

Logic and Critical Thinking

Study Book

Chapter 3



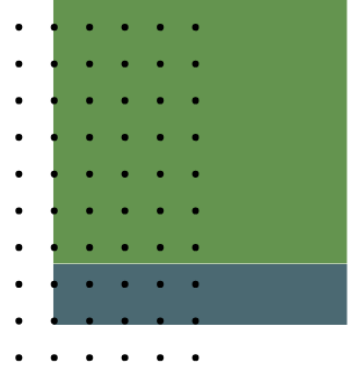
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1st edition

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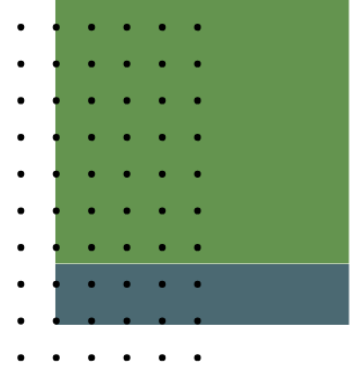
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CHAPTER THREE LOGIC AND LANGUAGE

- Any **good argument** must be presented by **clear, accurate** and **understandable** language
- The **clarification and analysis of terms and statements** is the objective of **philosophy in general** and **logic in particular**
- Many errors in logic stem from a careless or imprecise use of language, and many misunderstandings about the nature of language
 - **logic requires proper use of terms and statements**

Lesson 1: Philosophy of Language: An overview

- **Philosophy of Language** is the reasoned inquiry into the **origins of language**, **nature of meaning**, the **usage and cognition of language**, and the **relationship between language and reality**
- **Language** is a **body of standard meanings of words** and the form of speech used as a means of expressing the feeling, emotion, desire, thought etc in a consistent pattern of communication

1.1 What is Philosophy of Language?

- "what is language (in general terms)?"
 - According to **semiotics**, **language** is the **mere manipulation and use of symbols in order to draw attention to signified content**
 - ✦ **Semiotics** is the study of **sign processes in communication** and of **how meaning is constructed and understood**
- Philosophy of language, however, should not be confused with Linguistics
 - **Linguistics** asks questions like: **What distinguishes one particular language from another**
 - **Linguists**, like Noam Chomsky have **emphasized the role of "grammar" and syntax as a characteristic of any language**
 - ✦ Chomsky believes that humans are born with an **innate understanding** of what he calls **"universal grammar"** and a **child's exposure to a particular language just triggers this antecedent knowledge**
 - ✦ Chomsky begins with the study of **people's internal language** (what he calls **"I-languages"**)
 - ✦ Other attempts, which he dubs **"E-languages"**, have tried to explain a language as **usage within a specific speech community with a specific set of well-formed utterances in mind**

- **Semantic Holism**, a type of Holism which holds that **meaning** is not something that is associated with a single word or sentence, but **can only be attributed to a whole language** (if at all)

1.2 A Brief Note on the Debates and History of Philosophy of Language

- **Plato** generally considered that the **names of things** are determined by nature, with each **phoneme** (the **smallest structural unit that distinguishes meaning**) representing **basic ideas or sentiments**, and that convention only has a small part to play
- **Aristotle** held that the **meaning of a predicate** (the way a subject is modified or described in a sentence) **is established through an abstraction of the similarities between various individual things** (a theory later known as **Nominalism**)
- The **Stoic philosophers** made important contributions to the analysis of grammar, distinguishing five parts of speech: **nouns, verbs, appellatives, conjunctions** and **articles**
 - What they called the **lektón** (the **meaning, or sense, of every term**) gave rise to the important concept of the **proposition of a sentence** (its ability to be considered an assertion, which can be either true or false)
- The **Scholastics of the Medieval era** considered Logic to be a "science of language", and anticipated many of the most interesting problems of modern Philosophy of Language, including **the phenomena of vagueness and ambiguity**, the **doctrines of proper and improper supposition** (the interpretation of a term in a specific context), and the **study of categorematic and syncategorematic words and terms**
- **Linguists of the Renaissance period** were particularly interested in the idea of a **philosophical language (or universal language)**, spurred on by the gradual discovery in the West of Chinese characters and Egyptian hieroglyphs
- The philosophical study of language, finally, began to play a more central role in Western philosophy in the late 19th and 20th Centuries
 - philosophical branches of Analytic Philosophy and philosophy as a whole was understood to be purely a matter of Philosophy of Language
- the **philosophy of language**, particularly for **analytic Philosophers**, has been concerned with **four central problems**: the **nature of meaning**, **language use**, **language cognition**, the **relationship between language, logic and reality**
- For **continental philosophers**, however, the **philosophy of language** tends to be dealt with, **not as a separate topic, but as a part of logic and other field of studies**

1.3 Some Philosophical Approaches to the Nature of Meaning

- Most frequently, "**Meaning**" can be described as the **content carried by the words or signs exchanged by people when communicating through language**

- Arguably, there are **two essentially different types of linguistic meaning**
 - ◆ **Conceptual meaning**
 - the **definitions of words themselves** and the **features of those definitions**, which can be treated using semantic feature analysis
 - ◆ **Associative meaning**
 - the **individual mental understandings of the speaker**, and which may be connotative, collocative, social, affective, reflected or thematic
- **Major approaches to the philosophical nature of meaning**
 - ◆ **Idea theories**
 - claim that **meanings** are purely **mental contents** provoked by signs
 - ◆ **Truth-conditional theories**
 - hold **meaning** to be the **conditions under which an expression may be true or false**
 - ◆ **Use theories**
 - understand **meaning** to involve or be related to **speech acts** and **particular utterances**, not the expressions themselves
 - ◆ **Reference theories (or semantic externalism)**
 - view **meaning** to be **equivalent** to those **things** in the world that are actually **connected to signs**
 - ◆ **Verificationist theories**
 - associate the **meaning** of a sentence with its **method of verification** or **falsification**
 - ◆ **Pragmatist theories**
 - **meaning** or understanding of a sentence is **determined by the consequences of its application**

Key Points On Lesson 1: Philosophy of Language: An overview

- **Language:** body of standard meanings of words and the form of speech used as a means of expressing the feeling, emotion, desire, thought etc in a consistent pattern of communication

1.1 What is Philosophy of Language?

- According to semiotics, **language** is the **mere manipulation and use of symbols** in order to draw attention to signified content
- **Semantic Holism**, holds that **meaning** is not something that is associated with a single word or sentence, but **can only be attributed to a whole language** (if at all)

1.2 A Brief Note on the Debates and History of Philosophy of Language

- **Plato:** names of things are determined by nature, with each **phoneme** representing basic ideas or sentiments, and that convention only has a small part to play
- **Aristotle:** meaning of a predicate is established through an abstraction of the similarities between various individual things (a theory later known as **Nominalism**)
- For **analytic Philosophers**, philosophy of language concerned with **nature of meaning, language use & cognition, relationship between language, logic and reality**
- For **continental philosophers**, philosophy of language not as a separate topic, but as a part of logic and other field of studies

1.3 Some Philosophical Approaches to the Nature of Meaning

- **“Meaning”** described as content carried by the words or signs exchanged by people when communicating through language
- **Two types of linguistic meaning**
 - ◆ **Conceptual meaning:** the definitions of words themselves and the features of those definitions
 - ◆ **Associative meaning:** the individual mental understandings of the speaker
- **Major approaches to the philosophical nature of meaning**
 - ◆ **Idea theories:** meanings -> purely **mental contents** provoked by signs
 - ◆ **Truth-conditional theories:** meaning -> conditions under which an **expression** may be **true or false**
 - ◆ **Use theories:** meaning -> involve **speech acts** and **particular utterances**, not the expressions themselves
 - ◆ **Reference theories (or semantic externalism):** meaning -> **equivalent** to those **things** in the world that are actually **connected to signs**
 - ◆ **Verificationist theories:** associate the meaning of a sentence with its **method of verification** or **falsification**
 - ◆ **Pragmatist theories** meaning -> determined by the **consequences of its application**

Lesson 2: Logic and Meaning

2.1 The Functions of Language: Cognitive and Emotive Meanings

- words are the most basic units in any language, and thus the most important thing in every argument
- Ordinary language two linguistic functions are particularly important: **to convey information** and **to express or evoke feelings**
 - Example:

“Death penalty, which is legal in thirty-six states, has been carried out most often in Georgia; however, since 1977 Texas holds the record for the greatest number of executions.”
 - Example:

“Death penalty is a cruel and inhuman form of punishment in which hapless prisoners are dragged from their cells and summarily slaughtered only to satiate the bloodlust of a vengeful public.”
- ◆ **Cognitive meaning**
 - Terminology that **conveys information**
 - in Example 1 the words “legal,” “thirty-six,” “most often,” “Georgia,” “record,” etc. **have** primarily a **cognitive meaning**
- ◆ **Emotive meaning**
 - terminology that **expresses or evokes feelings**
 - in Example 2 the words “cruel,” “inhuman,” “hapless,” “dragged,” “slaughtered,” “bloodlust,” and “vengeful” **have** a **strong emotive meaning**
- The **emotively charged statement** about the death penalty illustrates two important Points
 - First, statements of this sort usually **have both cognitive meaning and emotive meaning**
 - ✦ since **logic is concerned chiefly with cognitive meaning**, it is **important** that we be able to **distinguish and disengage the cognitive meaning of such statements from the emotive meaning**
 - Second, **part of the cognitive meaning of such statements is a value claim**
- ◆ **Value claim**
 - is a **claim** that something is **good, bad, right, wrong, or better, worse, more important or less important than some other thing**
 - ✦ **example**, the statement about the death penalty asserts the value claim that the **death penalty is wrong or immoral**
 - **value claims** are often the most **important part of the cognitive meaning of emotive statements**

- for the purposes of logic, it is important that we be able to **disengage the value claims of emotively charged statements from the emotive meaning** and treat these claims as separate statements
- when value claims are couched in emotive terminology, the emotive “clothing” tends to **obscure the fact that a value claim is being made**, and it simultaneously gives **psychological momentum** to that claim
 - As a result, readers and listeners are inclined to swallow the value claim whole **without any evidence**

2.1.1 Emotive Terminologies in Arguments

- In arguments, **emotive terminology** allows the arguer to **make value claims** about the subject matter of the argument **without providing evidence**
 - it gives the argument a kind of **steamroller quality** by which it tends to **crush potential counter arguments** before the reader or listener has a chance to think of them
- These effects of emotive terminology **can be avoided** if the reader or listener will **disengage the value claims** and other **cognitive meanings** from the **emotive meaning** of the language and **re-express them as distinct premises**
 - **By restructuring** the argument in this way, **we can** more easily **evaluate the degree to which the premises support the conclusion**

2.1.2 Deficiency of Cognitive Meanings: Vagueness and Ambiguity

- Two problems that affect our cognitive use of language are **vagueness** and **ambiguity**
 - ◆ **Vague/Vagueness**
 - A linguistic expression is said to be vague if there are **borderline cases** in which it is **impossible to tell if the expression applies or does not apply**
 - Vague expressions often **allow for a continuous range of interpretations**
 - The meaning is **hazy, obscure, and imprecise**. example, words such as “love,” “happiness,” “peace,” “excessive,” “fresh,” “rich,” “poor,” “normal,” “conservative,” and “polluted” are vague
 - ✦ How fresh does something have to be in order to be called fresh?
 - **Vagueness can also affect entire statements**
 - ✦ example, suppose someone were to say, “Today our job situation is more transparent.” what is the meaning of “job situation”? Does it refer to finding a job, keeping a job, And what exactly does it mean for a job situation to be “transparent”? Does it mean that the job is more easily perceived or comprehended?
 - Not all cases of vagueness, however, are problematic

- ✦ To describe an acquaintance as “tall” or “thin” often **causes no trouble in ordinary conversation**

◆ **Ambiguous/Ambiguity**

- Expression is ambiguous when **it can be interpreted as having more than one clearly distinct meaning in a given context**
 - ✦ example, words such as “light,” “proper,” “critical,” “stress,” “mad,” “inflate,” “chest,” “bank,” “sound,” and “race” can be used ambiguously
 - ✦ If one were to describe an action as proper, does this mean proper in a moral sense or proper in the sense of being socially acceptable?
- **ambiguity can also affect entire statements**

Note

- **difference between ambiguity and vagueness**
 - **vague** terminology **allows** for a relatively **continuous range of interpretations**, whereas **ambiguous** terminology **allows** for **multiple discrete interpretations**
 - In a **vague** expression there is a **blur of meaning**, whereas in an **ambiguous** expression there is a **mix-up of otherwise clear meanings**
- The role of vagueness and ambiguity in arguments may be conveniently explored in the context of conflicting arguments between individuals
 - Such conflicts are called disputes. the **two kinds of disputes in logic**:
 - ✦ Verbal Disputes
 - ✦ Factual Disputes

2.1.3 Forms of Disputes in Logic: Verbal and Factual Disputes

Verbal disputes

- Disputes that **arise over the meaning of language**
- the apparent **conflict is not genuine and can be resolved by coming to agreement about how some words or phrases is to be understood**
 - Example:

Kassa: Mrs. Zenebech abuses her children. And how do I know that? I saw her spank one of her kids the other day after the kid misbehaved

Jemal: Don't be silly. Kids need discipline, and by disciplining her children, Mrs. Zenebech is showing that she loves them

 - ✦ Here, **the problem surrounds the vagueness of the words “abuse” and “discipline.”**
 - ✦ **When does discipline become abuse? The line separating the two is hazy at best, but unless it is clarified, disputes of this sort will never be resolved**
 - Example:

› Mullu: I'm afraid that Dagim is guilty of cheating in the exam. Last night he confessed to me that he was sate closer to Tsedale, who is the most excellent student in our class, and takes almost all answers from her

Worku: No, you couldn't be more mistaken. In this country, no one is guilty until proven so in a court of law, and Dagim has not yet even been accused of anything

✦ the dispute arises over the ambiguity of the word "guilty." Mullu is using the word in the moral sense. Worku, on the other hand, is using the word in the legal sense

Factual Disputes

› disputes arise over a **disagreement about facts**

› Example:

Debebe: I know that Fisseha stole a computer from the old school house. Aberash told me that she saw Fisseha do it

Maru: That's ridiculous! Fisseha has never stolen anything in his life. Aberash hates Fisseha, and she is trying to pin the theft on him only to shield her criminal boyfriend

✦ Here, the dispute centers on the factual issues of whether Aberash told the truth and whether Fisseha stole the computer

2.2 The Intension and Extension of Terms

› A **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: Abebe, South Ethiopia ...

✦ Common Names: Animal, Activity ...

✦ Descriptive Phrases: First Prime Minister of Ethiopia, Author of Oromay ...

› Words that are not terms include verbs, non-substantive adjectives, adverbs, prepositions, conjunctions, and all non-syntactic arrangements of words

› it is important to **distinguish the use of a word from the mention of a word**

› The word "wherever," for example, is not a term, but "**wherever**" (in quotes) can serve as the **subject** of a statement

› **Words** are usually considered to be symbols, and the entities they symbolize are usually called **meanings**

› The meanings they symbolize are of two kinds: intensional and extensional

◆ **Intensional meaning**

› Which is otherwise known as **intension** or **connotation**

› Consists of the **qualities or attributes that the term connotes**

◆ **Extensional meaning**

- Which is otherwise known as **extension** or **denotation**
- Consists of the **members of the class that the term denotes**

Example

- ✦ the **intensional meaning** of the term “cat” consists of the attributes of being furry, of having four legs, of moving in a certain way, of emitting certain sounds, and so on, while
- ✦ the **extensional meaning** consists of cats themselves - all the cats in the universe
- ✦ The term **connotes the attributes and denotes the cats**
- “**Intension**” and “**extension**” are roughly **equivalent** to the more modern terms “**sense**” and “**reference**,” respectively
- Because terms symbolize meanings to individual persons, **it is inevitable for subjective elements to invade the notion of connotation**
 - To a cat lover the term “cat”, for example, might connote the attributes of being cuddly and adorable, while to someone who hates cats it might connote the attributes of being obnoxious and disgusting
 - To avoid this problem, logicians typically **restrict the meaning of connotation to what is usually called the conventional connotation**
 - ✦ **conventional connotation** of a term includes the attributes that the term commonly calls forth in the minds of competent speakers of the language
- The **denotation of a term** also typically **remains the same from person to person**, but it **may change with the passage of time**
 - The denotation of “currently living cat,” for example, is constantly fluctuating as some cats die and others are born
 - The denotation of the term “cat,” on the other hand, is presumably constant because it denotes all cats, past, present, and future
- terms now have what is called **empty extension**. They are said to **denote the empty** (or “null”) class, the **class that has no members**
 - While these terms have empty extension, however, they do not have empty intension
- an important connection between extension and intension - that **intension determines extension**
 - The **intensional meaning** of a term **serves as the criterion for deciding** what the **extension** consists of
 - ✦ Because we know the attributes **connoted** by the term “unicorn” - a term with **empty extension**, for example, we know that the term has **empty extension**. That is, we know that there are no four - legged mammals having a single straight horn projecting from their forehead

