definition the definiendum is greater than the definiens.

Examples: The following definitions are broad

- ✓ **"Birds"** means any warm-blooded animals having wings.
- ✓ **"Pen"** means an instrument used for writing.

- In the first example, the phrase "any warm-blooded animal having wings" would include bats, and bats are not birds.
- In the second example, the phrase "an instrument used for writing " includes things like chalk, pencil, marker, pen, etc.

Examples: The following definitions are narrow

- ✓**"Bird"** means warm-blooded, feathered animal that can fly.
- ✓**"Gun"** means a tool used in the battle for defending the enemy.

➢These two definitions would be too narrow.

- ➢The first definition would exclude ostriches, which cannot fly.
- ➢In the second definition the term gun is defined using a few attributes, that is, the definiens fails it include different attribute of gun.

- **Rule 4: A lexical definition should avoid circularity**

➢A circular definition presents the meaning of a word: either by using the same word with the same meaning in the definiens, or by using grammatical variation of the same word (the definiendum) in the definiens. **Examples:**

➢**"Religious "** means any one engaged in religious activity.

➢**"Scientist"** means anyone who engages in science.

➢**A circular definition cannot provide any useful additional information** to the word being defined or their definiendum becomes visible in the

Rule 5: A lexical definition should not be negative when it can be affirmative.

- Of the following two definitions, the first one negative, and the second affirmative: Example
  - ✓**"Concord"** means the absence of discord.
  - ✓**"Concord"** means harmony.
- Thus, definition should explain what a term does mean rather than what it does not mean.

- **Some words, however, are intrinsically negative**. For them, a negative definition is quite appropriate. Example
  - ✓**"Bald"** means lacking hair.
  - ✓**"Darkness"** means the absence of light.
  - ✓ **"Death"** means the end of life

- **Rule6:A lexical definition should not be expressed in figurative, obscure, vague, or ambiguous language.**

➢**A definition is figurative when it involves and based on metaphors.** A metaphor is a word or a phrase used in the **imaginative way**.

➢A definition is figurative when it also tends to paint a picture (describes the thing in a particular way) instead of exposing the essential meaning of a term.

➢**Example1:** If you define ‘architecture’ as frozen music, you are expressing it in figurative language.

➢**Example 2:** If you define ‘camel’ as ship of the desert you are also expressing it in figurative language.

- **A definition is Obscure if its meaning is hidden as a result of defective or inappropriate language or expression**. One source of obscurity is excessively technical language. Examples
  - **“Bunny”** means a mammalian of the family Leporidae of the order Lagomorpha whose young are born furless and blind.
  - **“Bunny”** means a rabbit. The problem lies not with technical language as such but with *needlessly* technical language. Because “bunny” is very much a no technical term, no technical definition is needed.
- **A definition is vague if it lacks precision or if its meaning is unclear**—that is, if there is no way of telling exactly what class of things the definiens refers to.

- **Example:**

✓**“Democracy”** means a kind of government where the people are in control.

➢This definition fails to identify the people who are in control, how they exercise their control, and what they are in control of.

➢ **A definition is ambiguous if it lends itself to more than one different interpretation.**

- **Example:**

✓**“Triangle”** means a figure composed of three straight lines in which all the angles are equal to 180^0.

➢ Does this mean that each angle separately is equal to 180^0 or that the angles taken together are equal to 180^0?

Rule7:A lexical definition should avoid affective terminology.

- **Affective terminology is an expression that influences others positively or negatively**. It includes **Sarcastic** and **facetious** (inappropriate) language and any other kind of language that is liable to influence attitudes. **Examples:**
  - ✓**"Communism"** means that "brilliant" invention of Karl Marx and other foolish political visionaries.
- The intended meaning is the opposite of what is meant by brilliant. This is what we call a sarcastic use of language.
- Dear learner, again look at the following examples:
  - ✓ **"Ethiopia"** is a country of illiterate and hungry people.
  - ✓ **"Africans"** are uncivilized and have no history.

Rule 8: A lexical definition should indicate the context to which the definiens pertains.

- A **reference to the context** is important definiendum means different meanings in the different context. Examples:
  - ✓**"Strike"** means (in baseball) a pitch at which a batter swings and misses.
  - ✓**"Strike"** means (in fishing) a pull and a line made by a fish in taking the bait.
- In the above definitions at term "strike" has two different meanings in the different contexts given above (baseball and fishing).

- # CHAPTER FOUR
- ## 4.1.BASIC CONCEPTS OF CRITICAL THINKING
- ### 4.1.1. Meaning of Critical Thinking

➢ Critical thinking can be defined as

➢**A wide range of cognitive skills and intellectual dispositions** needed to effectively identify, analyze, and evaluate arguments and truth claims.

➢Involving or exercising skilled judgment or observation i.e. Thinking clearly and intelligently.

➢A wide range of cognitive skills and intellectual dispositions needed to effectively identify, analyze, and evaluate arguments and truth claims.

- Critical thinking is a process or journey that helps us
  - ✓ To arrive at the most useful, helpful, and most likely destinations when evaluating claims for scientific truth
  - ✓ To formulate and present convincing reasons in support of conclusions; and
  - ✓ To make reasonable, intelligent decisions about what to believe and what to do.
- Critical thinking, thus, is thinking clearly, thinking fairly, thinking rationally, thinking objectively, and thinking independently
- Therefore, **the aim of critical thinking** is **to arrive at well-reasoned, considered, and justifiable conclusions.**

- The American philosopher, **John Dewey,** has defined critical thinking as
  - ✓an **active, persistent, and careful consideration** of a belief or supposed form of knowledge
    - ‘**active**’ ,refers think things through for yourself, raise questions yourself, find relevant information yourself and so on, rather than learning in a largely passive way from someone else.
    - ‘**persistent**’ and ‘**careful consideration**’-- Dewey contrasting critical thinking with the kind of unreflective thinking we all sometimes engage in .
- For example, we sometimes jump to a conclusion or make a quick decision without thinking about it.
- What Dewey is saying, to express it in a more familiar language, is that **what matters are the *reasons* we have for believing something and the implications of our beliefs**.

- **Edward Glaser** defined critical thinking as:
  1. An **attitude** of being disposed to consider in a thoughtful way the problems and subjects that come within the range of one's experience;
  2. **Knowledge** of the methods of logical enquiry and reasoning; and
  3. Some **skill** in applying those methods.

- **Robert Ennis**-defined critical thinking as
  - ✓reasonable, reflective thinking that is focused on **deciding what to believe or do**.
  - ✓So 'deciding what to . . . do', or **decision-making** is an important part of critical thinking in Ennis's conception.
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- For **Richard Paul** Critical thinking is **Mode of thinking about any subject, content or problem** – in which the thinker improves the quality of his or her thinking by skillful thinking and imposing intellectual standards upon them. Paul associates critical thinking with **reflecting on thoughts**.
- **Michael** Scriven has defined critical thinking as **skilled and active interpretation and evaluation of observations and communications, information and argumentation.**
  - ✓ interpretation‘ of texts, speech, film, graphics, actions and e body language helps to construct and select the best alternatives
  - ✓evaluating the truth, probability or reliability of claims. Evaluation is the process of determining the merit, quality, worth, or value of something‘

- According to **Scriven** to be critical, thinking has to meet certain standards like clarity, relevance, reasonableness and so on.
- Critical thinking is sometimes referred to as '**criticocreative**' thinking. This word is the combination of two words: *critical* and *creative*.
- This is because critical thinking is a kind of evaluative thinking – which
  - ✓involves both criticism and creative thinking – and
  - ✓particularly concerned with the quality of reasoning or argument that is presented in support of a belief, or a course of action.

- **Standards of Critical Thinking**

➢To identify a critical thinking from the uncritical, we refer to some standards.

➢The most important intellectual standards are ***clarity, precision, accuracy, relevance, consistency, logical correctness, completeness, and fairness.***

1. **Clarity:** refers to **clear understanding of concepts** and clearly expressing them in a language that is free of obscurity and vagueness.
2. **Precision:** refers a matter of being **exact, accurate and careful**. Most ideas are vague and obscures though we think we have precise understanding of them.

