
UNIT 10 INTRODUCTION TO FALLACIES*

Structure

10.0 Objectives

10.1 Introduction

10.2 Kinds of Fallacies

10.3 Kinds of Informal Fallacies

10.3 Let Us Sum Up

10.4 Key Words

10.5 Further Readings and References

10.6 Answers to Check Your Progress

10.0 OBJECTIVES

The objectives of this unit are,

- to introduce the kinds of fallacies in logic.
- to understand and elucidate various informal fallacies with suitable examples.
- To enable learner how to avoid these fallacies.

10.1 INTRODUCTION

One of the major 19th Century Mathematician and Logician, Gottlob Frege, rightly pointed out that the primary tasks of a logician are to distinguish incorrect reasoning from correct reasoning and to “indicate the *pitfalls* laid by language in the way of the thinker.” When the premises of an argument are unable to support its conclusion, such an argument is considered to be fallacious. For example, ‘This man is not intelligent because he cannot run fast’, exhibits fallacious reasoning. Thus, a *fallacy* can be understood as any kind of error or mistake in reasoning. As it must have already been discussed in the previous units, every argument in logic is governed by some axioms and when these axioms are violated, a fallacy occurs and the argument becomes invalid. In logic, a fallacy in fact signifies some typical mistakes in reasoning which can be

* Ms. Ankita Jha, Doctoral Research Scholar, Department of Humanities and Social Sciences, Indian Institute of Technology, Bombay.

recognized and named. Many arguments may serve as an example of a particular type of mistake in reasoning or a particular kind of fallacy. Let us consider an example, if from the fact that ‘All whales are mammals’ and ‘X is a mammal’; we conclude: ‘X is a whale’; the argument becomes fallacious. All whales are mammals, but not every mammal is a whale. The argument discussed in the example above is fallacious because the conclusion does not correctly follow from the premises. There is an error in reasoning in the given argument which may recur in different contexts. The kind of error here is in the *form* of argument and hence it is a kind of formal fallacy. Formal fallacies have been discussed in the unit dealing with categorical syllogisms. In this unit, we will focus on the more commonly occurring fallacies viz., informal fallacies. Informal fallacies arise due to mistakes in our everyday use of language. Thus, they pertain to the *content* of the argument. The language we use in speaking and writing can sometimes be imprecise, obscure and ambiguous - we need to know how to recognize these mistakes. This will help us to refrain from using fallacious arguments. There may be various sources of fallacies in our daily life such as: a lack of complete knowledge about the context, making false assumptions, misinterpretations, lack of attentiveness, a tendency to make generalized conclusions without considering sufficient number of cases, distractions of the mind, having some preconceived notions and prejudices, being swayed away by emotions, so on and so forth. We must use logic to identify such errors in reasoning and follow appropriate methods to tackle them. Further, we must also be fair in our examination and provide space for the use of natural language in everyday life. For example: the use of figures of speech like sarcasm, metaphor, irony etc. by writers in order to convey a particular meaning – in such cases we must be cautious as although the used argument may appear to be fallacious superficially but it may not actually be so.

10.2 KINDS OF FALLACIES

There are two major types of fallacies.

- a) Formal Fallacies
- b) Informal Fallacies

10.2.1 Formal Fallacies

A formal fallacy arises when there is a fault in the form of a given argument. When a syllogism fails to adhere to any of the rules required for it to be a valid categorical syllogism then the fallacy occurred is formal. Some types of formal fallacies are as follows: Fallacy of Undistributed Middle, Fallacy of Illicit Major, Fallacy of Illicit Minor, Existential Fallacy, etc. As Formal fallacies have been discussed in detail with categorical syllogisms, let us go on to look at informal fallacies.

10.2.2 Informal Fallacies

There are various informal fallacies. Following I.M. Copi, they can be grouped under four major categories, viz., Fallacies of Ambiguity, Fallacies of Relevance, Fallacies of Defective Induction and Fallacies of Presumption. The following is the categorization within the four kinds of informal fallacies.

