

Business Logic

Lecture 6: Disputes and Definition

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Lecture Learning Objectives:

At the end of the lecture, you will be able to:

1. Distinguish the different kinds of definition and their uses.
2. Analyze statements that contain different kinds of disputes.
3. Differentiate the kinds of disputes
4. Apply the rules of definition.

Disputes and Disagreements

Many **disputes**, whether about beliefs or about attitudes, are genuine. However, some **disputes** are merely verbal, arising only as a result of linguistic misunderstanding. The terms used by the disputing parties may have more than one meaning—they may be ambiguous—but such ambiguity may be unrecognized by the disputing parties. To uncover and to resolve verbal disagreements, ambiguities must be identified, and the alternative meanings of the critical terms in the dispute must be distinguished and clarified. Disputes fall into **three categories**. The **first** is the obviously **genuine dispute**. If A roots for the Yankees, and B for the Red Sox, they are in genuine disagreement, though they disagree mainly in attitude. If C believes that Miami is south of Honolulu, and D denies this, they too are in genuine disagreement, but in this dispute about geographic facts a good map can settle the matter.

A **second category** is disputes in which the apparent conflict is not genuine and can be resolved by coming to agreement about how some word or phrase is to be understood. These may be called merely **verbal disputes**. F may hold that a tree falling in the wilderness with no person to hear it creates no sound, while G insists that a sound really is produced by the falling tree. If a “sound” is the outcome of a human auditory sensation, then F and G may agree that there was none; or if a “sound” is simply what is produced by vibrations in the air, then they may agree that a sound was indeed produced. Getting clear about what is meant by “sound” will resolve the disagreement, which was no more than verbal.

A **third category**, more slippery, is disputes that are apparently verbal but really genuine. A misunderstanding about the use of terms may be involved in such cases, but when that misunderstanding has been cleared up there remains a disagreement that goes beyond the meanings of the words. **For example**, should a film in which explicit sexual activity is depicted be considered “pornography”? J holds that its explicitness makes it pornographic and offensive, K holds that its beauty and sensitivity make it art and not pornography. Plainly they disagree about what “**pornography**” means—but after that ambiguity has been exposed, it is likely that the parties will still disagree in their judgment of that film. Whether the film is “pornographic” may be settled by a definition of that term,

but a deeper disagreement is then likely to be exposed. The word “**pornographic**” plainly carries pejorative associations. J, who finds the film objectionable, understands the word “pornographic” in one way, while K, who approves of the film, uses the word “pornographic” differently. Does the sexually explicit content of the film make it objectionable and thus “pornographic”? J and K differ in their uses of the word, but for both of them the emotional meaning of the word is very negative; and they also differ about the criteria for the application of that negative word, “pornography.”

In summary, when confronting a dispute that arises in discourse, we must first ask whether there is some ambiguity that can be eliminated by clarifying the alternative meanings in play. If there is, then we must ask whether clearing up that linguistic issue will resolve the matter. If it does, the dispute was indeed merely verbal. If it does not, the dispute was genuine, although it may have appeared to be merely verbal.

Exercise 5.1

Discuss each of the following disputes. If the dispute is obviously genuine, indicate each of the disputers’ positions with respect to the proposition at issue. If it is merely verbal, resolve it by explaining the different senses attached by the disputers to the key word or phrase that is used ambiguously. If it is an apparently verbal dispute that is really genuine, locate the ambiguity and explain the real disagreement involved.

1. **Daye**: Pete Rose was the greatest hitter in the history of baseball. He got more hits than any other major-league player.

Knight: No, Barry Bonds deserves that title. He hit more home runs than any other major-league player.

Answer: This is a genuine disagreement on belief regarding the greatest hitter in the history of baseball and this can easily be resolved by making an appeal to facts.

2. **Daye**: Despite their great age, the plays of Sophocles are enormously relevant today. They deal with eternally recurring problems and values such as love and sacrifice, the conflict of generations, life and death—as central today as they were over two thousand years ago.

Knight: I don’t agree with you at all. Sophocles has nothing to say about the pressing and immediate issues of our time: inflation, unemployment, the population explosion, and the energy crisis. His plays have no relevance to today.

3. **Daye**: Bob Jones is certainly a wonderful father to his children. He provides a beautiful home in a fine neighborhood, buys them everything they need or want, and has made ample provision for their education.

Knight: I don’t think Bob Jones is a good father at all. He is so busy getting and spending that he has no time to be with his children. They hardly know him except as

somebody who pays the bills.

4. **Daye:** Amalgamated General Corporation's earnings were higher than ever last year, I see by reading their annual report.

