# Recognizing and Evaluating Arguments

In every argument, there must be BOTH a “factual claim” that some statement(s) or other is true, AND a **claimed inferential link** that this justifies believing in the conclusion. That is, the person making the argument must claim (either explicitly or implicitly) that the premises provide reasons to believe the conclusion. Here are three “rules of thumb” for determining whether or not a given passage is an argument.

1. If there is actually IS an inferential link between the statements, one can safely assume that the passage counts as an argument.
   1. Ex: “Trees undergo photosynthesis. After all, all trees are plants and all plants undergo photosynthesis.” The first statement *really does follow* from the next two statements. So, it’s safe to assume that this is an argument (i.e. that the person was trying to convince you that the first statement was true.)
   2. Conclusion and premise indicators (*so, therefore, for, because*) often indicate the presence of an argument. This is not a foolproof test, however, since (a) these indicator words can also indicate causal connections and (b) not every argument will have premise or conclusion indicators.
2. Ex: “It’s safe to say that Harry won’t be coming to the party, because Tom Riddle is here, and Harry dislikes Tom.” In this case, the word *because* functions as a premise indicator, and the passage is an argument (with a conclusion of “Harry won’t be coming to the party.”)
   1. Ex: “The water started boiling because it was heated” is NOT an argument, even though it has the word “because” (which is often a premise indicator). In this case, “because” denotes a causal connection, and not an inferential one.
3. If a passage is recognizable as a common type of non-argument, then it is not an argument. Common types of non-arguments are discussed in the next section.

**Factual and Inferential Claims.** It can sometimes be helpful to think of an argument as consisting of two distinct parts. First, the premises of the argument must make some sort of **factual claim** about the way the world is. Second, the premises must make an **inferential claim** that, if this factual claim is true, then the conclusion is ALSO true. So, for example:

* Premise: It is Tuesday (factual claim)
* Premise: If it is Tuesday, I eat tacos (inferential claim)
* Conclusion: So, I eat tacos today.

In more complex argument, the distinction between the factual/inferential claims may always not be this clear-cut (and, of course, in bad arguments, it is always possible to make *false* factual or inferential claims). Non-arguments, by contrast lack this distinctive combination of factual and inferential claim. So, for example, the claim “It is Tuesday” is not an argument by itself, and neither is the claim “If it is Tuesday, then I eat Tacos.” It is only when these claims are *combined* that we are able to advance a conclusion (and remember, all arguments need conclusions!).

## What are some Common Types of Nonarguments?

Arguments requirethat there be a claimed inferential link between premises and conclusion. Because of this, not every group of statements that someone writes or says counts as an argument. Here are common examples of things that are NOT arguments:

**Warnings** and **pieces of advice** are not arguments, though these same sorts of statements can serve as premises or conclusions to arguments (for example, if you gave some *reasons* to try and convince someone to follow them).

* Ex: You should not smoke (warning). I recommend Camel cigarettes (advice).

A simple **statement of belief** isn’t an argument, either, since there is no claimed inferential link with anything else. This doesn’t change if the statement of belief is controversial or false. It only changes once you start trying to provide reasons.

* Ex: Smith believes that women should not be allowed to vote. He also believes that alcohol should be outlawed.

**Reports** provide information about an event, and often appear in newspapers. They might relate a long series of connected events, or interview various people to uncover their beliefs. In some cases, they might even have a report *about* an argument. **Expository passages** (of the type commonly found in many textbooks) elaborate upon a topic sentence, but don’t provide evidence for it.

* Ex: A newspaper article about the outcome of a recent football game is not an argument. By contrast, an “opinion piece” arguing that the coach of the football team should be fired IS an argument.
* Ex: A passage from a textbook giving details about the lives of early settlers of Minnesota is not argumentative.

In other cases, it is more difficult to distinguish arguments from non-arguments:

An **illustration** uses examples to clarify what is meant by another more, general statement. They sometimes will have indicator words like *thus, so,* or *hence.* Illustrations are NOT arguments, however.

* Ex: Irish-style stouts are dark, somewhat bitter beers. Thus, Guinness is a stout; so are beers like Murphy’s and Beamish.

An **argument from example** uses examples as premises to supporta general conclusion. These ARE arguments.

* Ex: The best beer comes from Ireland. For example, Guinness and Smithwicks are both Irish beers, and both are clearly better than anything brewed in the U.S.

Do you see the difference between the two passages? In the second, but not the first, there is an implicit claim that the specific example provides *a reason to believe* the more general point. There is the claim of an *inferential link.*

What is the Difference Between an Argument and an Explanation?

An **explanation** is a group of statements, one of more of which (the **explanans**) are claimed to provide the reason or cause of the other’s being true (the **explanandum**). Since the explanans does not provide *reasons to believe* the explanandum, explanations are NOT arguments. However, they do share certain structural similarities to arguments (and may even use similar indicator words).