- ✦ Similarly, the **intension of the word “cat”** serves as the criterion for **determining** what is and **what is not a member of the class of cats**
- One kind of **term that raises problems** for the **intension-determines-extension rule** is **proper names**. example, the name **“Abebe” might not appear to have any intension, but it denotes** the person who has this name
 - **One possible** solution to this problem is that **names are shorthand symbols** for descriptions or bundles of descriptions
 - ✦ For example, “Abebe” could be shorthand for “the first year student of Civil Engineering department, since 2005 E.C.” or “the person who is a representative of this section.”
 - **Another possible solution** to the problem of proper names is that the **intension of proper names consists of the causal chain of events** leading from the point at which the name is **first assigned** to the point at which a **certain person learns about the name**
 - ✦ Thus, the first link in such a chain might be the baptismal event at which the name “Abebe” is given to a certain infant
 - ✦ the second link would be the event in which a certain third party is informed of the first event, and so on
 - ✦ This **entire chain of events** extending through the linguistic community would **then constitute the intension of “Abebe.”**
 - Thus, **we conclude that for all terms, including proper names, intension determines extension**

Order to sequences of terms:

- **Order of increasing intension**
 - **each term** in the series (except the first) **connotes more attributes** than the one preceding it
 - **each term** in the series (except the first) is **more specific** than the one preceding it. A term is specific to the degree that it connotes more attributes
- **Order of decreasing intension**
 - the **reverse of that of increasing intension**
- **Order of increasing extension**
 - **each term** in the series (except the first) **denotes a class having more members** than the class denoted by the term preceding it
 - the **class size gets larger** with each successive term
- **Order of decreasing extension**
 - the **reverse of that of increasing extension**
 - ✦ Examples

Increasing intension: animal, mammal, feline, tiger

Increasing extension: tiger, feline, mammal, animal

Decreasing intension: tiger, feline, mammal, animal

Decreasing extension: animal, mammal, feline, tiger

➤ The **order of increasing intension** is usually the **same** as that of **decreasing extension**

➤ Conversely, the **order of decreasing intension** is usually the **same** as that of **increasing extension**

➤ There are, however, some **exceptions**

➤ Consider the following series:

Unicorn; unicorn with blue eyes; unicorn with blue eyes and green horn; unicorn with blue eyes, green horn, and a weight of over 400 pounds

✦ **Each term in this series has empty extension**; so, **while the series exhibits the order of increasing intension, it does not exhibit the order of decreasing extension**

➤ Example:

living human being; living human being with a genetic code; living human being with a genetic code and a brain; living human being with a genetic code, a brain, and a height of less than 100 feet

✦ In this series, **none of the terms has empty extension, but each term has exactly the same extension as the others**

✦ Thus, **while the intension increases** with each successive term, once again the **extension does not decrease**

Key Points On Lesson 2: Logic and Meaning

2.1 The Functions of Language: Cognitive and Emotive Meanings

- Ordinary language two linguistic functions are particularly important: to **convey information** and to **express or evoke feelings**
 - ◆ **Cognitive meaning:** Terminology that **conveys information**
 - Example words “**legal**,” “**thirty-six**,” etc. have primarily a **cognitive meaning**
 - ◆ **Emotive meaning:** Terminology that **expresses or evokes feelings**
 - Example words “**cruel**,” “**inhuman**,” “**bloodlust**,” have a **strong emotive meaning**
- Emotively charged statement illustrates two important Points
 - First, They **have both cognitive meaning and emotive meaning**
 - ✦ since **logic is concerned chiefly with cognitive meaning**, it is important to distinguish and disengage the cognitive meaning from the emotive meaning
 - Second, part of the cognitive meaning of such statements is a value claim
- ◆ **Value claim**
 - is a **claim** that something is **good, bad, right, wrong, or better, worse ...**
 - value claims are important part of the **cognitive meaning of emotive statements**
- when **value claims are couched in emotive terminology**, the emotive “clothing” tends to **obscure the fact that a value claim is being made**, and it simultaneously gives **psychological momentum** to that claim
 - As a result, readers and listeners are inclined to swallow the value claim whole **without any evidence**

2.1.1 Emotive Terminologies in Arguments

- In arguments, **emotive terminology** allows the arguer to **make value claims without providing evidence**
 - it gives the argument a kind of **steamroller quality** by which it tends to **crush potential counter arguments** before the reader or listener has a chance to think of them

2.1.2 Deficiency of Cognitive Meanings: Vagueness and Ambiguity

- ◆ **Vague/Vagueness**
 - **borderline cases** in which it is **impossible to tell if the expression applies or does not apply**
 - it allow for a **continuous range of interpretations**
 - Meaning is **hazy, obscure, imprecise**. Example words “**love**,” “**happiness**” ...
 - **Vagueness can also affect entire statements**
 - Not all cases of vagueness, however, are problematic
- ◆ **Ambiguous/Ambiguity**
 - **having more than one clearly distinct meaning** in a given context

✦ Example, words such as “light,” “proper,” “critical,” ... can be used ambiguously

➤ ambiguity can also affect entire statements

Note

➤ difference between ambiguity and vagueness

➤ vague terminology -> allows continuous range of interpretations

➤ ambiguous terminology -> allows for multiple discrete interpretations

➤ In a vague expression -> there is a blur of meaning

➤ In an ambiguous expression -> there is a mix-up of otherwise clear meanings

2.1.3 Forms of Disputes in Logic: Verbal and Factual Disputes

Verbal disputes

➤ Disputes that arise over the meaning of language

➤ the apparent conflict is not genuine and can be resolved by coming to agreement about how some words or phrases is to be understood

Factual Disputes

➤ disputes arise over a disagreement about facts

➤ Here, maybe the dispute centers on the factual issues of whether the truth told

2.2 The Intension and Extension of Terms

➤ A term: word or arrangement of words that may serve as the subject of a statement

➤ Terms consist of proper names, common names, and descriptive phrases

➤ Words are usually considered to be symbols, and the entities they symbolize are usually called meanings

➤ The meanings they symbolize are of two kinds

◆ Intensional meaning (also known as intension or connotation)

➤ Consists of the qualities or attributes that the term connotes

◆ Extensional meaning (also known as extension or denotation)

➤ Consists of the members of the class that the term denotes

➤ “Intension” roughly equivalent to the more modern terms “sense”

➤ “extension” roughly equivalent to the more modern terms “reference”

➤ Because terms symbolize meanings to individual persons, it is inevitable for subjective elements to invade the notion of connotation

➤ To avoid this problem, logicians typically restrict the meaning of connotation to what is usually called the conventional connotation

➤ The denotation of a term also may change with the passage of time

➤ Empty extension denote the empty (or “null”) class, the class that has no members

➤ intension determines extension:

- The **intensional meaning** of a term serves as the criterion for deciding what the **extension** consists of
- One kind of **term that raises problems** for the **intension-determines-extension** rule is **proper names** example, the name **might not** appear to **have** any **intension**, but it **denotes** the person who has the name
 - **One possible** solution is that **names** are **shorthand symbols**
 - **Another possible solution** is intension of proper names consists of the **causal chain of events** leading from the point the name is **first assigned** to the point at which a **certain person** learns about the name
- Thus, **we conclude that for all terms, including proper names, intension determines extension**