Knight: No, their earnings were really much lower than in the preceding year, and they have been cited by the Securities and Exchange Commission for issuing a false and misleading report.

5. **Daye:** Business continues to be good for National Conglomerate, Inc. Their sales so far this year are 25 percent higher than they were at this time last year.

Knight: No, their business is not so good now. Their profits so far this year are 30 percent lower than they were last year at this time.

6. **Daye:** Ann is an excellent student. She takes a lively interest in everything and asks very intelligent questions in class.

Knight: Ann is one of the worst students I've ever seen. She never gets her assignments on time.

Definitions

The best way to avoid verbal disagreements in belief is to define one's terms very clearly. To do this, we need to talk about what makes for a good and clear definition, that is, a definition that could find its way into a dictionary and be accepted into common usage. Those terms that find their way into standard dictionaries are called lexical definitions. However, before we can provide a clear definition of a lexical definition and discuss how they are formulated, evolve, and gain acceptance, we need to take a moment to point out that there are some definitions that are not usually included in dictionaries. There are **four such non-lexical kinds of definition:** (1) Stipulative; (2) Precising; (3) Theoretical; (4) Emotive.

1. **Stipulative Definitions:** In many cases, a discussion can be advanced when all of the parties in it agree to use a particular term in the same way throughout the discussion. Suppose **for example** that we agree to use "murder" in only its legal sense, or even more particularly in the legal sense of the term that is found in the legal definition of "first degree murder." That is, we may, for the sake of a particular discussion agree to use "murder" to mean only those cases in which there is a premeditated intention to murder. In this case, killing in self-defense, or manslaughter would not count as "murder." Since defining terms in this way depends on agreement, there is no way for such definitions to be mistaken or incorrect. In fact, there is nothing that keeps us from agreeing to use the word "cold" to mean "hot" if we agree to do so. The advantage of stipulating definitions is that it reduces ambiguity. This is especially useful

when terms with many and varied meanings are at play in the discussion. Just keep in mind that stipulative definitions are neither true nor false and you will not find them in a dictionary.

2. Precising Definitions: In some cases, we need to use a particular term in a way that is more precise than what we might find in a dictionary. This need occurs, **for example**, in the writing of legislation. Most bills in fact have a section in which some of the important terms in the would-be law are given precise definitions. Suppose that we are drafting a Scenic Rivers Bill. We want to protect a green corridor on either side of a certain river. We propose that a corridor of 1000 feet on either side of the river be protected from development. The problem with this is that some riverbanks, especially in low country, are constantly shifting. So, we give "riverbank" a precising definition as "the mean high-water mark." In this case this precise definition is also a stipulative definition since it is introduced with the understanding that all the parties will agree to use the term "riverbank" in just this precise way. Such a move saves much potential confusion. Again, such definitions are not to be found in dictionaries.

3. Theoretical Definitions: Sometimes it is helpful to formulate definitions to fit theoretical discussions. In discussions of this kind, we may find it useful to define "water" as H₂O, or "energy" as MC². Sometimes we will have to stipulate such theoretical definitions. In addition, often the purpose of such a stipulation is to make a particular term more precise. Sometimes we find theoretical definitions included in dictionaries but most often not.

4. Emotive Definitions: Finally, we may define terms emotively. We do this when we want to influence others. If I define abortion as "murder," I am clearly trying to get my audience to have a negative attitude toward abortion. Earlier we saw that many define "argument" as a fight. Such a definition evokes negative feelings toward arguments. Similarly, if we define "logical" as "cold and calculating" we are again trying to evoke negative feelings. If, on the other hand, we define "logic" as mankind's highest achievement or define "rational thinking" as economic cost-benefit analysis, we are certainly trying to produce a positive attitude toward logic and economic cost-benefit analysis. Recently we have heard environmentalists referred to as "green Nazis." No doubt about what this definition is designed to provoke.

Lexical Definitions

For the most part when we think of definitions we are thinking of lexical definitions. Unlike stipulative definitions, these definitions can be correct or incorrect.

The fact is, we can, and we often do, misuse words. Most of us have to consult a dictionary from time to time.

Extension and Intension

Now we must ask, how are lexical definitions formulated? **Lexical definitions** are assignments of meanings to terms that are primarily based on etymology and common usage. But we must note here that there are two kinds of meaning that can be assigned to terms; they are: extensive and intensive meaning. The **extension** of a term consists of all of the objects named, or referred to, or denoted by that term. The intension (with an “s”) of a term consists of the common attributes of the objects referred to by the term.