- **3. Accuracy:** refers to **correct**/genuine **information**.

➢ Decision based on wrong and false information will likely to result in distorting realities.

- **4. Relevance:** refers to the **connections of ideas**

➢Critical thinkers carefully choose only the information that has logical relation with the ideas at hands

- **5. Consistency**:- refers to the quality of having the same opinions or standards.

➢Logic tells us that if a person holds inconsistent beliefs, at least one of those beliefs must be false.

➢There are two kinds of inconsistency that should be avoided.

➢**Logical Inconsistency**, which involves **saying or believing inconsistent things** (i.e., things that cannot both or all be true) about a particular matter.

➢**Practical Inconsistency**, which involves **saying one thing and doing another**.

- **6. Logical Correctness:-** When the combinations of thoughts are mutually supporting and make sense in combination, the thinking is logical.

➢ To think logically is to reason correctly, therefore we need to use accurate and well supported beliefs.

- **7. Completeness:** **D**eep and complete thinking are more preferable than shallow and superficial thinking. Thinking is better when it is deep rather than shallow, thorough rather than superficial.
- **8. Fairness :-** Refers open minded, impartial, and free of distorting biases and preconceptions.

– Principles of Good Argument

- ***1.*** **The Structural Principle**

➢ An argument **should meet the fundamental structural requirements** of a well-formed argument.

➢ In other words, it should be formed in such a way that

✓ The **conclusion** either follows **necessarily** from its premises, in the case of deductive arguments, or

✓ The **conclusion** Follows **probably** from its premises, in the case of inductive arguments.

- *2.* **The Relevance Principle**

➢ An argument should set forth only reasons whose truth provides some evidence for the truth of the conclusion.

➢ The premises of a good argument must be relevant to the truth or merit of the conclusion.

- *3.* **The Acceptability Principle**

➢ The reasons set forth in support of a conclusion must be acceptable.

- ***4.*** **The Sufficiency Principle**

➢ An argument **should attempt to provide relevant and acceptable reasons** of the right kind, that together are **sufficient in number and weight to justify the acceptance of the conclusion**.

- ***5.*** **The Rebuttal Principle**

➢ An argument should be with effective rebuttal to all anticipated serious criticisms that may be brought against it.

–Principles of Critical Thinking

- 1. **The Fallibility Principle**

➢ Each participant in a discussion of a disputed issue should be **willing to accept the fact that he or she is imperfect**.

➢ One must acknowledge that one's own **initial view may not be the most defensible** position on the question.

- ***2.*** **The Truth Seeking Principle**

➢ Each participant should be committed to the task of **seriously searching for the truth**

➢ One should be willing to **examine alternative positions** seriously and look for insights in the positions of others.

- **3. The Clarity Principle**

➢It requires that the formulations of all **positions, defenses, and attacks should be free of any kind of linguistic confusion** and clearly separated from other positions and issues.

- 4**. The Burden of Proof Principle**

➢This principle requires that the burden of proof for **any position usually rests on the participant who sets forth the position**.

➢If an opponent asks the proponent should provide an argument for that position.

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- **5. The Principle of Charity**

➢If a participant's argument is reformulated by an opponent, **it should be carefully expressed in its strongest possible version** that is consistent with what is believed to be the original intention of the arguer.

➢If there is any question about the argument, **the arguer should be given the benefit of any doubt in the reformulation** and/or, when possible, given the opportunity to amend it.

- **6. The Suspension of Judgment Principle**

- This principle requires that **if no position is defended by a good argument**, or if two or more positions seem to be defended with equal strength, **one should suspend judgment about the issue**.
- If practical considerations seem to require a more immediate decision, one should weigh the relative benefits or harm connected with the consequences of suspending judgment and decides the issue on those grounds.
- If suitable evidence is so lacking that one has no good basis for making a decision either way, it may be quite appropriate to suspend judgment on the matter and wait until there is more of a basis for decision.

7. The Resolution Principle

- An issue should be considered resolved if the argument is
  - ✓a structurally sound
  - ✓uses relevant and acceptable reasons
  - ✓provide sufficient grounds to justify the conclusion and
  - ✓include an effective rebuttal to all serious criticisms and/or the position it supports.

Characteristics of Critical Thinking

Basic Traits of Critical Thinkers

- There are some dispositions and attitudes, skills and abilities, habits and values that every critical person should manifest.

Critical thinkers:

- ✓ Are **honest** with themselves, acknowledging what they don't know, recognizing their **limitations**, and being watchful of their own **errors**.
- ✓ Regard **problems** and controversial issues as **exciting**/stimulating challenges.
- ✓ **Strive for understanding**, keep curiosity alive, remain patient with complexity, and are **ready to invest time to overcome confusion**.

- ✓ **Base judgments on evidence** rather than personal preferences, deferring judgment whenever evidence is insufficient.
- ✓ They revise judgments when new evidence reveals error.
- ✓ Are **interested in other people's ideas** even when they tend to disagree with the other person.
- ✓ **Recognize that extreme views** (whether conservative or liberal) **are seldom correct**, so they avoid them, **practice fair-mindedness**, and **seek a balance view**.
- ✓ Practice **restraint(controlling) their feelings** rather than being controlled by them, and **thinking before acting.**

– Basic Traits of Uncritical Thinkers

- Some **traits of uncritical thinkers** includes:-

- ✓ **Believe they know more than they do**, ignore their limitations, and assume their views are error-free.
- ✓ Regard problems and controversial issues as nuisances or threats to their ego.
- ✓ Are **inpatient with complexity** and remain confused than make the effort to understand.
- ✓ Base **judgments on first impressions** and **gut/instinctive reactions**. And tend to follow their feelings
- ✓ Are **preoccupied with themselves** and their own opinions, and
- ✓ Are **unwilling to pay attention to others' views**. At the first sign of disagreement, they tend to think, "How can I refute this?“
- ✓ Ignore the need for balance and give preference to views that support their established views.

- **Key intellectual traits of critical thinkers and the relevant traits of uncritical thinkers**

➢**First**, **critical thinkers have a passionate drive for clarity, precision, accuracy**, and other critical thinking standards while uncritical thinker's are unclear, imprecise, and inaccurate.

➢In addition to this, critical thinkers are sensitive to ways in which **critical thinking can be skewed by egocentrism, sociocentrism, wishful thinking**, and other impediments,

➢while uncritical thinkers often fall prey to egocentrism, sociocentrism, relativistic thinking, unwarranted assumptions, and wishful thinking.

- **Second**, critical thinkers are **skilled at understanding, analyzing, and evaluating arguments** whereas uncritical thinkers often misunderstand or evaluate unfairly
- Critical thinkers **reason logically, draw appropriate conclusions from evidence and data**, while uncritical thinkers are illogical, and draw unsupported conclusions
- **Third**, critical thinkers are **intellectually honest with themselves**, **acknowledging what they do not know and recognizing their limitations** while uncritical thinkers pretend they know more than they do and ignore their limitations.
- Furthermore, critical thinkers **listen open-mindedly to opposing points of view**, whereas uncritical thinkers are closed-minded, and resist criticisms.

- **Fourth**, critical thinkers **base their beliefs on facts and evidence** while uncritical thinkers often base beliefs on mere personal preferences or self-interests.
- Critical thinkers are **aware of the biases and preconceptions that shape the way they perceive the world**, whereas uncritical thinkers lack awareness of their own biases and preconceptions.
- **Fifth**, critical thinkers **think independently** and are not afraid to disagree with group opinion whereas uncritical thinkers tend to engage in "groupthink" uncritically following the beliefs and values of the crowd.
- Moreover, critical thinkers **have the intellectual courage to face and assess fairly ideas** that challenge even their most basic beliefs whereas uncritical thinkers fear and resist ideas that challenge their basic beliefs..
- **Finally** yet importantly, critical thinkers **pursue truth** despite obstacles or difficulties whereas uncritical thinkers are often relatively indifferent to truth and lack curiosity.

- **Barriers to Critical Thinking**

➢**Egocentrism, Sociocentrism, *Unwarranted Assumptions and Stereotypes, Relativistic Thinking*** and Wishful Thinking are some of the barriers to Critical Thinking

- **1. Egocentrism**

➢Egocentrism is the **tendency to see reality as centered on oneself**.