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- **Order of increasing intension**
 - **each term** in the series (except the first) **connotes more attributes** than the one preceding it
 - **each term** (except the first) is **more specific** than the one preceding it
- **Order of decreasing intension**
 - the **reverse of** that of **increasing intension**
- **Order of increasing extension**
 - **each term** in the series (except the first) **denotes a class having more members** than the class denoted by the term preceding it
 - the **class size gets larger** with each successive term
- **Order of decreasing extension**
 - the **reverse of** that of **increasing extension**
- The **order of increasing intension** is usually the **same as** that of **decreasing extension**
- Conversely, the **order of decreasing intension** is usually the **same as** that of **increasing extension**
- There are, however, some **exceptions**
 - **When each term has empty extension**; while the series **exhibits the order of increasing intension**, it **does not exhibit the order of decreasing extension**
 - When, **none of the terms has empty extension, but each term has exactly the same extension as the others**; while the **intension increases** with each successive term, once again the **extension does not decrease**



University Exams

Lesson 2: Logic and Meaning

Instruction: True/False

1. An intentional definition or a term usually determines the extensional definition of terms and vice versa

✓ Answer: False

≡ Explanation: The vice versa is not true because extensional definition does not determine intentional definition

📖 Module Reference:

- ✓ an important connection between extension and intension- that intension determines extension – Module Page 102 Line 17
- ✓ To attempt to render the intension precise by exactly specifying the extension (as with an extensional definition) would be tantamount to having extension determine intension- which cannot be done – Module Page 113 Line 24
- ✓ The principle that intension determines extension, whereas the converse is not true – Module Page 114 Line 1

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Instruction: Multiple Choice

2. Which of the following is sequence of terms is provided in the order of increasing intension?

- A. Mammal, animal, University of Gondar student, rational animal, student
- B. Animal, mammal, rational animal, student, University of Gondar student
- C. University of Gondar student, student, rational animal, mammal, animal
- D. Animal, rational animal, mammal, student, university of Gondar student

✓ Answer: B

≡ Explanation: As we go from animal to University of Gondar student the terms are getting more specific and connote more attributes. Option D is incorrect, when we move from rational animal to mammal it becomes less specific because we know only human are rational animals and moving to mammal broad the scope to

irrational animals. Therefore, the correct direction is from mammal to rational animal

 Module Reference:

- ✓ A series of terms is in the order of increasing intension when each term in the series (except the first) connotes more attributes than the one preceding it. In other words, each term in the series (except the first) is more specific than the one preceding it – Module Page 103 Line 16

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3. Which of the following statements has primary a cognitive meaning?

- A. Betty G's latest novel prize performance is positively stunning
- B. From what I saw last night, It's clear that your little brother is spoiled child
- C. Private insurance companies regularly overcharge the Medicare program
- D. Everyone with a functioning brain rejects religious fundamentalism
- E. Our teacher delivered a moronic lecture today on Plato's metaphysics

✓ **Answer: C**

≡ **Explanation:** Only option C statement is primary has a cognitive meaning because it contain no words that expresses or evokes feelings and its main purpose is to Convery information which is "the overcharging of insurance companies". However in option A, B, D and E words/phrases like "**stunning**", "**Spoiled**", "**a functioning brain**", "**moronic**" has purpose of evoking the readers feelings

 Module Reference:

- ✓ Terminology that conveys information is said to have cognitive meaning. in Example 1 the words "legal," "thirty-six," "most often," "Georgia," "record," etc. have primarily a cognitive meaning – Module Page 94 Line 15 & 23
- ✓ terminology that expresses or evokes feelings is said to have emotive meaning. in Example 2 the words "cruel," "inhuman," "hapless," "dragged," "slaughtered," "bloodlust," and "vengeful" have a strong emotive meaning – Module Page 94 Line 17 & 24

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4. Which one of the following word is vague?

A. Bank

B. Right

C. Tall

D. Light

✓ Answer: C

≡ Explanation:

📖 Module Reference:

- ✓ Not all cases of vagueness, however, are problematic. To describe an acquaintance as “**tall**” or “thin” often causes no trouble in ordinary conversation. Indeed, it may be overly burdensome to describe this person in more precise language. Trouble arises only when the language is not sufficiently precise for what the situation demands – Module Page 97 Line 24
- ✓ For example, words such as “**light**,” “proper,” “critical,” “stress,” “mad,” “inflate,” “chest,” “**bank**,” “sound,” and “race” can be used ambiguously. If one were to describe an action as proper, does this mean proper in a moral sense or proper in the sense of being socially acceptable? – Module Page 98 Line 3

Lesson 3: Meaning, Types, and Purposes of Definitions

3.1 The Meaning of Definition

- **Definition** is a technical and structural organization of words and/or terms or phrases in **explaining the meaning of a given term**
- words and/or terms or phrases in explaining the meaning of a given term. For most logicians, **definitions are intended exclusively to explicate the meaning of words**
- Every definition consists of two parts:
 - ◆ **Definiendum**
 - the word or group of words that is **supposed to be defined**
 - ◆ **Definiens**
 - the word or group of words that **does the defining**
 - Example
Definition: “‘Tiger’ means a large, striped, ferocious feline indigenous to the jungles of India and Asia”
Definiendum: the word “tiger”
Definiens: everything after the word “means”
- The **definiens is not itself the meaning of the definiendum**; rather, it is the group of words that **symbolizes (or that is supposed to symbolize) the same meaning as the definiendum**

3.2 The Types and Purposes of Definitions

Stipulative Definitions

- A stipulative definition **assigns a meaning to a word for the first time**
 - This may involve either **coining a new word** or **giving a new meaning to an old word**
- The **purpose of a stipulative definition** is usually to **replace a more complex expression with a simpler one**
- The **need for a stipulative definition** is often occasioned by some **new phenomenon or development**
 - Example: the attempt, which has made to crossbreed tigers and lions, has been succeeded. When the offspring were born, it became appropriate to give them names. the names “tigon” and “liger” were selected. Hence, “Tigon” was taken to mean the offspring of a male tiger and a female lion, and “liger” the offspring of a male lion and a female tiger
- Another use for stipulative definitions is to **set up secret codes**
 - Example: “Operation Desert Storm” was the code name given to the military invasion of Iraq

- because a **stipulative definition** is a **completely arbitrary assignment** of a meaning to a word for the first time, **there can be no such thing as a “true” or “false” stipulative definition**
 - Furthermore, for the same reason, a **stipulative definition cannot provide any new information** about the subject matter of the definiendum
 - One stipulative definition may, however, be more or less convenient or more or less appropriate than another
- Stipulative definitions are **misused in verbal disputes** when one person covertly uses a word in a peculiar way and then proceeds to **assume that everyone else uses that word in the same way**
- **insofar as people keep coming up with new creations**, whether it be new food concoctions, new inventions, new modes of behavior, new kinds of apparel, new dances, or whatever, **the demand for stipulative definitions will continue**

Lexical Definitions

- This definition is **used to report the meaning that a word already has in a language**. **Dictionary definitions** are all instances of lexical definitions
- In contrast with a stipulative definition, a **lexical definition may be true or false** depending on **whether it does or does not report the way a word is actually used**
- Because **words are frequently used in more than one way**, lexical definitions **have the further purpose of eliminating the ambiguity** that would otherwise arise if one of these **meanings were to be confused with another**
- Because a lexical definition lists the various meanings that a word can have, a person who consults such a definition is better prepared to avoid ambiguous constructions of his or her own and to detect those of others
 - In many cases the **problem lies with the subtle shadings of meaning** that are **more likely to be confused with one another**
 - example, if a woman is described as “nice,” any number of things could be intended. She could be fastidious, refined, modest, pleasant, attractive, or even lewd
 - ✦ A **good lexical definition will distinguish these various shadings** and thereby guard against the possibility that two such meanings will be unconsciously jumbled together into one

Précising Definitions

- The **purpose of a précising definition is to reduce the vagueness of a word**
 - an expression is vague if there are borderline cases in which it is impossible to tell if the word applies or does not apply

- Once the **vagueness of such words is reduced by a précising definition**, one can reach a **decision** as to the **applicability of the word to a specific situation**
 - example, if legislation were ever introduced to give direct financial assistance to the poor, a précising definition would have to be supplied specifying exactly who is poor and who is not
 - ✦ The definition **“Poor” means having an annual income of less than \$4,000 and a net worth of less than \$20,000** is an **example of a précising definition**
- Whenever words are taken from **ordinary usage** and used in a **highly systematic context** such as science, mathematics, medicine, or law, **they must always be clarified by means of a précising definition**
 - The terms “force,” “energy,” “element,” ... have all been given précising definitions by specific disciplines
- Sometimes the **substance of a court trial may revolve around the precise usage of a term**
 - A trial in California addressed the question of whether a man who had driven a bicycle while intoxicated violated the motor vehicle code
 - ✦ The question concerned whether, for these purposes, a bicycle could be considered a “vehicle.”
 - ✦ The court decided in the affirmative, and the decision amounted to an incremental extension of an already existent précising definition of the word “vehicle.”
- A **précising definition differs from a stipulative definition** in that the latter involves a purely arbitrary assignment of meaning, whereas the **assignment of meaning in a précising definition is not at all arbitrary**
 - A great deal of care must be taken to ensure that the **assignment of meaning in a précising definition is appropriate and legitimate for the context** within which the term is to be employed