The extension of a term is sometimes called its **denotative meaning**, and the intension of a term is sometimes called its **connotative meaning**. The extension of the term “human being” consists of the entire collection of human beings, dead and alive. Being a language using rational and moral agent is part of the intension of the term “human being.” The extension of a term is related to its intension. Obviously, the intension of a term determines its extension but not vice versa. If we add the term “living” to the term “human being” we increase its intension (we add an attribute) and thereby decrease its extension (we decrease the number of objects it refers to.) Sometimes there is no variation when we increase the intension of term. **For example**, by adding “mortal” to “living human being,” we increase the intension of the term, but the extension remains the same. Accordingly, we adopt a simple rule: When the intension of a term causes a variation in its extension that variation will be an inverse one.

Lexical definitions can be formulated relative to either the extension or intension of a term. So, let's consider definitions of both types.

• Extensive Definitions

To define a term by reference to an object in its extension is to define it by example. If we want to define “human being” we can say, "Joe, for example, is what I mean." As well, we can define a term by example by simply pointing to an object in the extension of a term.

Conveying the meaning of a term by pointing with a gesture or with words, or with both, to an example of one of the objects in its extension, is to give the term what is called an ostensive definition.

• Intensive Definitions

Even though definitions by example are useful, this technique for defining terms has its limitations. Suppose we want to define the term “brown”, and we point to your

brown hair. Now suppose we want to define “hair,” how do we point just to your hair, or just to its color? And there are other problems. Suppose that we want to define a term like “unicorn.” We can’t exactly point to one, since no examples exist. We would not want to conclude from the fact that “unicorn” has no extension that it has no meaning. This tells us that terms can have a meaning even if their extension is empty.

These considerations lead us to think that lexical definitions that focus on intension have advantages that make them more useful than lexical definitions that focus only on extension. Defining terms intensively, however, is not without its own problems and limitations. **First**, we must notice that what a term connotes can vary from individual to individual. **For example**, some person may associate the term “river” with danger because of his or her experience of almost drowning in one. For this person, we might say, “river” means (connotes) “danger.” Moreover, terms can have many attributes that are not commonly recognized, accepted, or used. It is certainly true that rivers can be classified as geologically new or old. Ordinarily, however, the geological age of a river does not seem like an essential attribute of the term.

When dictionaries formulate a lexical definition, they usually restrict the attributes of the terms it defines to the ones that are commonly accepted as central to that term. Attributes that are central to its ordinary use include things like “body of water” and “flowing.” Again, good intensive definitions should avoid idiosyncratic (subjective) attributes, that is, attributes that depend on the particular experience of a person; and they should also avoid some 6 attributes that may objectively apply to a term (objective attributes) but are not central to its ordinary meaning as it is commonly used. In contrast to both, **dictionaries** prefer lexical definitions that define a term in a way that reflects the central attributes that are recognized in its ordinary usage both currently and historically. We can call these commonly recognized connotations of a term as its conventional attributes.

In sum then, **dictionaries** prefer intensive rather than extensive definitions. Moreover, we must point out that there are **three kinds of intensive definitions**.

- **Intensive Definitions with Synonyms**

Sometimes it is effective to define terms intensively by providing synonyms. We say, **for example**, that the term “cryptic” means “hidden.” Often this is an effective way to clarify the meaning of a term. We call such clarifications synonymous definitions. dictionaries make copious use of this technique. The fact is however, that synonymous definitions are limited. In order for such definitions to work a term must have a synonym whose meaning is known, and this is not always easy to find, if indeed there is one.

• Intensive Operational Definitions

A second kind of intensive definition is called an **operational definition**. We often define terms intensively by referring to some observational effect that the term is supposed to produce. I may, **for example**, define “good” in the phrase “a good tennis shot” as “a shot that wins the point.” While these definitions are sometimes helpful, they also suffer from being too restrictive. In normal usage, we think that it is possible to make a bad tennis shot (one with bad form, or a lucky miss-hit) that nevertheless wins the point. **Operational definitions** do not always reflect normal usage. As such, they are widely used in dictionaries.

• Intensive Genus Species Definitions

Fortunately, there is another technique for intensive definitions that avoids these limitations. This is the technique of **genus species definitions**. Indeed, this is the technique that is preferred by most logicians for it provides the clearest definition, at least of general terms. It is sometimes difficult, however, to apply this technique correctly. Lots can go wrong in our attempts to provide a genus species definition. Before we say what some of these ways of going wrong are, we must say something about the technique itself.