➢Egocentrics are selfish, self-absorbed people who view their interests, ideas, and values as superior to everyone else's.

➢Two common forms Egocentrism are ***self-interested thinking*** and *the* ***superiority bias*****.**

➢**Self-interested thinking** is the tendency to accept and defend beliefs that harmonize with one's self-interest. **Almost no one is immune to self-interested** thinking.

➢For example, most doctors support legislation making it more difficult for them to be sued for malpractice because they do not want to punish for mistakes committed in the workplace.

- ***superiority bias*** (also known as illusory superiority or the better-than average effect) is ***the tendency to overrate oneself - to see oneself as better in some respect than one actually is.***
- ***2.* Sociocentrism**

➢ ***It*** is **group-centered thinking** and it can **hinder rational thinking** by focusing excessively on the group.

➢ It can **distort critical thinking** in many ways. Two of the most important types of Sociocentrism are **group bias** and **conformism.**

- **Group bias is the tendency to see one's own group (nation, tribe, sect, peer group, and the like) as being inherently better than others.**
- **Most people absorb group bias unconsciously, usually from early childhood.**
- **Conformism refers to our tendency to follow the crowd unthinkingly to authority or to group standards of conduct and belief.**

3. Unwarranted Assumptions and Stereotypes

- An assumption is something we believe to be true without any proof or conclusive evidence. Almost everything we think and do is based on assumptions.
- If the weather report calls for rain, we take an umbrella because we assume that
  - the meteorologist is not lying,
  - the report is based on a scientific analysis of weather patterns,
  - the instruments are accurate, and so forth.

- **4. Relativistic Thinking**

➢ Relativism is the view that truth is a matter of opinion. It is strongest challenges to critical thinking.

➢ There is no objective or absolute standard of truth.

➢ There are two popular forms of relativism: **subjectivism and cultural relativism.**

- **A. Subjectivism**

➢ It is the view that truth is a **matter of individual opinion**.

➢ Whatever an individual believes is true, *is* true for that person, and there is no such thing as "objective" or "absolute" truth, i.e., truth that exists independent of what anyone believes.

- For example, suppose Abdella believes that abortion is wrong and Obang believes that abortion is not always wrong. According to subjectivism, abortion is always wrong for Abdella and not always wrong for Obang. Both beliefs are true – *for* them.

- B. **Cultural Relativism**

- It believe that **truth is a matter of social or cultural opinion**.What is true is whatever most people in a society or culture believe to be true.

- e.g Drinking wine is widely considered to be wrong in Iran but is not generally considered to be wrong in France. Therefore, drinking wine is immoral in Iran but is morally permissible in France.

- The most common form of relativism is **moral relativism.**
- Moral subjectivism is the view that what is morally right and good for an individual, A, is whatever A believes is morally right and good.
- Moral subjectivism comes in two major forms: **moral subjectivism** and **cultural moral relativism**.

- ***5.*** **Wishful Thinking**

- It refers to a state of believing something not because you had good evidence for it but simply because you wished it were true.
- People fear the unknown and invent comforting myths to render the universe less hostile and more predictable.

- **Benefits of Critical Thinking**
- ***Critical Thinking: Skills and Dispositions***

➢Critical thinking teaches

- ➢how to raise and identify fundamental questions and problems in the community.
- ➢How to reformulate these problems clearly and precisely.
- ➢How to gather and assess relevant information,
- ➢How develop reasoned conclusions and solutions, testing them against relevant criterion and standards.
- ➢How to be open minded to alternative system of thought, recognize and assess your own assumptions, implications

- Critical thinking is what university is all about. University is not only about teaching students with facts. It’s about teaching students to think(think critically).

- **Critical Thinking in the Classroom**

- Students learn a variety of skills that can greatly improve their classroom performance. These skills include:
  - Understanding the arguments and beliefs of others
  - Critically evaluating those arguments and beliefs
  - Developing and defending one’s own well-supported arguments and beliefs

- Also, critical thinking can help us
- To avoid making foolish personal decisions.
- To promote democratic processes. In democracy, it is the people who have the ultimate say over who governs and for what purposes. Citizens should vote, should evaluate different public policies, and collectively determine their fate and et cetera.
- To have personal enrichment/improvement it can bring to our lives. One of the most basic truths of the human condition is that most people, most of the time, believe what they are told.

CHAPTER FIVE

Logical Reasoning

&

Fallacies

3.1. The Meaning of 'Fallacy'

- In **ordinary language** usage, the term 'fallacy' refers to **a mistaken or false belief**.
- However, from the **logician point of view**, the term fallacy refers to **a defect in an argument**.
- Generally, fallacies can be committed b/c of
  - **Logical error** (error in reasoning) or
  - The **creation of some illusion** that makes a **bad argument appear good.**
- If **deductive arguments** are **unsound** or if **inductive arguments** are **uncogent**, then they contain fallacies.
- This is because such kinds of arguments have one or more false premises or they contain a fallacy (or both).

CAUSES OF FALLACIES

- Causes of fallacies, among others, include:
  - The failure to provide genuine evidences or premises for the conclusion;
  - The failure to provide premises that provide good support of the premises and conclusion;
  - The failure to address the most important or relevant aspects of the issue the arguer arguing for and so forth.

The Classifications of Fallacies

- Fallacies are usually divided into **formal** and **informal.**
- **Formal fallacies** are those fallacies that arise from an error or mistake in the form or **structure of an argument** and they are found only in deductive arguments such as in categorical syllogisms, disjunctive syllogisms, and hypothetical syllogisms.

- The following categorical syllogism contains a formal fallacy:
  - ✓All tigers are animals.
  - ✓All mammals are animals.
  - ✓Therefore, all tigers are mammals
- The above argument has the following form: Letter A, B, and C represents “tigers”, “animals”, and “mammals” ,respectively.

All A are B.

All C are B.

Therefore, all A are C.

- This argument is invalid, because the conclusion does not follow from the premises and the conclusion proves false for there is no any A which is also found in C.

- **Informal fallacies** are fallacies that can be detected only through **analysis of content of the argument**.
- Informal fallacies are **logical errors in the content** of the argument but not in the structure or form of the argument.

Example:

- ✓All factories are plants.
- ✓All plants are things that contain chlorophyll.
- ✓Therefore, all factories are things that contain chlorophyll.

- This argument has the following form: Letter A, B, and C represents “factories”, “plants” and “chlorophyll”, respectively.

All A are B.

All B are C.

Therefore, All A are C.

- Since this form is valid, one might conclude that the argument itself is valid.
- But the **argument is invalid since it has true premises and false conclusion**

- The word "plant" is used in two different senses. In the first premise it means a **building** where something is manufactured, and in the second it means a **life form**.
- Hence, the argument has the following invalid form: (Remember that, **two letters are used to indicate the different meaning of the word 'plant'**).

All A are B.

All C are D.

Therefore, All A are D.

- **Formal fallacies are always invalid**; however **informal fallacies can be valid**. **But Their validity is not genuine and logical**.
- The **correctness of reasoning in informal fallacies is only from psychological** and rhetoric sense of the argument.

- Therefore, the effect of an informal fallacy is to make a bad argument appear good.

MAJOR CAUSES OF INFORMAL FALLACIES

- ✓ when the premise becomes **irrelevant** to the conclusion(but the arguer presents it as if the premise is relevant to the conclusion) see **fallacies of relevance**;
- ✓ when the premise becomes **unacceptable** to the claims of the conclusion (the arguer however states the premise as if it is correct) see **fallacies presumption**;
- ✓ when the premise becomes **insufficient** to provide evidences to the conclusion(instead the arguer states the premise having adequate evidence to the conclusion) see **fallacies of weak induction**; and,
- ✓ when the premise is expressed by **unclear** language (the arguer state the idea with the assumption that there is no problem of linguistic confusion) see **fallacies of ambiguity and grammatical analogy**.

Characteristics Informal fallacies

- They are frequently backed by some motive on the part of the arguer to deceive the reader or listener;
- The arguer may not have sufficient evidence to support a certain conclusion and as a result may attempt to win its acceptance by restoring to a trick; and
- Sometimes the trick fools even the arguer and may mislead him or herself into thinking that he or she is presenting genuine evidence when in fact he or she is not.