* Ex: Chimpanzees do not have fire to scare away predators. Hence, chimpanzees spend much of their time in trees, since this is the only way for them to avoid being eaten.
* Ex: The moon stays in orbit around the earth because of gravitational force.

In an explanation, unlike an argument, it is *assumed* that the explanandum is true. So, if the potential “conclusion” of a passage seems to be so obvious that no one would debate it, consider the possibility that the passage might be an explanation (and not an argument).

## What is a Conditional Statement? Why aren’t they Arguments?

A **conditional statement** is a statement of the form *if antecedent A, then consequent C* or an equivalent form (such as *C if A* or *A only if C*).

* Ex: If *x* > 1 then *x* > 0.
* Ex: The soup will boil if it is left on the stove too long. (If S then B)
* Ex: Mary will bring an umbrella only if it is raining. (If U then R)
* Ex: If Napoleon was short, then he was a famous general.
* Ex: If Abe Lincoln was tall, then he was the King of France.

The antecedent A is a **sufficient condition** for the consequent C. Conversely, the C is a **necessary condition** for A. Conditional statements are NOT arguments. However, they often serve as premises or conclusions. Moreover, whenever an argument of the form *P therefore Q* is deductively valid, the conditional *if P then Q* will be true.

## Defining Deduction and Induction

There are two fundamentally different types of arguments. In order to figure out how “good” an argument is, it is necessary to determine the type, since different types of arguments are evaluated in different ways.

A **deductive argument** is an argument that incorporates the inferential claim that it is *literally impossible* for the premises to be true and the conclusion to be false. Basic idea: in a good deductive argument, if you can convince the person of the truth of your premises, they MUST accept your conclusion with 100% certainty. Deductive arguments either work or do no work; there is no middle ground. Deductive reasoning plays a central role in areas such as mathematics and computer science (and philosophy!), but play a somewhat more limited role in other areas of life. (This isn’t to say that we don’t use deductive reasoning; it’s just that many of the most difficult/important parts of everyday reasoning are often going to be inductive).

An **inductive argument** is an argument in which it is only claimed that it is *unlikely* for the premises to be true and the conclusion false. Inductive arguments come in a variety of strengths and can (unlike deductive arguments) be weakened or strengthened by the addition of new premises (new evidence makes a difference). Basic idea: in a good inductive argument, you are aiming to show the person that *if* your premises are true and *if* you haven’t left anything important out, *then* your conclusion is likely to be true. Much of our reasoning in everyday life (including nearly all of science, history, etc.) involves inductive arguments.

Once you get the hang of the idea, you’ll find that many arguments are clearly inductive or clearly deductive. In unclear cases, use the **principle of charity**—represent the argument in whichever way it has the best chance of working. For example, here are two deductive arguments, which implicitly involve the claim that the conclusion *must* be true if the premises are true:

* All clown fish are Harry Potter fans. Nemo is a clown fish. So, Nemo is a Harry Potter fan. (GOOD form, deductively “valid”)
* All clown fish are Harry Potter fans. All sharks are Harry Potter fans. So, all clown fish are sharks. (BAD form, deductively “invalid”)

By contrast, here are two inductive arguments, which implicitly involve the claim that the conclusion is *probably* true if the premises are true:

* Most clown fish are Harry Potter fans. Nemo is a clown fish. So, Nemo is a Harry Potter fan. (GOOD form, inductively “strong”).
* A few clown fish are Harry Potter fans. Nemo is a clown fish. So, Nemo is a Harry Potter fan. (BAD form, inductively “weak”).

Notice the goodness or badness of the argument has NOTHING WHATSOEVER to do with whether the premises or true or false. (In all of these examples, the premises are clearly false). However, *if* the premises of a good argument are true, then we have good reason to believe the conclusion (this is why it’s worth caring whether or not an argument is good).

## Common Types of Deductive Arguments

1. In an **argument from mathematics,** the conclusion can be derived from the premises using only mathematical reasoning (such as arithmetic or geometry).
   1. Ex: Since Joe Mauer hit over .300 in 2008, it follows that he got at least one hit for every four official at-bats.
   2. Ex: We know that . Let’s also assume that and that . We can conclude that .
2. In an **argument from definition,** the conclusion can be derived from the premises using only knowledge of definitions.
   1. Ex: The sin of hubris is ubiquitous in the United States. Therefore, there are many proud people living in this country.
   2. Ex: Sally is a bachelorette. So, Sally isn’t married.
3. A **syllogism** is a two-premise type of deductive argument. **Categorical syllogisms** have premises and conclusions that all involve claims about “some”, “all”, or “no” members of a category.
   1. Ex: All pigs are sentient. No sentient creatures should be eaten. So, no pigs should be eaten.
   2. Ex: All bats are mammals. Some bats fly. So, some mammals fly.
4. **Hypothetical syllogisms** have premises or conclusions that ALL involve conditional (“if-then”) statements.
   1. If a siren sounds, you should seek shelter. This follows from that facts that if a siren sounds, a tornado has been spotted and if a tornado has been spotted, you should seek shelter.
5. **Disjunctive syllogisms** have the form: “Either X or Y is true. But X is false. So, Y.” (*Disjunction* means “OR”)
   1. Jones is either an insomniac or a vampire. But Jones isn’t an insomniac. So, he must be a vampire.