Theoretical Definitions

- 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
- Such a definition provides a way of **viewing or conceiving these entities that suggests deductive consequences, further investigation (experimental or otherwise)**, and whatever else would be **entailed by the acceptance of a theory governing these entities**
 - The **definition of the term “heat”** found in texts **dealing with the kinetic theory of heat** provides a good example: **“heat” means the energy associated with the random motion of the molecules of a substance**

- ✦ This definition does more than merely assign a meaning to a word; it provides a way of conceiving the physical phenomenon that is heat
- ✦ In so doing, it suggests the deductive consequence that as the molecules of a substance speed up the temperature of the substance increases
- ✦ In short, this **definition of “heat” provides the impetus for an entire theory about heat**
- However, **not all theoretical definitions are associated with science**
 - Many terms in philosophy, such as “substance”, “form”, “cause” ... have been given theoretical definitions
 - most of the major philosophers in history have **given these terms their own peculiar theoretical definitions**, and this fact **accounts in part for the unique character of their respective philosophies**
 - ✦ Example: John Stuart Mill’s definition of “good” as the greatest happiness of the greatest number provided the underpinnings for his **utilitarian theory of ethics**
- Like stipulative definitions, **theoretical definitions are neither true nor false**, strictly speaking
 - The reason is that **theoretical definitions function as proposals to see or interpret some phenomenon in a certain way**
 - **Since proposals have no truth value, neither do theoretical definitions**
 - ✦ They may, however, be more or less interesting or more or less fruitful, **depending on the deductive consequences they entail** and on the outcome of the experiments they suggest

Persuasive Definitions

- The **purpose of a persuasive definition** is to **engender a favorable or unfavorable attitude toward what is denoted by the definiendum**
 - This purpose is accomplished by **assigning an emotionally charged or value-laden meaning** to a word while making it appear that the word really has (or ought to have) **that meaning in the language in which it is used**
- Thus, **persuasive definitions amount to a certain synthesis of stipulative, lexical, and, possibly, theoretical definitions** backed by the rhetorical motive to engender a certain attitude
 - As a result of this synthesis, **a persuasive definition masquerades as an honest assignment of meaning to a term while condemning or blessing with approval the subject matter of the definiendum**
 - Examples
 - “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

- While **persuasive definitions** may, like lexical definitions, be evaluated as either true or false, the **primary issue is** neither truth nor falsity but **the effectiveness of such definitions as instruments of persuasion**
- Giving their primary objective - i.e., **influencing the attitudes of the reader/listener** persuasive definitions may be used with considerable **effectiveness in political speeches and editorial columns**

Key Point On Lesson 3: Meaning, Types, and Purposes of Definitions

3.1 The Meaning of Definition

- **Definition** is a technical and structural organization of words and/or terms or phrases in **explaining the meaning of a given term**
- Every definition consists of two parts:
 - ◆ **Definiendum**
 - the word or group of words that is **supposed to be defined**
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- The **definiens** is **not** itself the **meaning of the definiendum**; rather, it is the group of words that **symbolizes the same meaning** as the definiendum

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Stipulative Definitions

- A stipulative definition **assigns a meaning** to a word **for the first time**
 - may involve either **coining a new word** or **giving a new meaning to an old word**
- The **purpose of a stipulative definition** is usually to **replace** a more **complex** expression with a **simpler one**
- The **need for a stipulative definition** is often occasioned by some **new phenomenon or development**
- Another use for stipulative definitions is to set up **secret codes**
- because a **stipulative definition** is a **completely arbitrary assignment** of a meaning to a word for the first time, **there can be no** such thing as a **“true” or “false” stipulative definition**
 - stipulative definition **cannot provide any new information** about the subject matter of the definiendum

Lexical Definitions

- This definition is **used to report the meaning that a word already has in a language**. **Dictionary definitions** are all instances of lexical definitions
- lexical definition **may be true or false** depending on **whether it does or does not report the way a word is actually used**
- Because **words are frequently used in more than one way**, lexical definitions **have the further purpose of eliminating the ambiguity**

Précising Definitions

- The **purpose of a précising definition** is to **reduce the vagueness of a word**
- Once the **vagueness of such words** is reduced by a précising definition, one can reach a **decision** as to the applicability of the word to a specific situation

- Whenever words are taken from **ordinary usage** and used in a **highly systematic context** they must always be clarified by means of a **précising definition**
- the **Assignment of meaning in a précising definition** is not at all arbitrary

Theoretical Definitions

- 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
- Such a definition provides a way of **viewing or conceiving these entities that suggests deductive consequences, further investigation (experimental or otherwise)**, and whatever else would be **entailed by the acceptance of a theory governing these entities**
- However, **not all theoretical definitions are associated with science**
 - Many terms in philosophy, such as “substance”, “form”, “cause” ... have been given theoretical definitions
 - most of the major philosophers in history have **given these terms their own peculiar theoretical definitions**, and this fact **accounts in part for the unique character of their respective philosophies**
- **theoretical definitions are neither true nor false**, strictly speaking
 - The reason is that **theoretical definitions function as proposals to see or interpret some phenomenon in a certain way**
 - **Since proposals have no truth value, neither do theoretical definitions**
 - ✦ They may, however, be **more or less interesting or more or less fruitful, depending on the deductive consequences they entail** and on the **outcome of the experiments they suggest**

Persuasive Definitions

- The **purpose of a persuasive definition** is to **engender a favorable or unfavorable attitude toward what is denoted by the definiendum**
 - This purpose is accomplished by **assigning an emotionally charged or value-laden meaning to a word**
- Thus, persuasive definitions **amount to a certain synthesis of stipulative, lexical, and, possibly, theoretical definitions** backed by the rhetorical motive to engender a certain attitude
- As a result of this synthesis, **a persuasive definition masquerades as an honest assignment of meaning to a term while condemning or blessing with approval the subject matter of the definiendum**
- While persuasive definitions may be evaluated as either true or false, the **primary issue is neither truth nor falsity but the effectiveness of such definitions as instruments of persuasion**



University Exams

Lesson 3: Meaning, Types, and Purposes of Definitions

Instruction: True/False

1. Lexical definitions are the kinds of definitions found in dictionaries and report the conventional definition of a term for the purpose of eliminating the ambiguity

✓ Answer: True

≡ Explanation:

📖 Module Reference:

- ✓ This definition is used to report the meaning that a word already has in a language. Dictionary definitions are all instances of lexical definitions – Module Page 107 Line 10
- ✓ Because words are frequently used in more than one way, lexical definitions have the further purpose of eliminating the ambiguity – Module Page 107 Line 13

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Instruction: Multiple Choice

2. A type of definition that assigns meaning of a term after new phenomena /development introduced is

- A. Lexical definition
- B. Theoretical definition
- C. Persuasive definition
- D. Stipulative definition

✓ Answer: D

≡ Explanation:

📖 Module Reference:

- ✓ The need for a stipulative definition is often occasioned by some new phenomenon or development – Module Page 106 Line 5

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3. Identify the statement which is correct about definition in logic

- A. All terms under lexical definitions are vague and necessarily hold the truth value
- B. The role of definiens is always projected to offer extensional description to the definiendum
- C. In both persuasive and stipulative definitions the ultimate objective is to assign meaning which basically consists of truth
- D. Words are said to be "vague" when there are borderline cases where it is impossible to decide whether they apply, because their meanings do not have sharp boundaries

✓ Answer: D

≡ Explanation: Only option D is correct. Option A is incorrect because lexical definitions are not vague rather they try to eliminate vagueness. Option B is incorrect because definiens are not only related with extensional description but also with intentional description too. Option C is incorrect because stipulative definitions doesn't have truth-value

📖 Module Reference:

- ✓ A linguistic expression is said to be vague if there are borderline cases in which it is impossible to tell if the expression applies or does not apply – Module Page 97 Line 11
- ✓ Because words are frequently used in more than one way, lexical definitions have the further purpose of eliminating the ambiguity that would otherwise arise if one of these meanings were to be confused with another – Module Page 107 Line 13
- ✓ because a stipulative definition is a completely arbitrary assignment of a meaning to a word for the first time, there can be no such thing as a "true" or "false" stipulative definition – Module Page 106 Line 23

4. Identify the definition which is purely persuasive

- A. "Ocean" means those bodies of salt water with an area greater than five million square miles
- B. "Suicide" means ruthless self-murdering

C. "Assault" means for legal purpose, a deliberate act resulting in the apprehension of an Immediate harmful of offensive contact

D. "Dinosaur" means an extinct reptile

✓ Answer: B

≡ Explanation: The word "ruthless" is emotionally charged word and the whole statement indicates that "Suicide" is unfavorable or unacceptable thing. Trying to peruse something is what persuasive definitions accomplish and we clearly see that in this statement

📖 Module Reference: The purpose of a persuasive definition is to engender a favorable or unfavorable attitude toward what is denoted by the definiendum. This purpose is accomplished by assigning an emotionally charged or value-laden meaning to a word while making it appears that the word really has (or ought to have) that meaning in the language in which it is used ... examples: "Abortion" means the ruthless murdering of innocent human beings – Module Page 110 Line 7

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5. The definition "'Contract' means an agreement enforceable by law" is an example of

A. A definition by genus and difference

B. An etymological definition

C. A theoretical definition

D. A précising definition

E. A definition by subclass

✓ Answer: D

≡ Explanation:

📖 Module Reference: Whenever words are taken from ordinary usage and used in a highly systematic context such as science, mathematics, medicine, or law, they must always be clarified by means of a précising definition. The terms "force," "energy," "acid," "element," "number," "equality," "**contract**," and "agent" have all been given précising definitions by specific disciplines – Module Page 108 Line 8

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6. The definition "'juvenile' means, for the purposes of law, a person under 16 years of age" is an example of

- A. A theoretical definition
- B. An etymological definition
- C. A synonymous definition
- D. A précising definition
- E. An operational definition

✓ Answer: D

≡ Explanation:

📖 Module Reference: The purpose of a précising definition is to reduce the vagueness of a word. For example, if legislation were ever introduced to give direct financial assistance to the poor, a précising definition would have to be supplied specifying exactly who is poor and who is not. The definition “Poor” means having an annual income of less than \$4,000 and a net worth of less than \$20,000” is an example of a précising definition – Module Page 108 Line 2 & 6

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7. Of the following one is correct about definition

- A. Stipulative definition are universally accepted definitions
- B. Lexical definitions are the most world widely and commonly used definitions
- C. The purpose of persuasive definitions is to minimize vagueness of terms
- D. Theoretical definitions can be evaluated as either true or false
- E. Précising definitions are neither true nor false

✓ Answer: B

≡ Explanation:

📖 Module Reference:

- ✓ Giving the function of a lexical definition, lexical definitions are what we most frequently encounter and are what most people mean when they speak of the “definition” of a word – Module Page 118 Line 13
- ✓ Stipulative definitions are misused in verbal disputes when one person covertly uses a word in a peculiar way and then proceeds to assume that everyone else uses that word in the same way. Under these circumstances that person is said to be using the word “stipulatively”. In such cases the assumption that other persons use the word in the same way is rarely justified – Module Page 107 Line 2

- ✓ lexical definitions have the further purpose of eliminating the ambiguity that would otherwise arise if one of these meanings were to be confused with another – Module Page 107 Line 13
- ✓ The purpose of a persuasive definition is to engender a favorable or unfavorable attitude toward what is denoted by the definiendum – Module Page 110 Line 7
- ✓ theoretical definitions are neither true nor false, strictly speaking. The reason is that theoretical definitions function as proposals to see or interpret some phenomenon in a certain way – Module Page 110 Line 1

8. The definition “‘Integration’ means a communist – inspired policy that forces rich parents to send their children to inferior schools” is an example of a

- A. Lexical definition
- B. Theoretical definition
- C. Stipulative definition
- D. Persuasive definition
- E. Précising definition

✓ Answer: D

≡ Explanation: The statement tries to engender unfavorable attitude toward the concept of “integration” using emotionally charged or value-laden words like “inferior”

📖 Module Reference: The purpose of a persuasive definition is to engender a favorable or unfavorable attitude toward what is denoted by the definiendum. This purpose is accomplished by assigning an emotionally charged or value-laden meaning to a word while making it appear that the word really has (or ought to have) that meaning in the language in which it is used – Module Page 110 Line 7

Lesson 4: Techniques of Definition

4.1 The Extensional (Denotative) Definitional Techniques

◆ Extensional definition

- is one that assigns a meaning to a term by indicating the members of the class that the definiendum denotes
- There are at least three ways of indicating the members of a class
 - pointing to them (**demonstrative** or ostensive definitions)
 - naming them individually (**enumerative** definitions)
 - naming them in groups (definitions by subclass)

Demonstrative (Ostensive) Definitions

- the **most primitive** form of definition
- All one need know to understand such a definition is the meaning of **pointing**
 - **Such definitions may be either partial or complete**, depending on whether all or only some of the members of the class denoted by the definiendum are pointed to
 - Example
 - “Chair” means this and this and this - as you point to a number of chairs, one after the other
- If you were attempting to teach a foreigner your own native language, and neither of you understood a word of each other’s language, **demonstrative definition would almost certainly be one of the methods you would use**
- **Demonstrative definitions are also the most limited**
 - there is the obvious limitation that the **required objects be available for being pointed at**
 - ✦ example, if one wishes to define the word “sun” and it happens to be nighttime, a demonstrative definition cannot be used
- 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**

Enumerative Definitions

- Enumerative Definitions assign a meaning to a term by naming the members of the class the term denotes
- they may also be either partial or complete
 - Example:

“Actor” means a person such as Abebe Balicha, Samsom Taddesse, or Mahder Assefa

- **Complete enumerative definitions** are usually **more satisfying** than partial ones because they identify the definiendum with greater assurance

Definition by Subclass

- Definition by Subclass **assigns a meaning to a term by naming subclasses of the class denoted by the term**
 - Such a definition, too, **may be either partial or complete**
 - examples, the first is partial, the second is complete
 - ✦ “Tree” means an oak, pine, elm, spruce, maple, and the like
 - ✦ “Fictional work” means a poem, a play, a novel, or a short story
- As with definitions by enumeration, **complete definitions by subclass are more satisfying than partial ones** but complete definitions by subclass are often difficult, if not impossible, to provide
- **Complete definitions by subclass are often difficult**, if not impossible, to provide
 - **Lexical definitions** are aimed at communicating how a word is actually used, and one of the ways of doing so is by **identifying the members of the class that the word denotes**
 - **Dictionaries**, for example, frequently **include references to the individual members (enumerative definition), or to the subclasses of the class (definition by subclass)** denoted by the word being defined and sometimes to the picture of the object that word symbolizes (demonstrative)
 - The **task of stipulative definitions may be accomplished by all three kinds of extensional definition**
- Although it is conceivable that **extensional definitions** could also serve as techniques for **theoretical and persuasive definitions** (though this would be highly unusual), **extensional definitions** by themselves **cannot properly serve as précising definitions**, for the following reason
 - The function of a **précising definition** is to clarify a vague word, and **vagueness is a problem affecting intensional meaning**
 - **Because the intension is imprecise, the extension is indefinite**
 - To **attempt to render the intension precise by exactly specifying the extension** (as with an extensional definition) **would be tantamount to having extension determine intension - which cannot be done**
- The principle that **intension determines extension**, whereas **the converse is not true**, underlies the fact that **all extensional definitions suffer serious deficiencies**

- Example When we **define the word “chair” by demonstration**, if all the **chairs pointed to are made of wood**, observers might get the idea that **“chair” means “wood” instead of something to sit on**
- it makes no difference how many individuals or subclasses are named in an extensional definition, **there is no assurance that listeners/readers will get the intensional meaning**
- Extensions can suggest intensions, but they cannot determine them