TYPES OF INFORMAL FALLACIES

- We shall consider just **22** different types of informal fallacies that are classified under five major classifications of informal fallacies. This includes:
  - ✓fallacies of **relevance**,
  - ✓fallacies of **weak induction**,
  - ✓fallacies of **presumption**,
  - ✓fallacies of **ambiguity**, and
  - ✓fallacies of **grammatical analogy**.

Fallacies of Relevance

- They are fallacies that **fail to provide relevant and acceptable premises to their conclusion.**
- They are arguments that **provide irrelevant premises to the conclusion.**
- The **premises are** relevant psychologically and the connection between premises and conclusion is emotional or **not logical**.
- Fallacies of Relevance contains eight different types of informal fallacies. Namely, **appeal to force**, **appeal to pity**, **appeal to people**, **argument against the person**, **straw man**, **red- herring**, **accident**, and **missing the point**.

1. **Appeal to Force** (***Argumentum ad Baculum*:Appeal to the Stick**)

- It occurs whenever an arguer creates a conclusion to another person and tells the person either implicitly or explicitly that **some harm will come to him or her if he or she does not accept the conclusion**.
- In other words, an appeal to force fallacy **occurs whenever one irrelevantly appeals to force or threat of force to win an argument.**
- This fallacy always involves **a threat by the arguer to the physical or psychological wellbeing of the listener or reader,**
- Obviously, such a threat is **logically irrelevant to the subject matter of the conclusion**.

- Premises of an argument are full of threat, intimidation, scary words, etc.
- Thus, in this fallacy attempt is made **to persuade others** of one's point of view by using threat of force, or psychological intimidation in any form,
- Indicating that some kind of unfortunate consequence will occur upon those who challenge to disagree with the idea presented in the argument.

Examples:

- ✓ "Meet ETV" is the best show on ETV; and if you do not believe it, I am going to call my big brother over here and he is going to beat you up.

- ✓Anyone who believes the government has exceeded its proper authority under the constitution will be subjected to severe harassment by the provincial police. Therefore, the government has not exceeded its authority.
- ✓**A teacher to his student**: Aristotle has the only correct philosophical view on this matter. If you do not think so, wait to see what mark I give you on the final exam.

- ➢These three arguments fail to provide logical evidence to the truth of their conclusion. Instead they provide a kind of harm or threat as a reason to accept their conclusion. Thus, the first two examples involve a physical threat whereas the last example a psychological threat.

2. Appeal to Pity (*Argumentum ad Misericordium*)

- It occurs when an arguer attempts to support a conclusion by simply evoking pity from the reader or listener in an effort to get him or her to accept the conclusion.
- The pity does not have any logical connection or relevance to the conclusion.
- But it is psychologically relevant for the conclusion as the arguer can usually succeed in getting a pitting heart from his audience.
- The appeal to pity is quite common and frequently appears in schools between instructors and students; court rooms between judges and defendants and their attorneys; streets between traffic Police and illegal driver; offices between employer and vacancy candidates; and the likes.

Examples:

- ✓ ***A student to his instructor: Professor, this paper deserves at least a 'B' grade. I stayed up all the night working on it. And if I do not get a 'B', I will be on academic probation.***

- The conclusion of this argument is “this paper deserves at least a ‘B’ grade.” And the student tries to support his conclusion using **pitiable ideas** such as ‘I stayed up all the night ‘and ‘I will be in academic probation’.
- The information the arguer has given might seem relevant and might even get the audience to consider the conclusion. **It is psychologically relevant**
- But evidences **are not logically relevant to the conclusion**. so the argument is fallacious
  - ✓***Your honor, it is true that I killed my parents. I fully admit that I murdered them in cold blood. But I should get a light sentence. After all, I am an orphan***.

3. **Appeal to People** (***Argumentum ad Populum***)

- It occurs **when the arguer attempts to persuade the reader or listener** about a certain issue on the ground that most people approve it or disapprove the issue being in question.
- It consist arguments with language that is calculated to excite enthusiasm, excitement, anger, or hate.
- It has **two approaches**, namely, direct and indirect approaches .
- The **direct approach** occurs **when an arguer, addressing a large group of people**, excites the emotions and enthusiasm of the crowd to win the acceptance for his/her conclusion.
- The objective of direct approach is to **arouse a kind of mob mentality**. This strategy is usually used by propagandists, demagogues, preachers, advertisement workers and so forth.

- direct approach consist in the **handling of one's audience by appealing inappropriately to that love**.
- **Indirect approach** is appeal to some or more individuals separately, focusing up on some aspect of their relationship to the crowd.
- The heaviest reliance on this approach in particular is **to be found in advertising industry** where the products advertised are often associated with things that we like: luxury, success, riches, and so on.
- Individuals associated with the advertisement are also usually beautiful or handsome, famous, clever, etc.
- There are **three varieties of the indirect approach**. These are ***appeal to bandwagon, appeal to vanity, and appeal to snobbery.***

A. Appeal to Bandwagon

- It emphasizes that the **majority choice is a correct one**
- It is fallacious because peer pressure urges the acceptance of a claim on the ground of the approval of friends or associates.

Examples:

- ✓ Chewing chat can not be all wrong because 70% of Werabe university students see nothing wrong with it.
- ✓ A film is good because there are long lines of people waiting to see it.

- They tell us nothing more than what large number of people does or believes and about the quality of a thing or the truth of the idea.
- The idea can be believed by everyone and yet not be true. So, it is fallacious.
- loyalty to a group and the need to belong can give people very strong reasons to agree to the views and positions of those groups

B. Appeal to Vanity

- It **associates the product with certain celebrities** such as artists, athletes, footballers, respected leaders, etc. and informs the audiences that if you buy and use the item you also will be admired.

Examples:

- ✓"Who is going to wear this new fashion T-shirt worn by the famous artist Gosaye for the new Ethiopian Millennium?"
- ✓"Who is going to buy this new fashion Shoes, a shoe used by the famous Haile G/ Sellassie in the London Marathon."

- In the above examples T- shirt and shoe are associated with the famous persons Gosaye and Haile and if others managed to buy these products they will be admired like these two artists.

C. Appeal to Snobbery

- It is an appeal to the **desire to be regarded as superior to others**.
- It occurs when an arguer associates a product with a selected few persons (distinguished person) that have an exaggerated social position, health and some other qualities.

Examples:

- ✓ This is not for ordinary people. If you want to be from among the selected few dignitaries buy the shoe.
- ✓ Look at the mark of this cell phone-it is Nokia and Nokia is not for everyone. Buy Nokia and join the selected few.
- ✓ First of all, did you see the mark of the shoe-its Clark? You should know that Clark is not for the ordinary citizens buy Clark and join with the dignitaries.

4. **Argument Against the Person** (***Argumentum ad Hominem***)

- This fallacy always involves two arguers.
- One can commit this fallacy if someone refuses to consider his or her opponent's argument on its merit alone, and instead attacks his or her opponent on the ground of his belief, motive, religion, character, practice.
- The argument against the person occurs in **three forms: the ad hominem abusive, the ad hominem circumstantial, and the tu quoque (You Too).**

4.1 Ad hominem abusive

- Here the second person responds to the first person's argument by verbally abusing the first person and discredits the character of the opponent; deny his or her intelligence or reasonableness.

- The person can be abused for being ugly, smoker, gambler, and conservative.
- But the character of the individual is logically irrelevant to the truth or falsehood of what that person says, or to the correctness or incorrectness of that person's reasoning.

Examples:

  - ✓How a stingy person can tell us about charity. Hence, let us stop discussing about these issue raised by Tamirat.

- These arguments commit the fallacy ad hominem abusive because they are directed to attack or abuse the person who made the claim instead of attacking the claim or argument itself.

