

ARGUMENTS AND VALIDITY

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1 ARGUMENTS AND VALIDITY

1. Eating meat is morally permissible because humans have always eaten meat.

This is an **argument**: an attempt to support a claim by providing a reason to think it is true. The **conclusion** of the argument is the claim being supported. The **premises** are the claims that make up the reason in support.

1. Humans have always eaten meat. ← premise
2. So, eating meat is morally permissible. ← conclusion

Arguments often have unspoken or *implicit* premises. This argument has an implicit premise. What is it?

Some arguments are good, and some are bad. There are two ways of thinking about what it takes to be a *good* argument:

- For an argument to be good, it must have **true premises**.
- For an argument to be good, the conclusion must **follow from** the premises.

These are independent. Here is an argument with true premises, but the conclusion doesn't follow:

1. Anyone 40 or older can legally purchase alcohol. ← true premise
2. I can legally purchase alcohol. ← true premise
3. So, I am 40 or older. ← true conclusion (!)

Here is an argument where the conclusion follows from the premises, but the premises are not true:

1. All rabbits are carnivores. ← false premise
2. All carnivores eat ice cream. ← false premise
3. So, rabbits eat ice cream. ← true (?) conclusion

The *best* arguments are good in *both* ways. We call these arguments **sound**:

Soundness An argument is **sound** if and only if (a) all of its premises are true and (b) its conclusion follows from its premises.

In **Deductive Logic**, we are just interested in the second condition, which we call *deductive validity*:

Deductive Validity An argument is **deductively valid** if and only if its conclusion follows from its premises.

1.1 EXERCISES

Rewrite each argument in **standard form**. Be sure to include any implicit premises. Then, answer two questions: Is the argument valid? Is it sound? If you think it is valid but not sound, which premise(s) do you think are false?

2. Eating meat is morally permissible because meat is part of a healthy human diet.
3. You should vote because you live in a democracy.
4. It is okay for the US to destroy Iranian cultural artifacts because Iran has destroyed US cultural artifacts.

2 CLARIFYING DEDUCTIVE VALIDITY

What does it mean to say that the conclusion **follows from** the premises?

Deductive Validity An argument is **deductively valid** if and only if it is impossible for the premises to be true but the conclusion false.

Note the role of *possibility* in this definition. To show that an argument is *not valid*, you need to describe a *possible situation* in which the premises would all be true, but the conclusion false:

1. All rabbits are carnivores.
2. Some carnivores eat rabbits.
3. So, some rabbits eat rabbits.

Imagine a situation in which rabbits eat mice (but not rabbits), and coyotes eat rabbits. (1) is true. (2) is true. But (3) is false. So it is possible for the premises to be true, but the conclusion false. So the argument is not valid.

2.1 EXERCISES

Show that each argument is not valid by describing a possible situation in which the premises are all true, but the conclusion false.

1. Some dogs are over 100 lbs.
2. All St. Bernards are dogs.
3. So, some St. Bernards are over 100 lbs.
4. Anyone who is 40 years old can legally purchase alcohol.
5. Bernie Sanders can legally purchase alcohol.
6. So, Bernie Sanders is 40 years old.
7. Everyone I invited to my party is my friend.
8. I didn't invite you to my party.
9. So, you aren't my friend.

3 NUTS AND BOLTS

- Course website: <http://davidsanson.com/logic>
- Register for the course on <https://carnap.io>
- Read chapter 1 on the Carnap Book.
- Complete the two homework assignments that are due by Thursday at 1 am:
 - “Arguments and Validity”
 - “Problem Set 1”