

Introduction to Logic

Instructor: Jason Sheley

Opening week

- Welcome to the class!
- My first goal this week is to show you what the class is all about so that you can make an informed decision as to whether you want to take it or not.
- My second goal is to help ease us into studying logic so that it seems not so intimidating.

- On What Logic is
- Getting Over the Fear of Logic
- The Plan for the semester

What is logic?

Who cares?

Why should we study
it?

- What do you think?

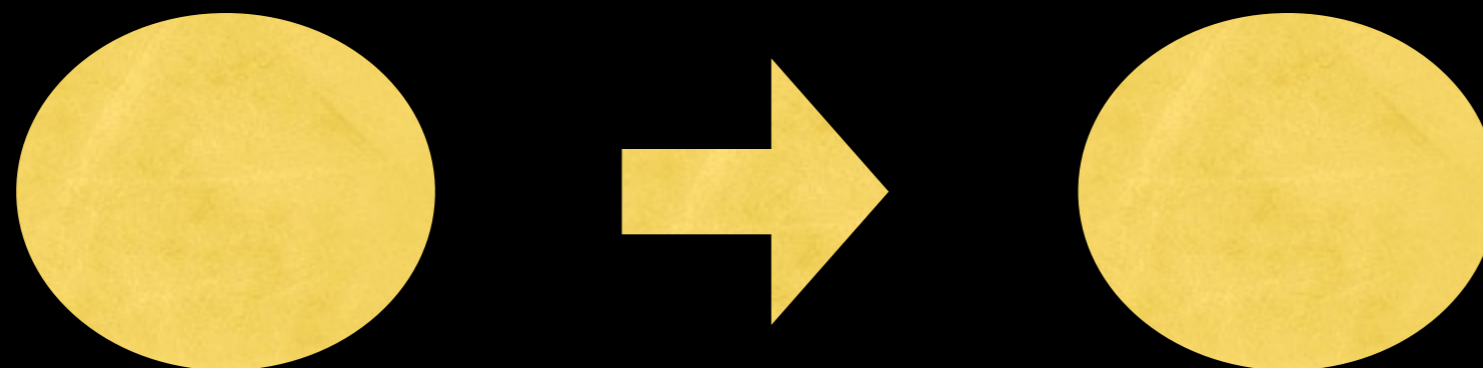
What's the correct approach?

- I think it's this:
 - We care about logic because we have questions we want to answer.
 - Logic helps us do this

My favorite definition

- Logic is the art of moving from what we know to what we don't know (or, from what is established to what would like to establish.)
- (This idea is credited to the philosopher C.S. Pierce, although I can't seem to find the exact quotation.)

The Star of the Show







- Logic has two dimensions:
 - **Courageous** — we want to build new ideas, prove new things, make new discoveries
 - **Cautious** — we want to make sure that our new idea really works, that the proof is successful, that we really have made a discovery

- As I mentioned last time, (in a sense) we already know how to do this.
- Let's look at some examples...

- (In a parking lot...)
- 1) You can either go right or go left.
- 2) The path to the right is blocked.
- Therefore, _____.

- 1) All Snakes should be killed
- 2) Socrates is a snake
- Therefore, _____ (?)

- Let's go back to the syllabus and look at the topics we will cover...

Puzzle

- The Ship of Theseus...

The identity of a person is a perfect identity; wherever it is real, it admits of no degrees; and it is impossible that a person should be in part the same, and in part different... For this cause, I have first considered personal identity, as that which is perfect in its kind, and the natural measure of that which is imperfect.

Thomas Reid¹

1 The Ship of Theseus

To understand the philosophical problems involved in persistence, in the fact that one and the same thing may endure through a period of time, we will begin with what Reid would have called the 'imperfect' cases and remind ourselves of some ancient philosophical puzzles. One such puzzle is suggested by the familiar dictum of Heraclitus: 'You could not step twice in the same river; for other and yet other waters are ever flowing on.'² Another is the problem of the Ship of Theseus.³

Updating the latter problem somewhat, let us imagine a ship – the Ship of Theseus – that was made entirely of wood when it came into being. One day a wooden plank is cast off and replaced by an aluminum one. Since the change is only slight, there is no question as to the survival of the Ship of Theseus. We still have the ship we had before; that is to say, the ship that we have now is identical with

Originally published in Roderick M. Chisholm, *Person and Object* (1976), ch. 3. Reprinted by permission of Open Court, a division of Canis Publishing.

the ship we had before. On another day, another wooden plank is cast off and also replaced by an aluminum one. Still the same ship, since, as before, the change is only slight. The changes continue, in a similar way, and finally the Ship of Theseus is made entirely of aluminum. The aluminum ship, one may well argue, is the wooden ship we started with, for the ship we started with survived each particular change, and identity, after all, is transitive.