4.2 The Intensional (Connotative) Definitional Techniques

◆ Intensional definition

- one that **assigns a meaning to a word by indicating the qualities or attributes that the word connotes**
- There are at least four strategies that may be used to indicate the attributes/qualities that a word connotes
 - synonymous definitions
 - etymological definitions
 - operational definitions
 - definitions by genus and difference

Synonymous Definition

- is one in which the **definiens is a single word that connotes the same attributes as the definiendum** - that the **definiens is a synonym of the word being defined**
 - Example:
 - “Physician” means **doctor**
 - “Observe” means **see**
- When a single word can be found that has the **same intensional meaning as the word being defined**, a **synonymous definition is a highly concise way of assigning a meaning**
 - However, **many words have subtle shades of meaning that are not connoted by any other single word**
 - ✦ example, the word “wisdom” is not synonymous with either “knowledge”, “understanding”, or “sense”

Etymological Definition

- Etymological Definition **assigns a meaning to a word by disclosing the word’s ancestry in both its own language and other languages**
 - example, the English word “license” is derived from the Latin verb *licere*, which means to be permitted
- Etymological definitions **have special importance for at least two reasons**

- First etymological definition of a word often **conveys the word's root meaning or seminal meaning from which all other associated meanings are derived**
 - ✦ Unless one is familiar with this root meaning, one often fails to place other meanings in their proper light or to grasp the meaning of the word when it is used in its most proper sense
- Second **if one is familiar with the etymology of one word**, one often has access to the **meaning of an entire constellation of related words**

Operational Definition

- Operational Definition **assigns a meaning to a word by specifying certain experimental procedures that determine whether or not the word applies to a certain thing**
 - Example
 - A solution is an **"acid"** if and only if **litmus paper turns red** when dipped into it
 - ✦ these definitions **prescribes an operation** to be performed
 - ✦ the litmus paper be placed in the solution and observed for color change
 - **Unless it specifies such an operation, a definition cannot be an operational definition**
 - Example, the definition **"A solution is an "acid" if and only if it has a pH of less than 7,"** while good in other respects, **is not an operational definition** because it **prescribes no operation**
- **Operational definitions** were invented for the purpose of **tying down relatively abstract concepts to the solid ground of empirical reality**
 - In this they succeed fairly well; yet, from the standpoint of ordinary language usage, **they involve certain deficiencies**
 - **One of these deficiencies** concerns the fact that **operational definitions** usually **convey only part of the intensional meaning of a term**
 - ✦ "Acid", for example, means more than blue litmus paper turning red
 - Moreover, **operational definitions cannot apply to terms outside the framework of science**
 - ✦ example, no adequate operational definition could be given for such words as "love," "respect," "freedom," and "dignity."

Definition by Genus and Difference

- assigns a meaning to a term **by identifying a genus term and one or more difference words that, when combined, convey the meaning of the term being defined**
- It is more **generally applicable and achieves more adequate results than any of the other kinds of intensional definition**

- To explain how it works, we must first explain the meanings of the terms “genus,” “species,” and “specific difference.”
 - In logic, “**genus**” simply means a **relatively larger class**, and “**species**” means a **relatively smaller subclass of the genus**
 - example, we may speak of the genus animal and the species mammal, or of the genus mammal and the species feline, or of the genus feline and the species tiger, or the genus tiger and the species Bengal tiger
- The “**specific difference**,” or “**difference**,” for short, is **the attribute or attributes that distinguish the various species within a genus**
 - Because the specific difference is what distinguishes the species, **when a genus is qualified by a specific difference, a species is identified**
- Definition by genus and difference consists of **combining a term denoting a genus with a word or group of words connoting a specific difference** so that the combination identifies the meaning of the term denoting the species
 - **definition by genus and difference for the word “ice.”**
 - ✦ first step is to identify a genus of which ice is the species. The **required genus is water**
 - ✦ Next we must identify a specific difference (attribute) that makes ice a special form of water. The **required difference is frozen**
 - ✦ The completed definition may now be written out
“Ice” means frozen water
- Definition by genus and difference is **the most effective of the intensional definitions for producing the five kinds of definition**
- Lexical definitions are typically definitions by genus and difference, but they also often include etymological definitions

Note

- **Operational definition** can serve as the method for constructing **stipulative, lexical, précising, and persuasive definitions**, **but** because of the limitations we have noted, it typically **could not be used to produce a complete lexical definition**
- **Synonymous definition** may be used to produce **only lexical definitions**
 - Since this definition **requires that the definiendum must have a meaning before a synonym can be found**, this technique **cannot be used to produce stipulative definitions**
 - At the same time, **since the definiens of such a definition contains no more information than the definiendum**, it **cannot be used to construct précising, theoretical, and persuasive definitions**

Key Point On Lesson 4: Techniques of Definition

4.1 The Extensional (Denotative) Definitional Techniques

◆ Extensional definition

- › assigns a meaning to a term by **indicating the members of the class that the definiendum denotes**

Demonstrative (Ostensive) Definitions

- › the **most primitive** form of definition
- › All one need know to **understand** such a definition is **the meaning of pointing**
 - › Example: **“Chair” means this and this - as you point to a number of chairs**
- › **to teach a foreigner your own native language, demonstrative definition would be one of the methods you would use**
- › Demonstrative definitions **are also the most limited**
 - › there is limitation that the **required objects be available for being pointed at**

Enumerative Definitions

- › assign a meaning to a term **by naming the members of the class the term denotes**
 - › Example: **“Actor” means** a person such as **Abebe Balicha, Samsom Taddesse**

Definition by Subclass

- › assigns a meaning to a term **by naming subclasses of the class denoted by the term**
 - › Examples: **“Tree” means** an oak, pine, elm, spruce, maple, and the like
- › **Dictionaries**, frequently **include references to the individual members (enumerative definition)**, or to the **subclasses of the class (definition by subclass)**
- › **extensional definitions** could also serve as techniques for **theoretical and persuasive definitions** (though this would be highly unusual), **extensional definitions** by themselves **cannot properly serve as précising definitions**

4.2 The Intensional (Connotative) Definitional Techniques

◆ Intensional definition

- › assigns a meaning to a word **by indicating the qualities or attributes that the word connotes**

Synonymous Definition

- › the **definiens** is a **single word** that **connotes the same attributes as the definiendum** - that the **definiens** is a **synonym** of the word being defined
 - › Example: **“Physician” means** **doctor**

Etymological Definition

- › assigns a meaning to a word **by disclosing the word’s ancestry in both its own language and other languages**

- Etymological definitions have special importance for at least two reasons
 - conveys the word's root meaning or seminal meaning from which all other associated meanings are derived
 - if one is familiar with the etymology of one word, one often has access to the meaning of an entire constellation of related words

Operational Definition

- assigns a meaning to a word by specifying certain experimental procedures that determine whether or not the word applies to a certain thing
 - Example: A solution is an "acid" if and only if litmus paper turns red when dipped into it
- Unless it specifies such an operation, a definition cannot be an operational definition
- One of these deficiencies concerns the fact that operational definitions usually convey only part of the intensional meaning of a term
- Moreover, operational definitions cannot apply to terms outside the framework of science

Definition by Genus and Difference

- assigns a meaning by identifying a genus term and one or more difference words that, when combined, convey the meaning of the term being defined
- It is more generally applicable and achieves more adequate results than any of the other kinds of intensional definition
 - In logic, "genus" simply means a relatively larger class, and "species" means a relatively smaller subclass of the genus
- Definition by genus and difference consists of combining a term denoting a genus with a word or group of words connoting a specific difference
 - definition by genus and difference for the word "ice."
 - ✦ The required genus is water
 - ✦ The required difference is frozen
 - ✦ The completed definition: "Ice" means frozen water

Note

- Operational definition can serve as the method for constructing stipulative, lexical, précising, and persuasive definitions, but because of the limitations we have noted, it typically could not be used to produce a complete lexical definition
- Synonymous definition may be used to produce only lexical definitions



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Lesson 4: Techniques of Definition

Instruction: True/False

1. Definition by genus and difference is the most effective technique of intentional definitions for producing all types of definitions

✓ Answer: True

≡ Explanation:

📖 Module Reference:

- ✓ Definition by genus and difference is the most effective of the intensional definitions for producing the five kinds of definition. Stipulative, lexical, précising, theoretical, and persuasive definitions can all be constructed according to the method of genus and difference – Module Page 117 Line 16

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Instruction: Multiple Choice