4.2. Ad hominem circumstantial

- Instead of focusing on verbal abuse on his or her opponent, the respondent attempts to discredit the opponent's argument **by mentioning to certain circumstances that affect the opponent**.
- It involves substituting an attack on person's circumstances such as the person's religion, political affiliation, ethnic background, position, etc for evidences in an argument.
- It has the form "of course Mr. X argues this way; just look at the circumstance that affects him."
- Examples:
  - ✓ Dr. Tewodros advocates a policy of increasing financial spending for higher education. But that is not innocent advocacy, for the reason that he is a college professor and would benefit financially from such a policy.

4.3. Tu quoque (“you too”): it is pronounced as “too kwo_kway”

- The ***tu quoque*** (you too) fallacy begins the same way as the other two varieties of the *ad hominem* argument, except that the second arguer attempts to make the first appear to be hypocritical or arguing in bad faith.
- “You also or you do it, too” implies that person’s action are not consistent (contradicts) with that for which he or she is arguing.
- In this you too fallacy, the second arguer usually accomplishes this by citing features in the life or behavior of the first arguer that conflict with the latter’s conclusion. In effect, the second arguer says, “How dare you argue that I should stop doing *X*; why, you do (or have done) *X* yourself.”

Examples:

- ✓ ***Child to parent:*** Your argument that I should stop stealing candy from the corner store is no good. You told me yourself just a week ago that you, too, stole candy when you were a kid.

- ➢ Obviously, whether the parent stole candy is irrelevant to whether the parent's premises support the conclusion that the child should not steal candy.
- ➢ This is committed when one of the arguers (the second arguer) rejects the other arguer (the first arguer) opinion by attacking or abusing him or herself (their personality, character, motives, and qualification) other than their argument.

- ✓ My doctor told me to lose some weight. Why should I listen to a doctor who is himself overweight?

- Determining what kind of person someone is includes determining whether that person is trustworthy.
- Thus personal comments are often relevant in evaluating whether a person's proclamations or statements, unsupported by evidence, warrant our belief.
- Examples of such statements include promises to do something, testimony given by a witness, and testimonials in support of a product or service.
- Here is an example of an argument that discredits a witness:
  - ✓Geremew has testified that he saw Belay set fir to the building. But Geremew was recently convicted on ten counts of perjury, and he hates Belay with a passion and would love to see him sent to jail. Therefore, you should not believe Geremew's testimony.

- This argument commits no fallacy. The conclusion is not that you should reject Geremew's' argument but rather that you should reject his testimony.
- Testimony is not argument, and the fact that the witness is a known liar and has a motive to lie now is relevant to whether we should believe him.
- Furthermore, note that the conclusion is not that Geremew's statement is literally false but rather that we should not believe the statement.
- It is quite possible that Geremew really did see Belay set fire to the building and that

- Geremew's statement to that effect is true. But if our only reason for believing this statement is the mere fact that Mickey has made it, then given the circumstances, we are not justified in that belief.
- **Personal factors are never relevant to truth and false**.
- In general, ad hominum arguments are effective due to the following reasons:
  - ✓Close **connection between truth and believability**.
  - ✓They **engaged the emotion of readers and listeners** and their by motive them to transfer their negative feelings about the arguer on the argument.

5. Fallacy of Accident

- It is committed when a general rule is applied to a specific case that was not intended to cover. In this fallacy, the general truth, law or principle is either applied to particular instance whose circumstance by accident or to a situation to which it cannot be applied.
- The general rule is cited in the premises and then wrongly applied to the specific case mentioned in the conclusion. Because of the "accidental' features of the specific case, the general rule does not fit or is misplaced.

Examples:

- ✓ Freedom of speech is a constitutionally guaranteed right. Therefore, Abebe should not be arrested for his speech that inspired the riot last week.
- ✓ Kidist! All good patients obey the order of their doctors. Hence, you should not refuse when your doctor invites you for bed.

6. Straw Man Fallacy

- The **straw man** fallacy is committed when an arguer distorts an opponent's argument for the purpose of more easily attacking it, demolishes the distorted argument, and then concludes that the opponent's real argument has been demolished.
- By so doing, the arguer is said to have set up a straw man and knocked it down, only to conclude that the real man (opposing argument) has been knocked down as well. In short, this fallacy occurs when the arguer attack misrepresentation of the opponent's view.

Example:

- ✓ **Mengesha:** It would be a good idea to ban advertising beer and wine on radio and television. These advertisements encourage teenagers to drink, often with disastrous consequences.
- ✓ **Tsegaye:** You cannot get people to give up drinking; they have been doing it for thousands of years.

- The straw man fallacy has three essential components.
  1. The first is that there is **a pair of arguers taking part in a dialogue.**
  2. The second component is that **each is arguing with the other.**
  3. The third is that **each is advocating a position opposed to that of the other party**.
- In the above example, you can observe that Tsegaye attempts to oppose Mengasha's idea but with a distorted form.
  - ✓ **Mary:** We must not betray the principles of justice and democracy. Suspected terrorists must be granted basic rights as well as legal representation and access to a fair court.
  - ✓ **Tom:** Mary is advocating the release of known terrorists. We cannot afford to allow our enemies to move freely in our society.

7. The Fallacy of Missing the Point (*Ignoratio Elenchii*)

- This fallacy occurs when the premise of an argument support one particular conclusion. In other words, it occurs when the premise of an argument support one particular conclusion, but then a different conclusion, often vaguely related to the correct conclusion is drawn.
- **Examples:**
  - ✓Crimes of theft and robbery have been increasing at an alarming rate lately.
- The conclusion is obvious: We must reinstate death penalty immediately.

- At least two correct conclusions are implied by the premises of the argument. Either “we should provide increased police protection in the invulnerable neighborhoods” or “we should initiate programs to eliminate the cause of the crimes.”
- The punishment for theft and robbery should be very serious. But it does not support the claim that the death penalty, therefore, reinstating the death penalty is not a logical conclusion at all.
  - ✓KKC University has a lot of problems. Students’ services and facilities are inadequate. Many of the instructors are inexperienced. It follows that, the university should be entirely closed.
- The conclusion of the example misses logical implication from the premise.

- The logical conclusion for the premise is not closing the university but it could have been stated in other ways like:
  - providing additional facilities for students, getting experienced instructors from other countries, developing the capacity of the administration of the university, and the like.
- *In general, the fallacy of missing the point is called ignoratio elenchi* which *means* "ignorance of the proof."
- This means the arguer is ignorant of the logical implications of his or her own premises and, as a result, draws a conclusion that misses the point entirely

8. Red-Herring (Off the Truck Fallacy)

- The **red herring** fallacy is committed when the arguer diverts the attention of the reader or listener by changing the subject to a different but sometimes subtly related one.
- It usually appears in the form of appeal to humor, ridicule or appeal to thought provoking questions for the purpose of diverting the attention of the audiences, which is logically irrelevant to the subject, issue or topic of the debate raised first.

Examples:

- ✓ The minister: The new education policy is appreciative. Bezawit: Did you hear about his first son? The important question confronting this great nation is the question of terrorism. Let me tell you how I plan to defeat it. He is going to marry an orphanage girl. Before the minister is talking about in practical education policy; he should give a lesson for his son to get a good wife. So, his new education policy is not appreciative.

- This argument commits the fallacy of red-herring because the arguer diverts the subject or topic of the argument for “new education policy appreciative” to marry an orphanage girl and get a good wife_ a topic which is irrelevance to the topic or the subject under discussion.
  - ✓ **Interviewer:** Your opponent has argued for immigration reform. Do you agree with her position?
  - ✓ **Candidate:** I think the more important question confronting this great nation is the question of terrorism. Let me tell you how I plan to defeat it.

B. Fallacies of Weak Induction: Definition and Types

- Usually fallacies of weak induction appear in inductive arguments and contain appeal to authority, argument based on prediction, sign, analogy, inductive generalization, and causal inference. If the arguer made a kind of mistakes or errors in these forms of argumentation, the fallacies of weak induction are committed.
- Fallacies of weak induction involve that are in some degree relevant to their conclusion but do not provide sufficient support for them. Hence, fallacies of weak induction involve insufficient evidence because their premises provide shred or little evidence to the conclusion.