- 1) Fallacies of Ambiguity
 - i) Fallacy of Equivocation
 - ii) Fallacy of Amphiboly
 - iii) Fallacy of Accent
 - iv) Fallacy of Composition
 - v) Fallacy of Division
- 2) Fallacies of Relevance
 - i) The Appeal to Emotion (Argument *ad populum*)
 - ii) The Red Herring
 - iii) The Straw Man
 - iv) The Argument Against the Person (Argument *ad hominem*)
 - (a) Abusive
 - (b) Circumstantial
 - v) The Appeal to Force (Argument *ad baculum*)
 - vi) Missing the Point or Irrelevant Conclusion (*Ignoratio elenchi*)
- 3) Fallacies of Defective Induction
 - i) The Argument From Ignorance (Argument *ad ignorantiam*)
 - ii) The Appeal to Inappropriate Authority (Argument *ad verecundium*)

- iii) False Cause (Argument *non causa pro causa*)
- iv) Hasty Generalization (Fallacy of *Converse Accident*)
- 4) Fallacies of Presumption
 - i) Fallacy of Accident
 - ii) Begging the Question (*petitio principii*)
 - iii) Complex Question

Let us discuss each of these fallacies and their sub-types along with illustrations.

10.3 KINDS OF INFORMAL FALLACIES

10.3.1 Fallacies of Ambiguity

The erroneous reasoning in this kind of informal fallacy occurs due to the equivocal use of words or phrases. In such cases, some term or phrase has a different meaning in one part of the argument than the same term or phrase in another part of the argument. When language is used in an inattentive and loose manner, such errors arise. It may be due to incorrect use of words or due to incorrect construction of statements. The five sub-types within Fallacies of Ambiguity are as follows:

10.3.1.1 Fallacy of Equivocation

The Fallacy of Equivocation arises when the same term or a phrase is used in a manner such that it has two different meanings in the same argument.

Let us consider the following examples:

- “I will abide by Gopal’s suggestion because he gives sound suggestions’. Another person says. “Yes, his sound is audible even from a far distance”. Thus, I can hear his suggestion even from a far distance. In this case, the term ‘sound’ has two different meanings. Firstly it means that which is based on valid reason or good judgment; reliable: he gives reliable suggestions. Secondly, the word ‘sound’ means the noise or vibrations produced while talking.

- John is a big writer because he is from a big city. Here, the term ‘big’ is a relative term. The meanings of relative terms differ in degrees from context to context. Thus, they cannot have the same meaning at different occurrences.

10.3.1.2 Fallacy of Amphiboly

The Fallacy of Amphiboly arises when the construction of the statement is such that it has more than one possible meaning.

As also pointed out in the examples above, in the cases of Fallacy of Equivocation the ambiguity lies in the *meaning* of a word or a phrase. Fallacy of Amphiboly refers to the ambiguity of a statement due to its grammatical *structure*.

Let us consider the following examples:

- “Kids make delicious dinners.”
One meaning of the given statement can be that children prepare (cook) delicious meals. Another meaning of the statement can be that kids are delicious food item for dinner. Even though, the latter sounds ridiculous.
- “Mary ran to meet his 6 year old son, cheerful and happy.”
One meaning of the above statement can be that Mary is cheerful and happy. The other meaning of the statement can be that her son is cheerful and happy.
- “Save water and waste paper.”
The above statement can have two meanings. First, that one should save water but one can waste paper. Second, it can mean that one should save both ‘water’ as well as ‘waste papers’.
- Let us look at an example from the domain of mathematics. Suppose we are instructed that find a number ‘x’ that is equal to two times seven plus eight. The statement commits the fallacy of amphiboly, since the answer can be either:
 $[(2*7) + 8 = 22]$ or
 $[2*(7+8) = 30]$
The above example shows us the importance of the use of correct punctuation marks in language, including the field of mathematics.

