ANALYSING ARGUMENTS: VALIDITY & SOUNDNESS

Writing in the humanities and social sciences often involves arguing a case. When constructing your own arguments, or engaging with the arguments of others, it is important to have an idea of what constitutes a good argument and what constitutes a bad argument.

We may criticize an argument very precisely on the basis of its Validity and/ or its Soundness.

**Validity**

A valid argument is one such that if its premises are true, the conclusion must be true. In other words, it is not possible for its conclusion to be false given the truth of its premises.

An invalid argument, then, is one where the truth of the premises doesn’t ensure the truth of the conclusion. Less formally, we might say, when presented with an invalid argument, “but your conclusion doesn’t follow”.

Consider the following:

(A1) All men are wise, Donald is a man, therefore Donald is wise.

The premises of this argument are in maroon and the conclusion is in green.

If the premises, All men are wise and Donald is a man, are true, then the conclusion must be true also. So this argument is valid.

Now consider:

(A2) Some Americans are wise, Donald is an American, therefore Donald is wise.

In this case, the truth of the premises would not ensure the truth of the conclusion. It might be the case that, say, Hillary is wise and an American (verifying the first premise) and that Donald is an American (verifying the second premise), but it does not follow from this that Donald is wise also, so the argument is invalid.

**Soundness**

A sound argument is a valid argument whose premises are all true.

(A1) is valid but unsound because the premise All men are wise is false. If we replace occurrences of the word ‘wise’ in the argument with the word ‘mortal’, we get the valid argument:
(A3) All men are mortal, Donald is a man, therefore Donald is mortal.

From the true premises, All men are mortal and Donald is a man, the conclusion, Donald is mortal, follows. So (A3) is sound.

Validity and Soundness in Practice

When constructing arguments, or analysing the arguments of others, be sure to identify what the premises are and what conclusions are being drawn.

You can then criticize or defend an argument on the basis of its validity and soundness and structure an argument or even a whole essay accordingly.

Typically, the validity of an argument will be less contentious than its soundness.

Competent, logical thinkers should generally be able to agree on whether or not a given argument is valid, though consensus on validity becomes less likely, the more complicated an argument is.

The soundness of an argument, on the other hand, will often be more open for debate. This is because among the premises of an argument there may be propositions to do with morality or ideology, for example, the truth of which will be contentious.

Consider:

(A4) It is of the utmost importance that state intervention in the lives of its citizens is minimized, minimal state intervention leads to inequality among citizens, therefore inequality among citizens is permissible.

Plausibly, (A4) is valid; the conclusion would seem to follow from the premises.

The soundness of (A4), on the other hand, would seem to hinge on the contentious claim that it is of the utmost importance that state intervention in the lives of its citizens is minimized. This isn’t the sort of claim that you can look out of your window to see if it is true or not – it would seem to require a whole separate argument to establish.
Exercise

Consider the arguments below: For each of the arguments 1-5, i) identify the premise(s) and conclusion(s), ii) Assess for validity, iii) Assess for soundness.

Answers on next page.

1. All tigers are mammals, some mammals are carnivores, therefore some tigers are carnivores.

2. Heathrow is the London Airport with the most transatlantic departures. The busiest airport in London should have an extra runway, so Heathrow should have an extra runway.
3. Britain would have a weaker economy outside of the EU. A weaker economy would be bad for the citizens of Britain, so Britain should remain a member of the EU.

4. Prime numbers are only divisible by themselves and 1, 13 is prime, therefore 3 is not a factor of 13.
5. If I have a round, square coffee table then I have an impossible object in my house. There are no impossible objects, therefore I don’t have a round square, coffee table.
Answers to exercise (P1,…,Pn = premises, C = Conclusion)

1. P1: All tigers are mammals, P2: some mammals are carnivores, C: some tigers are carnivores.
   i. INVALID
   ii. UNSOUND

2. P1: Heathrow is the airport in London with the most transatlantic departures, P2: The Busiest airport in London should have an extra runway, C: Heathrow should have an extra runway.
   i. INVALID
   ii. UNSOUND

3. P1: Britain would have a weaker economy outside of the EU, P2: A weaker economy would be bad for the citizens of Britain, C: Britain should remain a member of the EU.
   i. INVALID (the premises do not say that we should do what’s good for British citizens)
   ii. UNSOUND (because invalid)

4. P1: Prime numbers are only divisible by themselves and 1, P2: 13 is prime, C: 3 is not a factor of 13.
   i. VALID
   ii. SOUND

5. P1: If I have a round square coffee table then I have an impossible object in my house, P2: There are no impossible objects, C: I don’t have a round square coffee table.
   i. VALID
   ii. SOUND