But what happened to the discarded wooden planks? Consider this possibility, suggested by Thomas Hobbes: 'If some man had kept the old planks as they were taken out, and by putting them afterwards together in the same order, had again made a ship of them, this, without doubt, had also been the same numerical ship with that which was at the beginning; and so there would have been two ships numerically the same, which is absurd.'⁴ Assuming, as perhaps one has no right to do, that each of the wooden planks survived intact throughout these changes, one might well argue that the reassembled wooden ship *is* the ship we started with. 'After all, it is made up of the very same parts, standing in the very same relations, whereas that ugly aluminum object doesn't have a single part in common with our original ship.'

To compound the problem still further, let us suppose that the captain of the original ship had solemnly taken the vow that, if his ship were ever to go down, he would go down with it. What, now, if the two ships collide at sea and he sees them start to sink together? Where does his duty lie – with the



Let's apply the structure...

- The question: what does the identity of an object consist in?
- The answer(s): ???
- Reasons: ...
- Critique?

Roderick M. Chisholm

aluminum ship or with the reassembled wooden ship?

'The carriage' is another ancient version of the problem. Socrates and Plato change the parts of their carriages piece by piece until, finally, Socrates' original carriage is made up of all the parts of Plato's carriage and Plato's carriage is made up of all the parts of Socrates' original carriage. Have they exchanged their carriages or not, and if so, at what point?

Perhaps the essence of the problem is suggested by an even simpler situation. Consider a child playing with his blocks. He builds a house with ten blocks, uses it as a garrison for his toy soldiers, disassembles it, builds many other things, then builds a house again, with each of the ten blocks occupying the position it had occupied before, and he uses it again as a garrison for his soldiers. Was the house that was destroyed the same as the one that subsequently came into being?

Another version...



- What does it mean to “think critically?”
- What role does logic play in criticism?

Puzzle:
Can a monkey take a selfie?



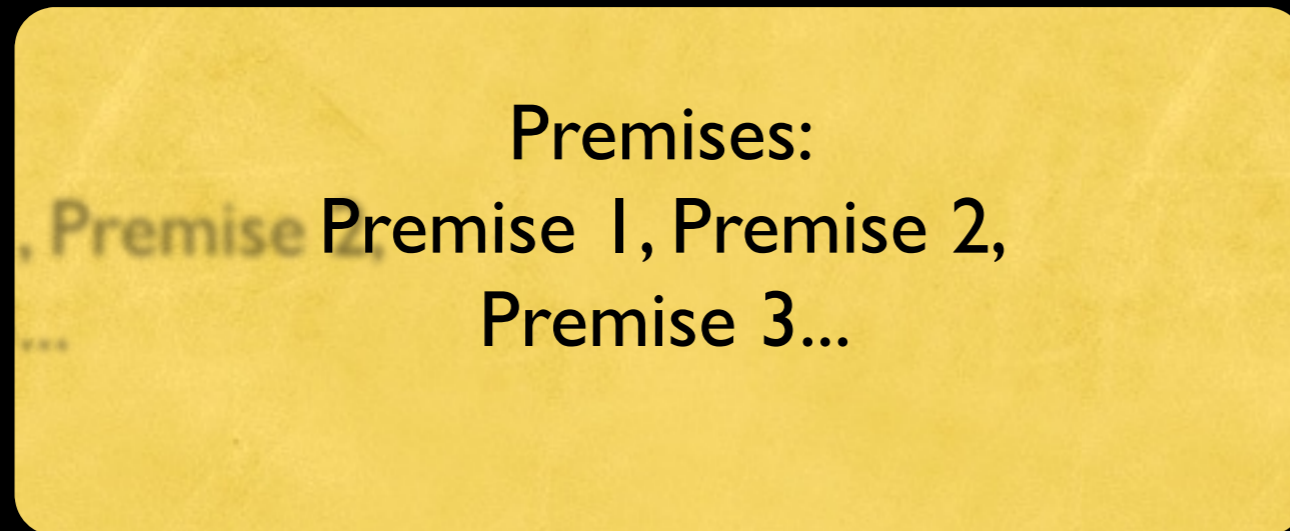
- There are a couple lessons we can take from this:
- 1) Learning logic isn't enough
- 2) We need to develop good habits in addition to learning the rules