10.3.1.3 Fallacy of Accent

The Fallacy of accent arises when the meaning of a statement is changed or distorted by wrongfully stressing on or emphasizing some particular part (words) of it.

It is important to note that, the Fallacy of Accent, similar to the previously discussed, Fallacy of Amphiboly, is not an inferential fallacy. In our use of language, we do often emphasize a particular word or phrase to put forth a particular point. When, a word or a phrase, which was not emphasized in the original text by an author, is incorrectly emphasized upon later by someone else, the meaning of the statement changes. The elements such as accent, stress, tone etc., tend to change the meaning of the statements, often quite drastically. This in turn makes the argument fallacious.

Let us consider the following example:

- “Wife without her husband is nothing.”

The above statement would convey different meanings to husband and wife depending upon the emphasis on the term ‘wife’ or the term ‘husband’. If the emphasis is on ‘wife’ then the meaning of the statement will be: For a wife, husband is important as she will be nothing without him. If the emphasis is on the term ‘husband’ then the meaning will be that for husband, wife is important as without her he will be nothing.

10.3.1.4 Fallacy of Composition

The Fallacy of Composition arises when the conclusion is drawn from the properties of the parts of a whole to the properties of whole itself. In this case, it is assumed that what is applicable to the parts is applicable to the whole as well. The fallacy occurs because the whole, the comprehensive set is regarded as the collection of its subsets.

Let us consider the following examples:

- Each and every player of the Indian Hockey team is an excellent player. Thus, the Indian Hockey team is an excellent team.

The given argument is fallacious because for a team to be excellent it is not just sufficient that it has players who are talented and skilled. What is also required for the proper and smooth functioning of a team are the key values of unity and team spirit.

- There can be another form of this fallacy in which one argues from a premise containing a term taken distributively to a conclusion in which the term is used collectively. For example, “An elephant eats more food than any other animal does. Therefore, elephants of Sanjay Gandhi National Park eat more food than all the other animals in the park.

The above example involves incorrect reasoning because even though an elephant in comparison with other animals may eat more food, yet collectively all the other animals, being greater in number, eat more food than all the elephants in the Park.

10.3.1.5 Fallacy of Division

The Fallacy of Division arises when the properties of its parts are drawn from the properties of whole. The Fallacies of Division and Composition are reciprocal fallacies. In case of Fallacy of Division, what is applicable only to the whole is erroneously predicated to its parts. So, it becomes incorrect to reason that since a particular football team is a good one, so each of its players must be good. Similarly, one may reason wrongly when one says what is good for the nation is also necessarily beneficial for each of its citizens.

Let us look at the following examples:

- Indians are fond of the game of Cricket.

Ram is an Indian.

Therefore, he is fond of the game of Cricket.

- No men desire the success of all.

So, no man desires his own success.

The above examples illustrate the Fallacy of Division,

It has become evident from our discussion so far that the fallacies of ambiguity occur due to a lack of knowledge, wrong interpretation and incorrect understanding.

Check Your Progress I

Note: a) Use the space provided for your answer.

b) Check your answers with those provided at the end of the unit.

1. When the fallacy of equivocation arises?

2. When the fallacy of composition arises?

10.3.2 Fallacies of Relevance

Fallacies of Relevance arise when the premises of an argument are irrelevant to the conclusion for some reason. The premises may appear to be relevant to the conclusion initially, but on close analysis and examination, they are found to be inadequate. In this case, the premises of the argument may appear to be psychologically relevant but for a sound argument, the premises must be logically relevant rather than psychologically. There are mainly six sub-categories within this fallacy. They are as follows:

10.3.2.1 The Appeal to Emotion (Argument *ad populum*)

This fallacy arises when an argument is supported with the help of an appeal to emotions and not by reasoning. For example, a political speech may appeal to emotions in order to stir up love or hatred among the masses. Emotionally charged language is often used in order to manipulate the beliefs of the public and gather their approval or disapproval on some issue.