To define a term intensively by the genus species technique, we must first find a general category (a genus, or class) of which the referent of the term we are defining is a member. **For example**, if we are defining the term “human being” we determine that it is a member of a genus or class. We want this class to be general enough but not too general. In this case it is obvious that a good candidate here is the class “animal,” rather than, say the class “living thing,” since plants would be included in that very broad category. If the class is too general, it becomes more difficult to proceed to the second step in this definition technique. What is this step? Simply this: now we must go on to say how this member of the class of animals is different from all of its other members. That is, we must look for specific differences, differences that mark the way this term has a use that is narrower than the genus term under which it fall. Such specific differences are what make this kind of animal the particular species of the class of animal that it is. **For example**, we might say, as Aristotle once did, that the human being is a “rational animal.”

It is easy to see how this technique can be expanded. We may define “triangle” as a member of the class of plane geometrical figures that has an attribute that is its specific difference from all other such figures, namely the attribute of having only three connected sides and three angles. As well, we may define “raincoat” as a member of the

class “outer garments” and as being different from all other outer garments in being “designed to provide protection from rain.”.

Recognizing Defective Definitions

Even though the genus species technique of formulating intensive definitions gives us the most precise definitions of terms, it also has many ways of going wrong. This fact makes the effort to formulate such definitions very difficult. However, if we are aware of the various ways that such definitions can go wrong, we will advance our goal of avoiding ambiguities that can mislead us.

I might point out that even though the search for definitions that are as clear as possible is required for the purposes of evaluating formal arguments in logic, we can also appreciate a positive side of this difficulty. The fact is that our language is profoundly complex and rich in its inherent ambiguity. When we are not doing logic, but simply having conversations, or writing poetry or prose, the ambiguity of our words reveals a depth of thought that may be eclipsed by logic’s search for definitions that are as univocal as possible.

But our business in this course is logic. So, we must try to eliminate ambiguity as much as we can when it comes to formulating arguments and evaluating them. The following are helpful guides in this process. They are defects in genus species definitions that need to be avoided.

Genus Species definitions are defective if they are:

1. Too broad
2. Too narrow
3. Too broad and too narrow
4. Circular
5. Figurative Emotive
6. Accidental
7. Negative
8. Obscure

1. **Too Broad:** “Human beings are featherless bipeds.” The genus here is the class of bipeds (things that walk on two feet.) The specific difference that is claimed to make

human beings are different from other bipeds is that they are featherless. This definition fails because it is TOO BROAD; it is too broad because it includes too much, **for example**, it includes plucked chickens as human beings, which they obviously are not.

2. **Too Narrow:** "Human beings are the only animals that are accountable before the law." The genus here is animals. The specific difference that is claimed to make human beings different from other animals is that they are accountable before the law. This definition fails because it is TOO NARROW; it is too narrow because it excludes too much, for example, it excludes children from being human beings, for clearly, if young enough, they are not accountable before the law and yet they are surely human beings.

3. **Too Broad and Too Narrow:** "Human beings are the only animals that can communicate." The genus here is animals. The specific difference that is claimed to make human beings different from other animals is that they communicate. This definition fails because it is both TOO BROAD AND TOO NARROW; it is too broad because it includes too much, for example, it includes dogs and cats; it is too narrow because it excludes too much, for example human beings who are in deep comas.

4. **Circular:** "Human beings are the only animals that are essentially human." The genus here is the class of animals. The specific difference that is claimed to make human beings different from other animals is that they are essentially human. This definition fails because it is CIRCULAR; it is circular because there is no specific difference that is cited to mark the difference between other animals in the genus, and the word being defined is used in the definition itself. While it is sometimes useful to give synonymous definitions, when one is attempting to give a genus species definition, it gets us nowhere to define a term with other terms that are essentially equivalent to the term being defined.

5. **Figurative:** "Human beings are thinking reeds." The genus here is the class of "reeds" (no doubt this is a figure for things that are fragile). The specific difference that is claimed to make human beings different from other "reeds" is that they think. This definition fails because it uses figures of speech, images, or metaphors, instead of the essential attributes associated with a term. This definition fails because it is FIGURATIVE; it is figurative because it does not aim to provide a literal definition.

6. **Emotive:** "Human beings are the only animals that are blights on the environment." The genus here is the class of animals. The specific difference that is claimed to make human beings different from other animals is that they are 8 blights on the environment. This definition fails because it is EMOTIVE; it is emotive since it attempts to arouse emotions and feelings rather than provide a literal definition. In this example the intention

is to express a negative attitude toward human beings.

7. **Accidental:** "Human beings are the only animals that are inclined to appreciate beautiful sunsets." The genus here is the class of animals. The specific difference that is claimed to make human beings different from other animals is that they are inclined to appreciate beautiful sunsets. This definition fails because it is ACCIDENTAL; it is accidental because it makes no attempt to define "human beings" in terms of its conventional attributes. There are many attributes that qualify human beings, but a definition of them should aim to specify the attributes that are commonly accepted as essential to the term.