2. Which one is wrong about ostensive definition?

- A. It refers to the examples by means of pointing or by some other gesture
- B. A serious limitation with this method is that it is highly sophisticated
- C. It is among the extensional techniques of defining a term
- D. It is quite important to teach children

✓ Answer: B

≡ Explanation: Option B is incorrect because Demonstrative (Ostensive) definitions is not sophisticated rather it is the most primitive form of definition. Option D is also correct because to teach children language people usually point to objects and tell them the meaning as a way to teach them language

📖 Module Reference:

- ✓ Demonstrative (Ostensive) 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 – Module Page 112 Line 8
- ✓ [Extensional (Denotative) Definitional Techniques] There are at least three ways of indicating the members of a class: pointing to them (demonstrative or

ostensive definitions), naming them individually (enumerative definitions), and naming them in groups (definitions by subclass)

- ✓ Demonstrative (Ostensive) Definitions are probably the most primitive form of definition. All one need know to understand such a definition is the meaning of pointing. examples: “Chair” means this and this and this- as you point to a number of chairs, one after the other

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3. ‘Reptiles include snakes, lizards, and crocodilians’. This definition is:

- A. Definition by subclass
- B. Lexical definition
- C. Enumerative definition
- D. Precising definition

✓ Answer: A

≡ Explanation:

📖 Module Reference:

- ✓ Definition by Subclass assigns a meaning to a term by naming subclasses of the class denoted by the term ... examples “Tree” means an oak, pine, elm, spruce, maple, and the like – Module Page 112 Line 22 & Page 113 Line 1

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4. The definition “‘Reptile’ means a snake, lizard, crocodile, and so on” is an example of

- A. A précising definition
- B. An enumerative definition
- C. A demonstrative definition
- D. A definition by subclass

✓ Answer: D

≡ Explanation: The statement tries to engender unfavorable attitude toward the concept of “integration” using emotionally charged or value-laden words like “inferior”

📖 Module Reference:

- ✓ Definition by Subclass assigns a meaning to a term by naming subclasses of the class denoted by the term ... example “Tree” means an oak, pine, elm, spruce, maple, and the like – Module Page 112 Line 22 & Page 113 Line 1

Lesson 5: Criteria for Lexical Definitions

- Giving the function of a lexical definition, **lexical definitions are what we most frequently encounter** and are what **most people mean** when they speak of the “definition” of a word
- Accordingly, it is appropriate that we have a **set of rules** that we may use in constructing our own lexical definitions and in evaluating the lexical definitions of others

Rule 1: A Lexical Definition Should Conform to the Standards of Proper Grammar

- A definition, like any other form of expression, **should be grammatically correct**
 - Examples, the following definitions are grammatically incorrect:
 - ✦ Furious means if you're angry at someone
 - the grammatically correct definitions of the above terms:
 - ✦ “Furious” means a condition of being angry
- Technically, the **definiendum should be put in quotation marks or italics**, but this convention is not always followed

Rule 2: A Lexical Definition Should Convey the Essential Meaning of the Word Being Defined

- A definition **cannot be helpful** if it **fails to convey the essential meaning** of the definiendum
 - Any definition that defines the word “human” as “featherless biped”, for instance, cannot be helpful since it fails to convey the essential meaning of “human” as the word is used in ordinary English
 - a more adequate definition would be “human” means the animal that has the capacity to reason and to speak
- If a lexical definition **is to be given in terms of an operational definition** or in terms of **any of the forms of extensional definition**, it **should usually be supplemented by one of the other forms of intensional definition**, preferably definition by genus and difference

Rule 3: A Lexical Definition Should Be Neither Too Broad nor Too Narrow

- If a definition is **too broad**, the definiens includes **too much**; if it is **too narrow**, the definiens **includes too little**
 - example, “bird” were defined as any warm-blooded animal having wings, the definition would be **too broad** because it **would include bats**, and **bats are not birds**

- If, on the other hand, “bird” were defined as any warm-blooded, feathered animal that can fly, the definition would be too narrow because it would exclude ostriches, which cannot fly

Rule 4: A Lexical Definition Should Avoid Circularity

- Sometimes the problem of circularity appears in connection with pairs of definitions
 - The following pair is circular
 - ✦ “Science” means the activity engaged in by scientists
 - ✦ “Scientist” means anyone who engages in science
- Certain operational definitions also run the risk of circularity
 - “Time” means whatever is measured by a clock
 - ✦ Surely a person would have to know what “time” means before he/she could understand the purpose of a clock

Rule 5: A Lexical Definition Should Not Be Negative When It Can Be Affirmative

- Of the following two definitions, the first is affirmative, the second negative:
 - “Concord” means harmony
 - “Concord” means the absence of discord
- Some words, however, are intrinsically negative. For them, a negative definition is quite appropriate
 - Examples
 - “Bald” means lacking hair
 - “Darkness” means the absence of light

Rule 6: A Lexical Definition Should Avoid Figurative, Obscure, Vague, or Ambiguous Language

- A definition is figurative if it involves metaphors or tends to paint a picture instead of exposing the essential meaning of a term
 - Example:
 - “Camel” means a ship of the desert
- A definition is obscure if its meaning is hidden as a result of defective or inappropriate language. One source of obscurity is overly technical language
- Compare the following two definitions
 - “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

- ✦ “bunny” is very much a nontechnical term, **no technical definition is needed**
- **A definition is vague** if it lacks precision or if its meaning is blurred- 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 distinct interpretation
 - Example
 - “Triangle” means a figure composed of three straight lines in which all the angles are equal to 180
 - ✦ Does this mean that each angle separately is equal to 180 or that the angles taken together are equal to 180?
 - ✦ **Either interpretation is possible** given the **ambiguous meaning** of “all the angles are equal to 180.”

Rule 7: A Lexical Definition Should Avoid Affective Terminology

- **Affective terminology** is any kind of word usage that plays upon the emotions of the reader or listener
- It includes **sarcastic** and **facetious language** and any other kind of language that is **liable to influence attitudes**
 - Example
 - “Communism” means that “brilliant” invention of Karl Marx and other foolish political visionaries in which the national wealth is supposed to be held in common by the people

Rule 8: A Lexical Definition Should Indicate the Context to Which the Definiens Pertains

- This rule applies to any definition in which the **context of the definiens is important to the meaning of the definiendum**
 - Example
 - “Strike” means (in baseball) a pitch at which a batter swings and misses
 - “Strike” means (in bowling) the act of knocking down all the pins with the first ball of a frame
- It is **not always necessary to make explicit reference to the context**, but at least the **phraseology of the definiens should indicate the context**

Key Point On Lesson 5: Criteria for Lexical Definitions

Rule 1: A Lexical Definition Should Conform to the Standards of Proper Grammar

- A definition, like any other form of expression, **should be grammatically correct**

Rule 2: A Lexical Definition Should Convey the Essential Meaning of the Word Being Defined

- If a lexical definition is to be given in terms of an **operational definition** or in terms of **any of the forms of extensional definition**, it **should usually be supplemented by one of the other forms of intensional definition**, preferably by genus and difference

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- Certain **operational definitions** also run the risk of circularity

Rule 5: A Lexical Definition Should Not Be Negative When It Can Be Affirmative

- Some words are **intrinsically negative**; for them **negative definition is appropriate**

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- **Figurative** if it **involves metaphors** or tends to **paint a picture** instead of **exposing the essential meaning** of a term
- **Obscure** if **its meaning is hidden** as a result of **defective** or **inappropriate** language
 - One source of obscurity is **overly technical language**
- **Vague** if it lacks precision or if **its meaning is blurred** - that is, if **there is no way of telling exactly what class of things the definiens refers to**
- **Ambiguous** if it lends itself to **more than one distinct interpretation**

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Lesson 5: Criteria for Lexical Definitions

Instruction: Multiple Choice

1. “Diet” means like when you cut back on your calories. This definition is not an example of a good definition because?

- A. It employs affective terminology
- B. Essential features of the definedum are not indicated
- C. It lacks proper grammar
- D. It is obscure

✓ Answer: C

≡ Explanation: This sentence is grammatically incorrect and needs to be corrected

📖 Module Reference:

- ✓ examples, the following definitions are grammatically incorrect: Furious means if you’re angry at someone. the grammatically correct definitions of the above terms: “Furious” means a condition of being angry – Module Page 118 Line 21 & Page 119 Line 1