Let us consider the examples given below:

- In William Shakespeare's Julius Caser, when Mark Antony instigates the crowd to take revenge on Caesar's killing, he says, "... You all did love him once, not without cause: What cause withholds you then, to mourn for him? ..."

It is evident that the phrases and arguments used in the speech appeal to emotions.

- 60 percent of people buy Motorola phones rather than any other brand. All these people cannot be wrong. Thus, Motorola is the best phone brand in the market.

In this example, the conclusion is drawn and taken to be true on the basis of what many people popularly believe. However, the argument becomes fallacious as the soundness of reasoning should be judged not on the basis of popularity but on the relevance of the premises involved in the argument to the conclusion.

- "If we send this man to jail, who will feed his five little hungry and helpless kids. Therefore, in the interest of the poor children, pardon the man."

In the above example we see that an appeal of special kind of emotions is being made viz., pity and sympathy. The argument appeals to the heart rather than to the head.

The employment of emotionally laden and expressive language to support conclusions in arguments is not a logically acceptable approach. Thus, such arguments, which involve an appeal to emotions, are fallacious.

10.3.2.2 The Red Herring

This fallacy arises when a deliberate attempt is made to distract or divert the attention of listener(s) from the original topic, with the intention to do away with the original issue under discussion. According to the ancient story, red herring was used to confuse or divert dogs. So, anything that can mislead and can keep the listener off the track can act as a 'red herring'.

Let us look at the example below:

- Mother (At 8.30 pm): It is time for you to go to bed.

Boy: Mummy, I feel hungry ... I also have a stomach ache ... I need to go to the bathroom ...

In this case, the mother of a young boy tells him to go to bed as it is his bed-time. He in turn begins to talk about other issues such as, he is hungry, or he needs to go to the bathroom. Such statements are made to avoid the central topic of going to bed and to distract the mother. The fallacy committed here is The Red Herring.

10.3.2.3 The Straw Man

The Straw Man Fallacy occurs when one argues against an opponent's view by presenting the opponents position in a manner which can be easily refuted. The opponent's actual view is put forth in a distorted and misinterpreted manner and then refuted. The misconstrued and exaggerated version of the opponent's position which the arguer himself presents and then refutes is in fact like a 'straw man'.

Let us consider the following example:

- Jinsi is the class secretary. She suggests in the class meeting that the class should participate in more social service projects and programs. To this, Ram says that he cannot believe that Jinsi does not support the annual school dance program.

The above case involves erroneous reasoning. What Ram is refuting here is a misinterpreted version of Jinsi's viewpoint. Jinsi's view of encouraging and facilitating social service projects is misconstrued as a necessary disapproval of all the other events and activities of the school. This distorted version of Jinsi's view is attacked by the arguer. It is similar to attacking a straw man.

10.3.2.4 The Argument Against the Person (Argument *ad hominem*)

This fallacy arises in the following way. Person X makes an argument. Person Y evaluates the argument. Person Y shows that the argument made by X is wrong because either:

- a) Person X carries a bad reputation and so his argument cannot be sound.
(Abusive)

Or

- b) Person X's circumstances are questionable hence his argument cannot be sound. (Circumstantial)

In this type of fallacy, the argument is examined not on the basis of its premises but on the basis of the person making the argument, his circumstances etc. Personal emotions, interests, attitudes, prejudices etc., lead to this fallacy.

For example:

- Since he is a leftist, he will not favour the policy even if it beneficial for the people. (Abusive)
- Since he works for Amazon, he will naturally give arguments in favour of e-commerce. We cannot believe him. (Circumstantial)

10.3.2.5 The Appeal to Force (Argument *ad baculum*)

This fallacy arises when an arguer threatens his opponent with some undesirable or unpleasant consequences if his viewpoint is not accepted. This appeal to force doesn't necessarily involve physical force or threat but can also use subtle threats to persuade the other person. In logic, accepting a conclusion merely based on threat is not sound.

