Key Terms

Argument

Definition

An argument is any set of *statements*- explicit or implicit- one of which is a *conclusion* (the statement allegedly being defended) and the others are *premises* (statements allegedly providing the defense).

- The relationship between the conclusion and the premises is such that the conclusion purportedly *follows from* the premises.

Statement

Definition

A statement is any indicative sentence that is either true or false.

Examples

1. Galileo was an astronomer.
2. Provided the fetus is a person, a featus has a right to life.
3. No one but Nixon knew the truth.
4. Lung cancer is not caused by smoking.
5. Everybody deliberates about alternative courses of action.
6. Martin Van Burren was not the ninth president of the United States.

- Interrogative, imperative, and exclamations are sentences that are not statements.

Examples

1. Is George Washington president?
2. Shave yourself.
3. Wow!

Premises and Conclusion, I

Premise indicators

They are the terms that indicate that a premise will immediately follow.

- Some common premise indicators: 'since', 'because', 'for', 'after all', 'given', 'whereas', 'although', 'suppose', 'assume', 'let us presume', 'granted', 'here are the facts'.
- When a premise indicator starts a clause, then what follows the premise indicator is usually a premise.

Premises and Conclusion, II

Conclusion Indicators

They are the terms which when start a clause, then what follows is usually a conclusion.

- Some common conclusion indicators: 'consequently', 'therefore', 'so', 'hence', 'it follows', '...proves', '...shows', 'we can now infer', 'it cannot fail to be', 'let us conclude', 'this implies', 'these facts indicate', 'this supports the view or claim', 'let us infer', 'as a consequence we can deduce'.

Putting Arguments into a Standard Format, II

Putting arguments into standard format may involve all of the following.

1. Identifying the premises and the conclusion.
2. Placing the premises first. (Order does not matter).
3. Placing the conclusion last.
4. Making explicit any premise or even the conclusion, which may be only implicit in the original but essential to the argument.

Putting Arguments into a Standard Format, II

Consider the following ordinary language argument:

> *Provided the fetus is a person, a fetus has a right to life. Should a fetus have a right to life, it is false that someone has the right to take its life. However, if abortions are moral, someone does have the right to take the life of a fetus. Consequently, if a fetus is a person, abortions are not moral.*

The Argument in Standard Form, II

1. Provided the fetus is a person, a fetus has a right to life.
2. Should a fetus have a right to life, it is false that someone has the right to take life.
3. If abortions are moral, someone does have the right to take the life of a featus.
4. Therefore, if a fetus is a person, abortions are not moral.

Multiple Conclusions, I

- Ordinarily, no argument can have more than one conclusion.
- There are two cases in which there can be multiple conclusions.

1. When more than one conclusion is drawn from the same set of premises.That is to say, distinct arguments can have same premises, but different conclusions.

Example

(i) All women are mortal and rational.
(ii) Andrea is a woman.
(iii) So, Andra is rational.
(iv) So, Andra is mortal

Multiple Conclusions, II

2. When we chain arguments together so that a single statement serves as both a premise and a conclusion. In this case, the conclusion of one argument functions as a premise of another.

Example

(V) Killing children is evil.
(vi) Children were being killed in Bosnia.
(vii) Therefore, someone was doing something evil in Bosnia.
(viii) When someone does something evil, he should be punished.
(ix) So, whoever killed children in bosnia should be punished.

- (v)-(vi) are premises of an argument with (vii) as its conclusion.
- (vii) is also the premise of an argument, which along with (v), (vi), and (viii), has (ix) as its conclusion.

Validity of an Argument

When Is an Argument Valid?

An Argument/Inference is said to be valid, if and only if (iff) given the premises are true the conclusion is absolutely guaranteed to be true.

- Validity as property of arguments.
- Truth and falsity as properties of propositions.

Deductive Validity

Deductively Valid Argument

A deductively valid argument is an argument such that it is not possible both for its premises to be true and its conclusion to be false.

A Valid Argument

(i) The current Vice-President will win the next election.

(ii) If the current Vice-President wins the next election, then the country will prosper.

(iii) So, the country will prosper.

An Invalid Argument

(i) If God exists, then the creation is perfect.

(ii) God doesn't exist.

(iii) So, the creation is imperfect.

Validity and the Notion of Possibility

- Two sense of possibility: Logical and nomological/empirical.
- Logical Possibility: More or less same as what is conceivable or involves no contradiction, (Weaker Notion)
- Nomological or empirical possibility: Things that are possible given the laws of nature. (Stronger sense of possibility)

Validity and Nomological Possibility

A Deductively Valid Argument?

1. Jo jumped out of a twentieth floor window (without parachute, safety-net, etc.) and fell freely unimpeded onto a concrete pavement.
2. Therefore, Jo was injured.

- Given the laws of nature, it is not (physically) possible that a person falling unimpeded from twentieth floor will not produce fatal injury.
- Yet not a deductively valid argument because the scenario is logically possible.
- Conceivability of a situation with different laws of nature(physics), where someone jumping from twenty floors up, will float down delicately like a feather.