1. Appeal to Unqualified Authority (*Argumentum ad Verecundiam*)

The appeal to unqualified authority is also called *argumentum ad verecundiam* in Latin. *T*his fallacy commits because of the person who presents argument which has not a legitimate authority on the subject or the issue which he or she is arguing about. More specifically, when an individual we relied on to provide the information that we seek might be unreliable due to the problems of lack of expertise in a certain profession, bias or prejudice, a motive to lie, lack of the requisite ability to perceive or recall, and personality problem to disseminate wrong information.

Examples:

It is always better to drink white wine with fish. Tony Blair says so, he must know what he is talking about, and he is the prime minister.

In this example, you can see the following structure in the argument:

Tony Blair says that it is always better to drink white wine with fish.

Tony Blair is Prime Minister.

If some one is prime minister, then they must always have knowledge about all the Subjects they talk about.

Therefore, it is always better to drink white wine with fish.

Tom Jones, a respected actor who plays the brilliant cardiologist Dr. John Smith in the film *Emergency*, recommends Drug X for improving the overall health of the heart.

Therefore, it would be wise to take Drug X.

2. Appeal to Ignorance (*Argumentum ad Ignoratio*)

The fallacy of appeal to ignorance, also called ***argumentum ad ignoratio*** in Latin, and it implies that lack of evidence or proof for something is used to support the truth of the conclusion.

This fallacy is committed when the premises of an argument state that nothing has been proved one way or the other about some thing due to lack of evidence rather than by knowledge or tangible information.

There are two ways for appeal to ignorance fallacy to be committed: arguing that some thing is true because no one has proved to be false, and arguing that some thing is false because no one has proved to be true.

Examples:

Nobody has ever proved to me there's a God, so I know there is no God.

After centuries of trying no one has been able to prove that God does not exist.

Therefore, God exists.

The premises of the above arguments tell us nothing about the existence of God.

Therefore, rather concluding that God exists or does not exist based on the mere ground that no one has proved or disproved it, the best way we have to do is simply to suspend our judgment about things which are incapable of being proved. If we judge either way, our judgment would be fallacies.

Appeal to ignorance has **two** exceptions:

1. The first stems from the fact that if qualified researchers investigate a certain phenomenon within their range of expertise and fail to turn up any evidence that the phenomenon exists, this fruitless search by itself constitutes positive evidence about the question. Consider, for example, the following argument:

Teams of scientists attempted over a number of decades to detect the existence of the luminiferous aether, and all failed to do so. Therefore, the luminiferous aether does not exist.

The premises of this argument are true. Given the circumstances, it is likely that the scientists in question would have detected the aether if in fact it did exist. Since they did not detect it, it probably does not exist.

Thus, we can say that the above argument is inductively strong (but not deductively valid).

It is not *always* necessary, however, that the investigators have *special* qualifications. The kinds of qualifications needed depend on the situation. Sometimes the mere ability to see and report what one sees is sufficient.

Example: No one has ever seen Mr. Samuel drink a glass of wine, beer, or any other alcoholic beverage. Probably Mr. Samuel is a nondrinker.

Because it is highly probable that if Mr.Samuel was a drinker, somebody would have seen him drinking, this argument is inductively strong. No special qualifications are needed to be able to see someone take a drink.

2. The second exception to the appeal to ignorance relates to courtroom procedure. In the United States and Canada, among other countries, a person is presumed innocent until proven guilty. If the prosecutor in a criminal trial fails to prove the guilt of the defendant beyond reasonable doubt, counsel for the defense may justifiably argue that his or her client is not guilty.

Example: Members of the jury, you have heard the prosecution present its case against the defendant. Nothing, however, has been proved beyond a reasonable doubt.

Therefore, under the law, the defendant is not guilty. This argument commits no fallacy because "not guilty" means, in the legal sense, that guilt beyond a reasonable doubt has not been proved. The defendant may indeed have committed the crime of which he or she is accused, but if the prosecutor fails to prove guilt beyond a reasonable doubt, the defendant is considered "not guilty."

3. Hasty Generalization (Converse Accident)

The fallacy of hasty generalization is just the opposite of accident. This fallacy is committed whenever one arrives to a conclusion, on the basis of very little evidence or whereby generalization is asserted or concluded based on: very limited information, inadequate information, and unrepresentative sample.

Examples:

I have met two persons in Hawassa town so far, and they were both nice to me. So, all people I will meet in Hawassa will be nice to me.

Freshman Governance and Development Studies students of 2009 are one – hundred sixty in number. Blood is taken out of three students and upon examination of all, three students are found to have their blood type “B”. Therefore, on the basis of this, I conclude that the rest of the students will also have the same blood type, which is “B”.

Examples:

Ten milligrams of substance Z was fed to four mice and within two minutes all four went into shock and died. Probably substance Z, in this amount, is fatal to the average mouse.

On three separate occasions I drank a bottle of Meta beer and found it flat and bitter. Probably I would find every bottle of Meta beer flat and bitter.

Neither of these arguments commits the fallacy of hasty generalization because in neither case is there any likelihood that the sample is atypical of the group. In the first argument the fact that the mice died in only two minutes suggests the existence of a causal connection between eating substance Z and death. If there is such a connection, it would hold for other mice as well. In the second example the fact that the taste of beer typically remains constant from bottle to bottle causes the argument to be strong, even though only three bottles were sampled.

- Hasty generalization is also called **converse accident**, because it proceeds from particular to general (the premises deal with a particular issue, but the conclusion generalizes that something is true or false merely based on the knowledge of the particular issue-the sample) while accident proceeds from the general to the particular (the premises deal with a general issues, but the conclusion deals with something particular),

4. The Fallacy of False Cause

- The fallacy of false cause commits when the link between premises and conclusion depends on some imagined causal connection that probably does not exist.
- In this fallacy, when the arguer in his or her argument oversimplified the cause of a certain event, makes a kind of confusion between the cause and effect, or identifies a certain event as the cause of another event merely on the ground that the first event, which the arguer identifies as a cause, occurs before the new action.

- There are **three varieties** of false cause fallacy, namely, ***Post Hoc Ergo Propter Hoc Fallacy, Non Causa pro Causa Fallacy, and Oversimplified cause***.

A. Post Hoc Ergo Propter Hoc Fallacy (Post Hoc Fallacy)

The Latin expression ***Post Hoc Ergo Propter Hoc Fallacy*** traditionally refers to **"after this, therefore because of this,** or **after this, therefore the consequence of this". Post Hoc Fallacy.** The *post hoc ergo propter hoc* fallacy occurs when it is concluded that one event causes another simply because the proposed cause occurred before the proposed effect.

Post hoc fallacy presupposes just because one event precedes another event. The first event causes the second. That is event Y is caused by event X because event "Y" follows event "X", or X precedes Y in time. This is way of reasoning has the following form:

event "X" occurs before event "Y"; therefore, event "X" is the cause for event "Y".

- **Examples:**
  - During the last two months, the football team has worn red ribbons in their hairs, and the team was defeated. Therefore, to prevent defeats in the future, the team should get rid of those red ribbons.
  - Every time I wash the car, it starts to rain shortly afterwards. Therefore, my car-washing activities are causing outbursts of precipitation in the clouds.
- The above two arguments commit the post hoc fallacy. This is because of the fact that the arguer wrongly thinks those actions which come before another action in time as a cause for the next event. The first argument, for instance, considers the wearing of red ribbons in their hairs as a cause for the defeating of the football team. The second argument also considers the car-washing activity as the cause for outburst of precipitation in the clouds.

B. Non Causa Pro Causa Fallacy

The Latin phrase ***Non causa pro causa*** **fallacy** has been traditionally interpreted as "not the cause for the cause". This variety is committed when what is taken to be the cause of something is not really the cause at all and the mistake is based on something other than mere temporal succession.

In general, this fallacy considers something as the cause of an effect when in reality it is not; and on the other hand when a kind of confusion occurs between the causes and effect of a certain event.

Examples:

There are more churches& Mosques in Ethiopia today than ever before, and more HIV victims than ever before, so, to eliminate the pandemic we must abolish the churches& Mosques

Successful business executives are paid salaries in excess of $5,000. Therefore, the best way to ensure that Ferguson will become a successful executive is to raise his salary to at least $5,000.