For example:

- The auto drivers often threaten the authorities that if their demands are not met, they will go on strike.
- "Give me your wallet or else look at the knife in my hand."

10.3.2.6 Missing the Point or Irrelevant Conclusion (*Ignoratio elenchi*)

This fallacy is committed when instead of proving what is intended, we prove something different. That is to say, the premises imply something other than the conclusion which they are supposed to imply. *Ignoratio elenchi* means "ignoring the conclusion to be proved" and instead "proving the wrong conclusion."

This can be further understood by looking at the example given below.

- The object of war is peace therefore army soldiers are the best peacemakers.

This argument commits the Fallacy of Irrelevant Conclusion as even if it is assumed that the object of war is peace, still it does not imply that army soldiers are the best peacemakers. Since the premise misses the point, this fallacy is also called “Missing the Point”.

Check Your Progress II

Note: a) Use the space provided for your answer.

b) Check your answers with those provided at the end of the unit.

1. What does Fallacy of *straw man* mean?

10.3.3 Fallacies of Defective Induction

In the Fallacies of Defective Induction, the premises of the argument may be relevant to the conclusion but they are too weak to support the conclusion. This will be further clarified when we look at the four sub-types under this fallacy along with an example of each.

10.3.3.1 The Argument From Ignorance (Argument *ad ignorantiam*)

This fallacy arise when it is argued that a proposition is true on the basis that it has not been proved false, or when it is argued that a proposition is false because it has not been proved to be true.

For example:

- There is no evidence that cigarette smoking causes lung cancer. Thus, cigarette smoking does not cause lung cancer.

Here, the appeal is made to ignorance rather than to knowledge. The fact that it has not been definitely proven yet that smoking leads to cancer, it does not imply conversely that smoking does not cause cancer.

10.3.3.2 The Appeal to Inappropriate Authority (Argument *ad verecundum*)

This fallacy arises when the authority who is cited, does not have enough credibility to judge the issue at hand.

Let us consider the following example:

- When some famous Bollywood actor says that a particular brand of tea is good and it is accepted as good; it is fallacious. The actor is not authority to judge the quality of tea. He is an authority in the field of acting and entertainment. Had he recommended a particular acting school, his words would have been reliable. But in the domain of tea, he does not have credibility as he is not an expert.

10.3.3.3 False Cause (Argument *non causa pro causa*)

This fallacy is committed when a non-causal event is assumed to be either a cause or part of a cause of an effect. That is to say, in such cases, a causal relationship is assumed to exist when actually there is none.

For example:

- Harry drinks 'Rasna' with water every day. That is the cause of his good performance in studies.
- When the building got burnt, the sun was shining bright. Thus, the bright shining sun is the cause of the building burning.

The above example shows another form of the Fallacy of False Cause called *Post hoc ergo propter hoc*. It means, 'after the thing, therefore, because of the thing'. Although temporally, a cause is always prior (antecedent) to the effect, yet to say that every antecedent event is necessarily the cause of the following event is fallacious.

10.3.3.4 Hasty Generalization (Fallacy of *Converse Accident*)

The Fallacy of Hasty Generalization arises when it is argued in a careless and quick manner from one or very few instances to a very broad or universal claim. In this fallacy, a general rule is formed on the basis of very few instances.

For example:

- To give charity to healthy beggars is wrong. Thus, charity of all kinds is wrong.

In this example, even though few cases/instances of fit and healthy beggars stop us from giving them charity. It is erroneous to form a universal claim that all kinds of charity are wrong. There can be people who are poor and needy and genuinely require support.

10.3.4 Fallacies of Presumption

Fallacies of Presumptions are committed when unnecessary presumptions are made prior to making an argument. The premises already presume to be true (without evidence) what they aim to prove. There are three major sub-categories under this:

10.3.4.1 Fallacy of Accident

This fallacy occurs when general or universal claim is erroneously applied to an individual case which is not properly governed by that general claim.