Validity and Logical Possibility

- Logical possibility as absence of contradiction.
- For example, there is no contradiction in saying that somebody falling from twenty floors up land without being hurt.
- The notion of deductive validity is in terms of the notion of logical possibility, not in terms of nomlogical possibility.

Invalidity

An inference is invalid if there is no internal contradiction in having true premises and false conclusion.

Validity and Logical Impossibility

- If something is logically impossible, it means that it is inconsistent, incoherent and logically absurd.
- For example, being square and circular at the same time.

Definition of Validity in Terms of Impossibility

A inference is valid iff it is impossible for its premises to be true and the conclusion false.

Validity and Consistency

Consistency

A set of propositions is logically consistent iff it is logically possible for the propositions to be true together.

Inconsistency

A set of propositions is logically inconsistent if it is logically impossible for the propositions to be true together.

Validity in Terms of Consistency

An inference is valid if the premises taken together with the denial of conclusion form an inconsistent set.

Evaluation of Validity, I

- For the evaluation of validity, we need to consider not only what the case in the actual world is, but also what the cases in other possible worlds are.

- Reason: The notion of validity is related to the notions of possibility and necessity.

Evaluation of Validity, II

Example I

1. No Welshman is a great poet.
2. Shakespeare is a Welshman.
3. Therefore, Shakespeare is not a great poet.

- Both the premises and the conclusion are false, yet the inference is a valid one.
- Because there is no possible situation in which premises would be true and the conclusion false.
- In other words, if there is a possible world where the premises are true, then in that world the conclusion will also be true.

Evaluation of Validity, III

Example II

1. No mother is a male.
2. Sonia Gandhi is a Mother.
3. Therefore, Sonia Gandhi is not a male.

- Its premises and conclusions are all true.
- The validity of the argument has nothing to do with the truth of the premises and conclusions in the actual world.
- Its validity depends on the fact that there is no possible world where the premises can be true and conclusion false.

Evaluation of Argument, IV

Example III

1. No one whose middle name is 'Kumar' is a Congress man.
2. L. K Advani's middle name is 'Kumar'.
3. Therefore, L. K. Advani is not a Congress man.

- A valid argument with false premise and true conclusion.
- In this argument, the truth of the conclusion has nothing to do with the fact cited in the premises. It just happens to be true.
- If there is a world where above premises are true, then the conclusion must be true as well.
- So the above argument too, is deductively valid though its premises are false.

Validity and Permissible Truth-value Assignments

Permissible combinations truth-values of premises and conclusions of a valid arguments:

- Actually true premises and a true conclusion.
- Actually false premises and a false conclusion,
- Actually false premises and a true conclusion.

The combination of truth-values not allowed:

- All true premises and a false conclusion.

The Invalidity Principle

- A valid inference cannot take us from, true premises to a false conclusion because validity is about necessary preservation of truth.
- That a valid inference cannot take us from actually true premises to a false conclusion may be called invalidity principle

The Invalidity Principle

An inference with actually true premises and an actually false conclusion can't be deductively valid.

-

Application of Invalidity Principle

The invalidity principle may help us to check the validity of a complex and long inference.

Example

1. No England cricket captain has written a world-famous philosophy textbook.
2. All world-famous philosophy textbooks are written by people with some knowledge of philosophy.
3. Anyone who has taught philosophy at a university has some knowledge of philosophy.
4. Therefore, no one who has taught philosophy at a university has captained England at cricket.

- All the three premises are true while the conclusion is actually false.
- So the invalidity principle shows that the argument is invalid as there is counterexample.

False Statements About Validity

Falsity About Valid Arguments

1. Any classically valid argument has a true conclusion.
2. No pair of classically valid arguments can have inconsistent propositions.
3. No classically valid argument has inconsistent premises.

Why the above statements are not true?

- Answer: *Reductio ad Absurdum* Arguments
- We infer certain explicit contradictions from premises that are implicitly inconsistent. Hence, it is not true to say that no valid argument has inconsistent premises.
- We argue from premises that we think are false to bring out some absurd consequences to make one accept that the premises are not true.

Sound Arguments

- Two Kinds of valid arguments:
  1. Those having true premises.
  2. Those having false premises.

- Those valid arguments, which start from true premises and proceed deductively to true conclusions, are called Sound arguments.

Definition of Soundness

Definition

An argument is sound just if it has all true premises and the inference from those premises to the conclusion is valid.

- Thus, an argument is sound when it is valid and its premises are true.

Example of an Unsound Argument

(i) All fish fly.

(ii) Anything which flies talks.

(iii) So, all fish talk.

- The above argument is valid, because the conclusion follows from the premises, but it is not a sound argument.

Consequences of the Definition of Soundness

Truths About Soundness

1. Any sound argument has a true conclusion.
2. No pair of sound arguments can have inconsistent conclusions.
3. No sound argument has inconsistent premises.

1. is true because validity with the truth of the premises guarantees the truth of the conclusion
2. is true because both the arguments have true conclusion. Hence they can be true together
3. is true because inconsistent premises cannot be true together.