1 Truth and Validity

- Two useful definitions:
  - **Definition of validity**: An argument is **valid** if, and only if, there is no logical possible situation in which all of its premises are true and its conclusion false.
  - **Definition of soundness**: An argument which is valid and which also has all of its premises true is called **sound**.

- VERY IMPORTANT: Validity has to do everything with an argument’s *form*, and almost nothing to do with the actual content of the premises and the conclusion. It is not important what the premises and the conclusion actually say to determine whether an argument is valid or not.
  - If we know the truth values of the premises and the conclusion, this can help us determine whether an argument is valid or invalid only in one case: when the premises of an argument are true, and its conclusion is false, that argument is invalid.
  - Any other combination of truth and falsity with regards to the truth-values of the premises and the conclusion will **not** tell us whether that argument is valid or not.
  - A valid argument need **not** have true premises
    1. All cats are fish.
       Bugs Bunny is a cat.
       ∴ Bugs Bunny is a fish.
    2. If Bugs Bunny is a talking being, then he is a man.
       Bugs Bunny is a talking being.
       ∴ Bugs Bunny is a man.
  - Neither of the premises of those arguments are true. Nor are their conclusions. But the premises are of such a form that if they were true, then the conclusion would also have to be true, in both (1) and (2). Hence the arguments are valid.

- How to determine whether an argument is valid or not: we have to figure out what the *form* of the argument is, and then try to think of some other argument of that *same* form, but with true premises and a false conclusion. If we succeed, then every argument of that form must be invalid. A valid form of argument can **never** lead you from true premises to a false conclusion.
  3. If Socrates was a philosopher, then he wasn’t a historian.
     Socrates wasn’t a historian.
∴ So Socrates was a philosopher.

- Argument (3) is of the form “If P, then not-Q. not-Q. Therefore, P.” The conclusion of the argument is true, but is the argument valid or not? To decide, look at the following example of an argument, with the same form:

(4) If Socrates was a horse (this corresponds to P), then he was not cold-blooded (this corresponds to not-Q).

Socrates was not cold-blooded.

∴ Socrates was a horse.

- Argument (4) has true premises (Socrates, being a man, was warm-blooded) and a false conclusion, so it is invalid. Since argument (3) has the same form as argument (4), argument (3) is invalid too.

2 Logical Fallacies

2.1 False dilemma

- A claim presenting a false dilemma usually takes the form of an “either/or” statement. The dilemma presented is false because there are other possibilities that are not accounted for by the claim. For instance, a claim like “America: love it or hate it” presents a false dilemma: you can also be indifferent about America; or you can love some things and hate others.

- If you can think about other options, besides the ones offered in the statement of the dilemma, than that is a false dilemma.

Examples

(5) The key to success is not competition, but cooperation.

Explanation: Maybe there are other paths that lead to success, that have nothing to do either with competition or cooperation. E.g. team sports use both competition and cooperation to achieve success.

(6) The goal of an educational system must be to instill values, not to provide vocational training.

Explanation: A good educational system should have both aims: instill values and develop vocational skills.

(7) Government needs to provide social services instead of wasting money on the arts.
**Explanation:** Government spending is more complicated than a choice between social services and the arts; moreover, there are solutions that would accommodate both.

(8) Anybody who supported that bill in the Senate either didn’t understand the issue or was trying to ruin America.

**Explanation:** There are alternatives to this false dilemma, including the possibility that some supporters of the bill understood it and thought that it would be good for America anyway, or that they didn’t understand it but weren’t thinking about the good of America at all.

### 2.2 Overstated Generalization

- This takes usually the form of a broad claim about a specific group (of people, related by job, race, citizenship, etc.) This type of statements make assumptions about the whole when there is at least one possible exception to the statement. So, if you can think about an exception to the argument, that argument is committing this type of fallacy.

- For instance, if we consider the statement: “Success is easy to achieve but difficult to enjoy.” Don’t some people enjoy their success? Don’t some people have a difficult time achieving success?

- Both false dilemmas and overstated generalizations assume only that X is true and don’t consider alternatives. False dilemmas present you only with two choices; you have to think of the in-betweens. Overstated generalizations state one point of view, and you have to think of the alternatives.

- Very often, these two fallacies will be combined (in many arguments that we meet with everyday). For instance, “An individual’s attitudes are primarily determined by his or her character rather than by the particular situation in which they are evoked.”

- **Explanation:**
  - *Overstated generalization:* all attitudes of all individuals are determined by... Are there no individuals whose attitudes are determined in a different manner?
  - *False dilemma:* “...either by character of the situation in which the attitudes are evoked” Are there any other things that determine what attitudes an individual will form?
  - Why can’t we say that both of these things determine the attitudes of some individuals?
• Examples

(9)  Government should never seek to restrict the rights of individuals.

Explanation: There are cases in which the rights of individuals should be restricted, namely when one individual is attempting to infringe on the rights of others. My “right” of committing murder is restricted by the government, and that’s a good thing.

(10) In today’s society, everyone thinks that style is more important than substance.

Explanation: This statement contains a false dilemma (style and substance are not mutually exclusive) but also an overstated generalization in the assertion that “everyone thinks” style is more important.

2.3 Appeal to authority

• In making an argument, it is sometimes good to invoke the views of the experts.

  – The argument might be strong if the authority in question has pertinent expertise.
  – The argument will be less strong if it cites “experts” without establishing their credentials or if there is substantial disagreement among experts regarding the point in question.
  – The argument will be extremely weak, if it is based on anonymous authority (hearsay, e.g.), since the expertise of the authority can’t be verified (and it can be missing altogether.)

(11) Experts agree that to an overwhelming extent, perceived job prospects determine undergraduates’ choice of field of study.

Explanation: Who are the experts? And what does their expertise consist in?

2.4 Inductive Fallacies

• Inductive fallacies, in inductive reasoning, arise from inappropriate reliance on a sample. There are several possibilities here:

  • The conclusion is drawn from a sample that is too small = hasty generalization;
  • The sample the conclusion is based on is unrepresentative of the target group of things that the argument is about = unrepresentative sample;
  • Or the conclusion may be drawn from a sample that is not analogous to the target group of things = false analogy.