For example:

- In the moral domain, when we look at the universal moral dictum, it is true that lying is a sin but if in order to save lives, one lies, it would not be wrong. So, to presumably say that all acts of lying are wrong, without taking into consideration some special circumstances is fallacious.

10.3.4.2 Begging the Question (*petitio principii*)

This fallacy arises when the conclusion or some part of the conclusion is already stated in the premises either explicitly or in some slightly different form. This fallacy of *Petitio Principii* is also called 'reasoning in a circle' because the conclusion is already present in the evidence, out

of one's eagerness to prove it. The reasoning involved becomes superfluous as the conclusion is already assumed.

For example:

- Ram is a good student because he spends more time studying. He spends more time studying because he is a good student.

This argument involves 'reasoning in circle'.

10.3.4.3 Complex Question

This fallacy arises when a question is asked in such a way that it assumes or presupposes the truth of some facts hidden in it (question). In this fallacy, often a single question is asked but two or three questions are wrapped up in it. Thus, it is also called 'Fallacy of Many Questions'.

Let us consider the example given below,

- "Have you stopped being careless with your work?"

In this case, there are two questions involved. First, 'Did you ever have a tendency of being careless towards your work?' and second, 'Have you given up that attitude now?'. Further, an affirmative answer to the question asked in the example presumes that earlier the person had a careless attitude towards his work.

An adequate knowledge about all the various informal fallacies, as discussed above, helps us to avoid mistakes in reasoning and enables us to always use correct reasoning while framing arguments.

Check Your Progress III

Note: a) Use the space provided for your answer.

b) Check your answers with those provided at the end of the unit.

1. Check the fallacy in the following statements:

- i. Haldiram's is a famous restaurant because they serve delicious food.
Haldiram's serves delicious food because it is a famous restaurant.

- ii. “Have you stopped drinking alcohol?”
 - iii. IIT Bombay is the best institute in the country; therefore every student of IIT Bombay must be the best student in the country.
 - iv. Since Sachin Tendulkar promotes Toshiba TV, therefore Toshiba TV must be good.
-
-
-
-

10.4 LET US SUM UP

In this unit we have discussed informal fallacies, the four main kinds of informal fallacies, viz., Fallacies of Ambiguity, Fallacies of Relevance, Fallacies of Defective Induction and Fallacies of Presumption. In this unit we have also covered the sub-categories within each of these four broad categories of informal fallacies along with adequate examples. The wider scope of the unit consists in looking at the kinds of errors and mistakes the human mind is prone to make when we use arguments in our day to day life. The illustrations provided from our everyday use of natural language helps to facilitate better understanding. The informal fallacies involve those fallacies which may occur when we use language incorrectly in making arguments.

10.5 KEY WORDS

Fallacy: an error in reasoning.

Formal Fallacy: fallacies that occur in the ‘form’ of an argument.

Informal Fallacy: fallacies that occur in the ‘content’ of an argument.

10.6 FURTHER READINGS AND REFERENCES

- Read, Carveth. *Logic: Deductive and Inductive*. Dodo Press, 1914.
- Copi, I.M. *Introduction to Logic*. New Delhi: Prentice Hall India, 9th Ed., 1995.

10.7 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress I

1. The Fallacy of Equivocation arises when the same term or a phrase is used in a manner such that it has two different meanings in the same argument.

2. The Fallacy of Composition arises when the conclusion is drawn from the properties of the parts of a whole to the properties of whole itself.

Check Your Progress II

1. The Straw Man Fallacy occurs when one argues against an opponent's view by presenting the opponents position in a manner which can be easily refuted. The opponent's actual view is put forth in a distorted and misinterpreted manner and then refuted. The misconstrued and exaggerated version of the opponent's position which the arguer himself presents and then refutes is in fact like a 'straw man'.

Check Your Progress III

- i. Fallacy of *Petitio Principii*
- ii. Fallacy of Complex Question
- iii. Fallacy of Division
- iv. Fallacy of Appeal to Inappropriate Authority