5 Identifying and evaluating arguments: logic and morality

Box 5.3 Activity: Conceptual analysis

Can you say which arguments are deductive and which inductive?

1. The sun is coming out so the rain should stop soon.
2. If Jane is at the party John won't be. Jane is at the party, therefore John won't be.
3. The house is a mess therefore Lucy must be home.
4. Either he's in the bathroom or the bedroom. He's not in the bathroom, so he must be in the bedroom.
5. The dog would have barked if it saw a stranger. It didn't bark, so it didn't see a stranger.
6. No-one in Paris understands me, so my French must be rotten, or the Parisians are stupid.

Answers:
1. inductive, 2. deductive, 3. inductive, 4. deductive, 5.deductive, 6. inductive.

Box 5.4 Activity: Quiz

1. What is an argument?
2. Can an argument have a single premise?
3. How does deduction differ from induction?
4. The relation of 'following from' includes two different relations, what are they?
5. Why doesn't induction deliver certainty?
6. What are the two questions we must ask in order to evaluate an argument?
7. What is the difference between an argument that is **sound** and one that is merely **good**?
8. In order for an argument to be sound must *all* its premises be true?

Answers:

1. **When we construct an argument we put forward a claim (a conclusion) and one or more reasons for believing the claim (the premise(s)). The argument is the set consisting in the premises plus the conclusion.**
2. **Yes.**
3. **A deductive argument, when sound, offers certainty. An inductive argument, even when sound, makes its conclusion more or less likely (possibly *much* more likely).**
4. **Validity (in the case of deduction). Inductive strength (in the case of induction).**
5. **All inductive arguments rely on the assumption that nature is uniform; that the future will be like the past. As this assumption isn't certainly true, no inductive argument can deliver certainty.**
6. **(i) Are the premises true? (ii) Does the conclusion follow from the premises?**
7. **A sound argument is such that all its premises are true *and* its conclusion follows from these premises. A good argument is such that its conclusion follows from the premises (we may not know whether the premises are true or not).**
8. **Yes.**

Box 5.6 Activity: Evaluating deductive arguments

An argument is deductively valid if and only if there is no possible situation in which its premises are true and its conclusion false. A counterexample is just such a situation. The existence of a counterexample, therefore, demonstrates the invalidity of the argument.

We know that argument three is invalid, so we also know there must be at least one counterexample, one situation in which the premises are true but the conclusion false.

Here is argument three. See if you can find a counterexample:

> If the patient is in a permanent vegetative state (PVS) then he will not be conscious.
>
> The patient is not conscious.
>
> Therefore the patient is in PVS.

Answer:
There are lots of counterexamples to this argument: any situation in which the patient is unconscious for reasons *other* than his being in PVS. If the patient is unconscious because he has taken a knock on the head, this would be a counterexample to argument three. Only one counterexample is needed to demonstrate invalidity.

Box 5.7 Activity: Conceptual analysis

To make sure you are not confusing validity, truth and/or soundness look at the definition of validity then answer the questions below:

Definition: validity

An argument is valid if and only if there is no possible situation in which the premises are true and the conclusion false.

Now answer the following questions:

1. Could all the premises of a valid argument be false?
2. Should we always reject the conclusion of an invalid argument?
3. Could the set of sentences consisting of the premises of a valid argument and the negation of its conclusion be consistent (such that they could all be true together)?
4. Could an invalid argument have a true conclusion?

Answers:

1. Yes (if this is the case the argument might be good but it isn't sound).
2. No, an invalid argument tells us nothing about the truth of its conclusion and the conclusion might reasonably be believed to be true on grounds other than the argument.
3. No. Because a valid argument with true premises *must* have a true conclusion, the set consisting of the true premises plus the *negation* of the conclusion (i.e. the conclusion with 'it is not the case that' tacked on the front) must be inconsistent (such that they can't all be true together).
4. Yes. It could also have a false conclusion. The invalidity of an argument tells us nothing about the truth of its conclusion.

Box 5.10 Activity: Evaluating inductive arguments

What do you think of the following arguments?

1. Einstein supports pacifism. Therefore it is right to support pacifism.
2. The universe, like a clock, has a designer. Therefore the universe has a designer.
3. All daffodils we have ever seen have been yellow. Therefore all daffodils are yellow.

Q1 From a sample of which population is the argument extrapolating to the rest of that population? Is the extrapolation reasonable?