8. **Negative:** "Human beings are not gods." The genus here is the class of beings. The specific difference that is claimed to make human beings different from other beings is that they are not gods. This definition fails because it is NEGATIVE; it is negative because it defines a term by saying what it is not, rather than what it is. Knowing that human beings are not gods does not get us very far in defining what they are.

9. **Obscure:** "Human beings are enigmas wrapped up in a conundrum." The genus here is the class of, well, what? It is not clear. It could be the class of things; but this would be much too general. The specific difference claimed here is that human beings are different from other things or animals insofar as they are enigmas wrapped up in a conundrum. This definition fails because it is OBSCURE; it is obscure because it uses language even less well known than that which is being defined. Indeed, we are left more mystified than enlightened after being given this definition. We need to be as clear as possible.

Exercise 2

A. Arrange each of the following groups of terms in order of increasing intension:

1. Animal, feline, lynx, mammal, vertebrate, wildcat.

Answer: Animal, vertebrae, mammal, feline, wildcat, lynx

2. Alcoholic beverage, beverage, champagne, fine white wine, white wine, wine.

3. Athlete, ball player, baseball player, fielder, infielder, shortstop.

4. Cheese, dairy product, Limburger, milk derivative, soft cheese, strong soft cheese.

5. Integer, number, positive integer, prime number, rational number, real number.

B. Divide the following list of terms into five groups of five terms each, arranged in order of increasing intension:

Aquatic animal, beast of burden, beverage, brandy, cognac, domestic animal, filly, fish, foal, game fish, horse, instrument, liquid, liquor, musical instrument, muskellunge, parallelogram, pike, polygon, quadrilateral, rectangle, square, Stradivarius, string instrument, violin.

C. Define the following terms by example, enumerating three examples for each term:

1. actor
2. boxer
3. composer
4. vlogger
5. element
6. flower
7. general (officer)
8. president
9. inventor
10. poet

D. Identify and discuss the defects in definition in the following statements

1. A flower is a testimony that the world is designed for our enjoyment.

-Source: <https://www.familyfriendpoems.com/poems/nature/flower/>

This definition fails because it is EMOTIVE; it is emotive since it attempts to arouse emotions and feelings rather than provide a literal definition.

2. Knowledge is true opinion.

—Plato, Theaetetus

3. Life is the art of drawing sufficient conclusions from insufficient premises.

—Samuel Butler, Notebooks

4. “Base” means that which serves as a base.

—Ch’eng Wei-Shih Lun, quoted in Fung Yu-Lan, A History of Chinese Philosophy, 1959

5. Honesty is the habitual absence of the intent to deceive.

6. Hypocrisy is the homage that vice pays to virtue.

—François La Rochefoucauld, Reflections, 166

7. The word body, in the most general acceptance, signifieth that which filleth, or occupieth some certain room, or imagined place; and dependeth not on the imagination but is a real part of that we call the universe.

—Thomas Hobbes, Leviathan, 1651

8. Torture is “any act by which severe pain or suffering, whether physical or mental, is intentionally inflicted on a person for such purposes as obtaining from him or a third person information or a confession.”

—United Nations Convention Against Torture, 1984

9. A hazard is anything that is dangerous.

—Safety with Beef Cattle, U.S. Occupational Safety and Health Administration, 1976

10. To sneeze [is] to emit wind audibly by the nose.

—Samuel Johnson, Dictionary, 1814

11. A bore is a person who talks when you want him to listen.

—Ambrose Bierce, 1906

READINGS AND VIDEOS (Please see the digital copies of the materials.)

Reading 1 Hall, R. Logic: A Brief Introduction. Retrieved from <https://www.stetson.edu/artsci/philosophy/media/A.%20chapter2.pdf>

Reading 2 Copi, I., Cohen, C & McMahon, K. (2014). Introduction to Logic Fourteenth Edition. London: Pearson Education Limited

Video 1 Types of disputes in <https://www.youtube.com/watch?v=VIMpIOMZcDQ>

Video 2 Definition in <https://www.youtube.com/watch?v=gbbetx-kkpw>

LECTURES (Please refer to the PowerPoint presentations)

ACTIVITY AND ASSESSMENT

Answer Exercise 1 and 2 (Write your answer in a separate sheet of paper)

REFERENCES:

Introduction to Logic

Irving Copi

Carl Cohen

Kenneth McMahon

14th edition, Pearson Education Limited, 2014

Logic : A Brief Introduction

Ronald L. Hall, Stetson University