Arguments, premises, and conclusions

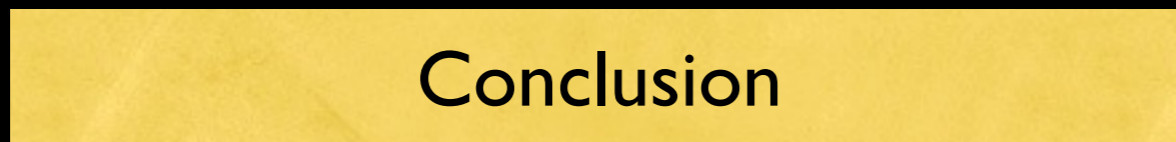
Logic and arguments

- Logic: the organized body of knowledge, or science, that evaluates arguments.
- Argument: A group of statements, one or more of which (the premises) are claimed to provide support for, or reasons to believe, one of the others (the conclusion)

Logic and arguments



— Claimed evidence



— What is claimed to follow from the evidence

statements

- The premises and the conclusion must be in the form of statements.
- But what is a statement?
- A statement is something that is either true or false.
 1. Broccoli is a good source of vitamin A.
 2. Argentina is located in North America.
 3. Rembrandt was a painter and Shelley was a poet.

Not Statements

1. What is the atomic weight of carbon?
2. Let's go to the park today.
3. We suggest that you travel by bus.
4. Turn to the left at the next corner.
5. All right!

Why aren't these statements?

Not Statements

1. What is the atomic weight of carbon? (question)
2. Let's go to the park today. (suggestion)
3. We suggest that you travel by bus. (suggestion)
4. Turn to the left at the next corner. (command)
5. All right! (exclamation)

Why aren't these statements?

more _{on} statements

- All statements have truth-values.
- Truth and falsity are called the two possible truth-values of a statement. Only statements can have truth-values.
- Note: Arguments do not have truth-values.

Premises and conclusions

- How can we tell the difference between a premise and a conclusion?

All film stars are celebrities.
Halle Berry is a film star.



Therefore, Halle Berry is a
celebrity.

Conclusion indicators

Therefore..

Thus...

Consequently...

We may infer...

Accordingly...

We may conclude...

It must be that...

For this reason...

So...

This entails that...

Hence...

It follows that...

This implies that...

As a result...

Ergo...

QED

Examples of conclusion indicators

Tortured prisoners will say anything just to relieve the pain. Consequently, torture is not a reliable method of interrogation.

An agreement cannot bind unless both parties to the agreement know what they are doing and freely choose to do it. This implies that the seller who intends to enter a contract with a customer has a duty to disclose exactly what the customer is buying and what the terms of the sale are.

Premise indicators

Since...

As indicated
by...

Because...

For...

In that...

May be
inferred
from...

As...

Given that...

Seeing
that...

For the
reason
that...

Owing to...

Is evidenced
by...

Example of a Premise indicator

Expectant mothers should never use recreational drugs, since the use of these drugs can jeopardize the development of the fetus.

The use of recreational drugs can jeopardize the development of the fetus.

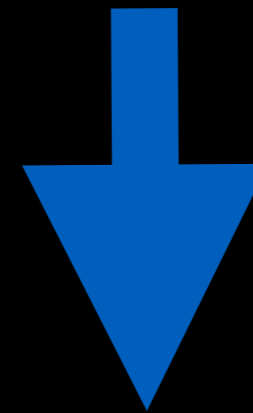


Expectant mothers should never use recreational drugs.

Example of a Premise indicator

The fact that there was never a land bridge between Australia and mainland Asia is evidenced by the fact that the animal species in the two areas are very different. Asian placental mammals and Australian marsupial mammals have not been in contact in the last several million years.

The animal species in Australia and Asia are very different. Asian placental mammals and Australian marsupial mammals have not been in contact in the last several million years.



There was never a land bridge between Australia and mainland Asia.

Examples: Argument or No Argument?