These two arguments commit non causa pro causa fallacy. In the first argument, the increase in churches is only correlated with the increase in the HIV pandemic. And obviously, the simple fact that one event is correlated with another is not sufficient reason to consider that one caused the other. In the second argument, increases in salary causes success as an executive- the arguer fails to leave room for other possible causes, so, the arguer mistakes the cause for the effect.

A. Over Simplified Cause Fallacy

This variety of false cause fallacy is more probably committed than the other two varieties. The **Over simplified cause fallacy** occurs when a large number of causes are responsible for an effect, but the arguer selects just one of these causes and represents it as if it is the sole cause of the event.

Example:

The quality of education in our grade schools and high schools has been declining for years. Clearly our teachers just are not doing their jobs these days.

The argument of the above example commits over simplified cause fallacy. For the reason that in this argument the cause for the declining of the quality of education is not limited to one single cause though there are many factors that can be considered as the cause for this effect. For instance, to mention some of factors that are responsible for the decline quality of education are: lack of discipline in the home; parental un-involvement; and, drug use by students, and etc

5. The Fallacy of Slippery Slope

The **fallacy of slippery slope** occurs when we assume that series of events happen, after one other event as a result of the first cause. This fallacy is occurred when a certain argument rests on chains of events and the arguer fails to provide sufficient reasons why this chain of events committed. In other words, it is committed when one affirms an unjustifiable "chain reaction" of causes which, if it is allowed to continue leads inevitably to disaster.

Example:

I know the impetus for the whole tragedy in her life. She was jobless and has no other choice but to join bar ladies. While she was working in bars, she becomes infected with HIV/AIDS. Then, she becomes bedridden patient and in the lost her life. All these misfortune fall up on her due to her dismissal from the university in the first semesters of the first year.

The arguer, in the example, associated the death of a girl with her failure in the national examination, without considering other factors that lead her to join bar ladies, such as poverty, the problem of parents that could advice her to head a good life even after she failed to pass national examination, and so

6. The Fallacy of Weak Analogy

The fallacy of weak analogy is an inductive argument in which the conclusion depends on the existence of analogy, or similarities between two things. Argument based on analogy would be strong when either property cited, as relevant between two or more things, or when relevant differences between the objects are taken into consideration.

When these requirements are failed, the inductive argument becomes weak.

The **fallacy of weak analogy** is committed when important differences between two things or more things compared are not real similar in the relevant respects or when the analogy is not strong enough to support the conclusion. This fallacy has the following form:

Object “A” has attributes a, b, c, and z.

Object “B” has attributes a, b, c.

Therefore, object B probably has attributes z also.

Examples:

Kebede's new car is bright blue in color and has leather upholstery and gets excellent gas mileage. Taye's new car is also bright blue in color and has leather upholstery. Therefore, it probably gets excellent gas mileage, too.

I do not see what all the argument is about guns. Of course gun ownership should not be prohibited. You can kill someone with a cricket bat, but no one proposes to ban ownership of cricket bats.

These arguments commit the fallacy of weak analogy. In the first argument, the color of a car and the choice of upholstery have nothing to do with gasoline consumption. In the second example whereas you can see the following structure:

Guns are like cricket bats in that both can be used to kill people.

Whenever an object "X" is similar to an object "y" in one respect, it is similar in all -respects

Objects that are similar to each other in all respects should be treated identically

We would not ban ownership of cricket bats

Therefore, we should not ban ownership of guns.

NB: see the module on page 97

3.4 Fallacies of Presumption: Definition and Types

The fallacies of presumption include four different types of fallacies, namely: begging the question, complex question, false dichotomy, and suppressed evidence. The fallacies of presumption arise not because the premises are not irrelevant to the conclusion or provided insufficient reason for believing the conclusion. These fallacies committed when the arguer provides an argument that has premises which try to presume what they purport to prove.

The fallacies of presumption frequently have tricky and confusing phraseologies for the purpose of concealing or hiding the wrong ideas stated in the premise, even though the ideas stated in the premises are not supported by logical evidence or proof, the arguer invites readers or listeners to accept his or her argument as if it does not need proof or evidence. Therefore, when the fallacy contains tricky and confusing expressions for the purpose of concealing the wrong assumption stated in the premise is called **presumption fallacy**.

1. Begging the Question Fallacy (*Petito Principii*)

The **fallacy of begging the question** occurs when an arguer uses some form of phraseology that tends to conceal the questionably true character of a key premise. To make it clear, this fallacy is committed when the arguer, without providing real evidence, asks the readers or listeners to simply accept the conclusion of his or her argument. Some times this argument is known as **circular reasoning** since the argument depends upon premises that states the same thing as the conclusion.

Consequently, the arguments into have premises claiming to prove the truth of the conclusion. In an argument that commits the fallacy of begging the question, it is the conclusion (with the other premises) that claims to prove the questionable character of key premises that is why the fallacy is otherwise called as the circular reasoning.

Examples:

I believe the prime minister is telling the truth since he says he is telling the truth.

Capital punishment is justified for crimes of murder and kidnapping because it is quite legitimate and appropriate that some one be put to death for having committed such hateful and inhuman acts.

- ✓ These examples commit the fallacy of begging the question. In each example, the premise and the conclusion are worded differently but say the same thing. The premise in each case is relevant to the conclusion, but the ideas stated in the premise (which are repeated in the conclusion) are questionable.
- ✓ When we look at the first argument, it ignores an important premise which is needed to make the argument acceptable. In the argument, proof is not given on the truth of the prime minister's speech. Even though the arguer does not give proof, he or she begs us to accept it as true as if it does not need proof.
- ✓ On the other hand, in the second argument, the arguer has really said the same thing twice to say that capital punishment is "justified" means the same thing as to say that it is
- ✓ "legitimate" and "appropriate" because premise and conclusion means the same thing. But the arguer fails to give as real reasons why capital punishment is justified for the indicated crimes.

2. The fallacy of Complex or Loaded Question

This happens when the conclusion (that is, answer) is supported by confusing and tricky questions (that is, premises). This fallacy is committed when a single question that is really two or more questions is asked and a single answer is then applied to both questions.

Examples:

1. Have you stopped cheating on exams?

Let us suppose the respondent answers "Yes" to the question. The following argument comes out:

You were asked whether you have stopped cheating on exams. You answered "Yes" to the question. Therefore, it follows that you have cheated in the past.

On the other hand, let us suppose that the respondent answers “No” to the question. And we then have the following arguments: You were asked whether you have stopped cheating on exams. You answered “No.” Therefore, you continue to cheat.

Obviously, the above question is really two questions: Did you cheat on exams in the past? If you did cheat in the past, have you stopped now?

Therefore, this argument commits the fallacy of complex question. Because the arguer in his argument gives two different questions as if they are one. You can also look the same error in the following argument.

. The Fallacy of False Dichotomy

The **fallacy of false dichotomy** can be also known as “false bifurcation”, false dilemma, black and white thinking, and “either…or…fallacy”. This fallacy is committed when the premise of an argument is an either… or… statement or a disjunctive statement that presents two alternatives as if they were jointly exhaustive (as if no third alternative was possible).

To make more precise, the fallacy of false dichotomy is occurred when a person provides two alternatives, which are false, as the only option in the argument and then eliminates one alternative and it seems that we are left with only one option. The one the arguer wanted to choose. But, there are many different alternatives that the arguer fails to provide.

Example:

Well, it is time for a decision. Will you contribute $10 to our environmental fund, or are you on the side of environmental destruction?

The argument allows us only two options. You should contribute $10 to the fund or you are in favor of environmental destruction. Therefore, this argument commits the fallacy of dichotomy. Because, on the one hand, the two options are not exhaustive, there are many alternatives that the arguer fails to provide.

For instance, there seems to other possibilities such as contributing less than $10 or contributing nothing but supporting the environmental protection by other means.

The fallacious nature of false dilemma lies in the attempt by the arguer to mislead the reader or listener into thinking that the disjunctive premise jointly exhaustive alternatives, and is therefore true by necessity.

4. The Fallacy of Suppressed Evidence

The **fallacy of suppressed evidence** is committed when the inductive argument ignores some important piece of evidences and entails an extremely different conclusion. In such argument, the arguer intentionally or unintentionally suppresses or omits important evidence that fails to support his or her position and emphasizes on some other reasons that are not such important to the conclusion of the argument.