1. This extrapolates from the fact that Einstein is right about many things, to the claim that Einstein is right about everything. Is this reasonable?
2. This extrapolates from the fact that some clock-like things (clocks) have a designer to the claim that other clock-like things (universes) will have a designer.
3. This extrapolates from all the daffodils we have ever seen, to all daffodils (which might be grounded on the belief they share a genome).

Q2 Can we question the premises?

1. Does Einstein support pacifism?
2. Are there any clock-like things that don't have designers?
3. Is it true that all the daffodils we have seen have been yellow? Could we have seen them all, or some of them, under a yellow light or when we had our yellow-tinted glasses on?

Q3 Can we undermine the similarity claim underlying the extrapolation?

1. Why should we think Einstein is a good politician because he is a good physicist?
2. Are there any disanalogies between clocks and the universe that might undermine the analogy?
3. Could the daffodils we have seen be the same as each other, and yet different from daffodils we haven't seen?

Box 5.11 Activity: Analysing arguments

Find the conclusion

1. Since all men are mortal, Socrates is mortal, for Socrates is a man.
2. Socialism was doomed to failure because socialism did not provide the incentives needed for a prosperous economy.
3. Since many newly emerging nations do not have the capital resources necessary for sustained growth they will continue to need help from industrial nations.

Answers:

1. Socrates is mortal. 2. Socialism was doomed to failure. 3. Newly emerging nations will continue to need help from industrial nations.

See Robert J. Fogelin (1978) *Understanding Arguments: An Introduction to Formal Logic*. San Diego, CA: Harcourt, Brace and Jovanovitch, p. 34.

Box 5.12 Activity: Analysing arguments

Identify the premises of this argument (don't forget there might be a suppressed premise):

Socialism did not provide the incentives needed for a prosperous economy. Socialism was doomed to failure.

Answer:

Premise one: Incentives are needed for a prosperous economy.
Premise two: Socialism did not provide incentives.
Premise three: Governments fail when they do not provide what is needed to succeed.
Conclusion: Socialism was doomed to failure.
Premise three is a suppressed premise.
Taken from Robert J. Fogelin (1987) *Understanding Arguments*. San Diego, CA: Harcourt, Brace, Jovanovich, p. 34.

Box 5.13 Activity: Identifying premises and conclusions

Set out these arguments logic-book style removing irrelevancies and inconsistent terms and adding suppressed premises (if any):

1. Women's brains are on average smaller than men's. Therefore women are less intelligent than men.
2. The butler was in the pantry; therefore he couldn't have shot the master, who was in the study.
3. The green movement is wrong to think we should recycle paper and glass. Paper comes from trees, an easily renewable source, and glass is made from sand which is plentiful and cheap. Furthermore, in some American cities recycling schemes have been abandoned because they are too expensive.

Answers:

Premise one: Women's brains are on average smaller than men's.
Premise two: *The smaller the brain the less intelligent the person.*
Conclusion: Therefore women are less intelligent than men.

Premise two is a suppressed premise.

Premise one: The butler was in the pantry.
Premise two: The master was in the study.
Premise three: No one can be in two places at once.
Premise four: It is necessary to be in the same place to shoot someone.
Conclusion: Therefore the butler couldn't have shot the master.

It might be considered that premises three and four are too obvious to need to be added.

Premise one: Paper comes from trees, an easily renewable source.
Premise two: Glass is made from sand which is plentiful and cheap.
Premise three: In America some recycling schemes have been abandoned as too expensive.
Premise four: *We should only recycle if doing so saves money.*
Conclusion: Therefore the green movement is wrong to think we should recycle paper and glass.

Premise four is a suppressed premise.

Taken from Fisher, A. (2001) *Critical Thinking: An Introduction.* Cambridge: Cambridge University Press, p. 23.

Box 5.14 Activity: Group discussion

Once everyone understands the principle of charity, use the following questions to stimulate discussion:

- Can anyone describe a situation in which they were arguing with someone who didn't observe the principle of charity (so the person treated them as stupid and irrational or their beliefs as obviously false)? How did it make them feel?
- Can anyone describe a situation in which, as they were arguing with someone, they discovered they were themselves wrong about something?
- Is it possible *respectfully* to suggest that someone might be wrong? How?
- Check out the fallacy of the 'straw man' in Box 5.8. Why should we not set up 'straw men' when we argue with someone else?