On January 26, asteroid 2004 BL86 safely flew right past us, making its closest approach around 11:19 a.m. EST at a distance of about 1.2 million kilometers -- that's only about three times the distance between us and our moon. And it turns out, the asteroid has its own little moon.

Nine cases of measles have so far been recorded in an outbreak in California and Utah, and the number is expected to rise. It is thought that many of the infections were transmitted at Disneyland. Predictably, most of those who have become sick were not vaccinated. Infuriatingly, two of them were children who were too young to get the measles shots, rather than being the children of vaccine opponents.

Unlike Ebola, measles is highly contagious. When its airborne, a single person can potentially infect many others by coughing or sneezing, particularly if they spend a day in a crowded place like Disneyland. If you spend long enough with someone who has measles and you either have not had it before or been vaccinated, you have a 90% chance of coming down with the disease.

- (Source: iflscience.com)

Argument or No
Argument?

Arguments without indicators

- What single statement is claimed to follow from the others?
- What is the arguer trying to prove?
- What is the main point of the passage?

Use these questions to try and find the conclusion.

Opening puzzle:
The Experience Machine

Would you
plug into the
machine?
Why or why
not?

There are also substantial puzzles when we ask what matters other than how *people's* experiences feel "from the inside." Suppose there were an experience machine that would give you any experience you desired. Superduper neuropsychologists could stimulate your brain so that you would think and feel you were writing a great novel, or making a friend, or reading an interesting book. All the time you would be floating in a tank, with electrodes attached to your brain. Should you plug into this machine for life, preprogramming your life's experiences? If you are worried about missing out on desirable experiences, we can suppose that business enterprises have researched thoroughly the lives of many others. You can pick and choose from their large library or smorgasbord of such experiences, selecting your life's experiences for, say, the next two years. After two years have passed, you will have ten minutes or ten hours out of the tank, to select the experiences of your *next* two years. Of course, while in the tank you won't know that you're there; you'll think it's all actually happening. Others can also plug in to have the experiences they want, so there's no need to stay unplugged to serve them. (Ignore problems such as who will service the machines if everyone plugs in.) Would you plug in? *What else can matter to us, other than how our lives feel from the inside?* Nor should you refrain because of the few moments of distress between the moment you've decided and the moment you're

Reprinted from *Anarchy, State, and Utopia* by Robert Nozick. Copyright © 1974 by Basic Books, Inc. Reprinted by permission of Basic Books, a member of Perseus Books, L.L.C.

What does matter to us in addition to our experiences? First, we want to *do* certain things, and not just have the experience of doing them. In the case of certain experiences, it is only because first we want to do the actions that we want the experiences of doing them or thinking we've done them. (But *why* do we want to do the activities rather than merely to experience them?) A second reason for not plugging in is that we want to *be* a certain way, to be a certain sort of person. Someone floating in a tank is an indeterminate blob. There is no answer to the question of what a person is like who has long been in the tank. Is he courageous, kind, intelligent, witty, loving? It's not merely that it's difficult to tell; there's no way he is. Plugging into the machine is a kind of suicide. It will seem to some, trapped by a picture, that nothing about what we are like can matter except as it gets reflected in our experiences. But should it be surprising that what *we are* is important to us? Why should we be concerned only with how our time is filled, but not with what we are?

Thirdly, plugging into an experience machine limits us to a man-made reality, to a world no deeper or more important than that which people can construct. There is no *actual* contact with any deeper reality, though the experience of it can be simulated. Many persons desire to leave themselves open to such contact and to a plumbing of deeper significance.¹ This clarifies the intensity of the conflict over psychoactive drugs, which some view as mere local experience machines, and others view as avenues to a deeper reality; what some view as equivalent to surrender to the experience machine, others view as following one of the reasons *not* to surrender!

We learn that something matters to us in addition to experience

¹Traditional religious views differ on the *point* of contact with a transcendent reality. Some say that contact yields eternal bliss or Nirvana, but they have not distinguished this sufficiently from merely a *very* long run on the experience machine. Others think it is intrinsically desirable to do the will of a higher being which created us all, though presumably no one would think this if we discovered we had been created as an object of amusement by some superpowerful child from another galaxy or dimension. Still others imagine an eventual merging with a higher reality, leaving unclear its desirability, or where that merging leaves *us*.

Let's talk about essays