Example:

Hawassa University is the best university in Ethiopia; because it has very fat and tall teachers, finest buildings and a number of students.

The key evidences omitted in the example such as the organization of the university, the qualification and experience of instructors, equipment available for instruction, student services, and the likes. The argument of the above example de-emphasizing these important cases but the argument consists of insignificant evidences for determining the standard of a good university. Thus, this argument commits the fallacy of suppressed evidence.

Linguistic Fallacies

Linguistic fallacies are the result of a misuse of language, such as incorrect use of words, grammatical lack of clarity, vagueness and other linguistic impressions. **There are two types of linguistic fallacies,** namely; ***fallacies of ambiguity and fallacies of grammatical analogy*.**

3.5.1 Fallacies of Ambiguity

Fallacies of ambiguity arise from the occurrence of some form of ambiguity in either the premises or the conclusion (or both). They are committed when misleading or wrong conclusion of an argument is drawn from ambiguous words or sentences. The fallacies of ambiguity include two types of fallacies: *equivocation* and *amphiboly.*

A. Equivocation Fallacy

The **fallacy of equivocation** occurs when the conclusion of an argument depends on the fact that one or more words are used in two different senses in the argument.

Examples:

Odd things arouse human suspicion. But seventeen is an odd number. Therefore, seventeen arouses human suspicion.

- Any law can be repealed by the legislative authority. But the law of gravity is a law.
- Therefore, the law of gravity can be repealed by the legislative authority.

These two arguments commit the fallacy of equivocation.

In both examples, the same words (‘odd’ and ‘law’ in the first and in the second argument, respectively) are used in two different senses. In example one, in the first premise the word “odd” means ‘strange’, while in the second premise it implies a “number that is not divisible by two”. Likewise, the second argument equivocates on the word “law.” In the first premise it means “statutory law”, and in the second premise it means “law of nature”.

All stars are in orbit in outer space.

Sarah Flamingo is a star.

Therefore, Sarah Flamingo is in orbit in outer space.

This argument would be said to be an equivocation because the term ‘star’ is used ambiguously. In the first premise, ‘star’ is most plausibly taken to mean ‘distant, luminous celestial body.’ Then there is a shift of meaning. In the second premise, ‘star’ would most plausibly be taken to mean ‘entertainment celebrity.’ Because of this meaning shift, the argument could be taken to be valid when in fact it may not be valid.

In some cases equivocation can be associated with the shift of meaning of a relative term as it occurs in different contexts. For example, “small”, “good”, “bad”, “light”, “heavy”, “difficult”, “easy”, “tall”, “short”, and so on are relative terms that shift their meanings in different contexts. A short basketball player may not be a short man.

Look at the following example:

4. A mouse is an animal. Therefore, a large mouse is a large animal.

This argument illustrates the ambiguous use of a relative term. The word “large” means different things depending on the context.

B. Amphiboly Fallacy

The **fallacy of amphiboly** is caused by the error in grammatical construction of statements that can be interpreted in two more distinctly different ways without making clear which meaning is intended. In other words, it is a structural defect in a statement due to mistake in grammar or punctuation—a missing comma, a dangling modifier, an ambiguous antecedent of a pronoun, or some other careless arrangement of words. Because of this ambiguity, the statement may be understood in two clearly distinguishable ways. The arguer typically selects the unintended interpretation and proceeds to draw a conclusion based upon it.

Examples:

Solomon told Dawit that he had made a mistake. It follows that Solomon has at least the courage to admit his own mistakes.

Our engineering school teaches told us how to build a house in three years.

Both of the arguments commit fallacy of amphiboly. In the first argument the pronoun "he" has an ambiguous antecedent; it can refer either to Solomon or Dawit. Perhaps Solomon told Dawit that Dawit had made a mistake.

In the second argument, because of the very that the arguer made a kind of a mistakes or errors in constructing this argument; he or she commits the fallacy of amphiboly. We can interpret this argument in two ways. On the one hand, it has a meaning that says "our school teaches told us how to build a house in three years teaching period" or on other hand, it has a meaning that says "our school teaches told us how to build a house with in three years construction period".

Two areas where cases of amphiboly cause serious problems involve contracts and wills. The drafters of these documents often express their intentions in terms of ambiguous statements, and alternate interpretations of these statements then lead to different conclusions.

Examples:

Mrs. Sosna stated in her will, “I leave my 500-carat diamond necklace and my pet car to Hana and Bethlehem.” Therefore, we conclude that Hana gets the necklace and Bethlehem gets the car.

Mr. Markos signed a contract that reads, “In exchange for painting my house, I promise to pay Asenafi $5000 and give him my new Cadillac only if he finishes the job by May 1.” Therefore, since Asenafi did not finish until May 10, it follows that he gets neither the $5000 nor the Cadillac.

In the first example, the conclusion obviously favors Hana. Bethlehem is almost certain to argue that the gift of the necklace and Bethlehem should be shared equally by her and

Hana. Mrs. Hana could have avoided the dispute by adding either “respectively” or

“collectively” to the end of the sentence.

In the second example, the conclusion favors Mr. Markos. Asenafi will argue that the condition that he finishes by May 1 affected only the Cadillac and that he therefore is entitled to the $5000. The dispute could have been avoided by properly inserting a comma in the language of the promise.

3.5.2 Fallacy of Grammatical Analogy

Fallacies of grammatical analogy are those fallacies that are caused by the wrong association of the attributes of the parts of some thing onto the whole entity; or conversely, the fallacies of grammatically analogy are caused by the erroneous association of the attributes of the whole entity of something onto its parts.

Moreover, arguments that commit these fallacies are grammatically analogous to other arguments that are good in every respect. Because of this similarity in linguistic structure, such fallacious arguments may appear good yet be bad. The fallacies of grammatical analogy are divided into **two types;** namely, ***composition*** **and** ***division.***

A. Fallacy of Composition

The fallacy of composition is committed when the arguer wrongly transfers the attributes of the parts of something onto the whole. In other words, it is committed when some one argues that what is true of each part of a whole is also (necessarily) true of the whole itself, or what is true of some parts of a whole is also (necessarily) true of the whole itself.

Examples:

Every sentence in this paragraph is well written. Therefore, the paragraph is well written.

Each atom in a piece of chalk is invisible. Therefore, the chalk is invisible.

In these arguments the attributes that are transferred from the parts onto the whole are designated by the words “well written,” and “invisible,” respectively. In each case the transference is illegitimate, and so the argument is fallacious.

You have to take into account that not every such transference is illegitimate, however.

Consider the following arguments:

Examples:

Every atom in this piece of chalk has mass. Therefore, the piece of chalk has mass.

Every component in this picket fence is white. Therefore, the whole fence is white.

In each case an attribute (having mass, being white) is transferred from the parts onto the whole, but these transferences are quite legitimate. Indeed, the fact that the atoms have mass is the very reason *why* the chalk has mass. The same reasoning extends to the fence. Thus, the acceptability of these arguments is attributable, at least in part, to the legitimate transference of an attribute from parts onto the whole

B. Fallacy of Division

The fallacy of division is the direct opposite or converse of composition. The fallacy of division is committed when attributes are wrongly transferred from whole to parts. In other words, it is committed when some one argues that what is true of a whole is also (necessarily) true of its parts, or what is true of a whole is also (necessarily) true of some of its part.

Examples:

This chalk is visible. Therefore, each atom in a piece of chalk is visible.

The USA is the wealthiest country in the world. Hence, my uncle who live there must be wealthy.

These examples show that; the attributes of the collective of the parts is considered as the distributive property of the parts.

The arguer fails to understand that a whole often represents something different from its parts. In each case the attribute, designated respectively by the terms "visible," and "wealthiest" is illegitimately transferred from the whole or class onto the parts or members.

As with the fallacy of composition, however, this kind of transference is not always illegitimate. The following arguments contain no fallacy:

This piece of chalk has mass. Therefore, the atoms that compose this piece of chalk have mass.

This field of poppies is uniformly orange in color. Therefore, the individual poppies are orange in color.

The

End