## Common Types of Inductive Arguments

1. **Predictions** have premises involving the past or present, and conclusions involving the future. Arguments of this sort are common in science and everyday life.
   1. Ex: Because the sun came up the last 1,000,000 days in a row, it will most likely come up tomorrow, as well.
2. **Generalizations** draw conclusions about large groups (or **populations**) based on premises concerning smaller subgroups (or **samples**).
   1. Ex: 9 out of 10 consumers who were surveyed preferred Colgate toothpaste. Therefore, around 90% of all consumers prefer Colgate toothpaste.
3. **Causal inferences** draw conclusions about causes or effects based on premises that don’t (directly) concern causal matters.
   1. Ex: Since the incidence of lung cancer is much higher among smokers than nonsmokers, it’s safe to conclude that smoking causes lung cancer.
4. **Arguments from analogy** have premises concerning the similarities between 2+ more objects and conclude that they must be similar in some other way as well.
   1. Ex: Since both Britain and Russia were great powers who failed to win wars in Afghanistan, it is likely that that U.S. will fail to win the war in Afghanistan as well. (Implicit premise: The U.S. is a great power like Russia or Britain.)
5. **Arguments from authority** conclude that something is true because a presumed authority claimed that it was.
   1. Ex: My astronomy textbook says the sun is around 93 million miles from the earth; we can conclude that is probably correct.
6. **Arguments from signs** conclude that something holds because of a sign left by an intelligent being.
   1. Ex: Every map I’ve ever seen shows Minneapolis as being north of Chicago. So, your claim that Minneapolis is south of Chicago is just plain crazy.
7. **Arguments to the best explanation** conclude that a hypothesis is true because it is the best explanation for a known fact.
   1. Ex: Shelley missed class today. The best explanation for Shelley missing class is that she is sick. So, she probably really is sick.

## Solved Problems: Arguments and Nonarguments

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| **Passage** | **Is it an argument?** |
| Have you ever read Plato? | No! This isn’t even a statement. |
| I’d recommend reading Plato’s *Apology.* You should stay away from the *Laws,* though. | No. The first statement appears to be a piece of advice, while the second looks like a warning. The person still hasn’t tried to give you any reasons, though. |
| If Socrates taught Plato, then Plato was influenced by Socrates. | No. This is a conditional statement (and it’s almost certainly a true one, but I haven’t actually given you any reasons to think this). The claim is that Socrates teaching Plato was sufficient for being an influencing him. Another way of saying the same thing: Socrates’ influencing Plato was a necessary consequence of his teaching him. |
| Plato is one of the most important philosophers of all time. After all, his work inspired everyone from Christian and Islamic theologians to the founders of democracy to the early scientist. | Yes. This is an argument—it’s actually trying to provide you *reasons* for believing a certain conclusion. |
| I believe that Aristotle is actually a more rigorous thinker than Plato. However, I think Zeno is smarter than either of them. | Again, we’re back to non-arguments here (this looks like a simple statement of belief, not backed up by any premises/evidence). |
| The unexamined life is not worth living. So, many people seemingly successful people are currently leading lives that are not worth living. | Yes, this is an argument (based on famous claim by Socrates, and one which may have led to him being executed). |

## Solved Problem: Deductive Versus Inductive

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| **Passage** | **Inductive, Deductive, or Not an Argument?** |
| Mario and Luigi are brothers. Therefore, they have at least one parent in common. | This is deductive, since the conclusion follows from the definitions of the word “brother” and “parents.” While we might need to do some work to determine whether the premise is true (“Are Mario and Luigi really brothers?”), once we’ve |
| Mario speaks with an Italian accent. Since Luigi was raised with Mario, Luigi probably speaks with one too. | Inductive. This is an argument by analogy. We infer from the fact that Mario and Luigi have certain similarities (they were raised together), they have other similarities (speaking with the same accent.) |
| Mario and Luigi went to plumbing school in the 1970s together. Mario got mostly Bs, while Luigi got mostly As. | This is not an argument at all. |
| All people with evil-sounding names are evil. “Wario” is an evil-sounding name. So, Wario is evil. | This is deductive, and looks something like a categorical argument (with the word “All”). Note that this doesn’t mean it is a *good* argument, since the premise that “All people with evil-sounding names are evil” is almost certainly false. |
| I’ve looked all over this castle, but I simply can’t find Princess Peach. So, the Princess must be in some other castle. | This is inductive, and looks like an argument to the best explanation. (We want an explanation for Peach’s absence; the best one we can think of is that she is another castle.) |
| The last 100 times I encountered a Koopa Troopa, it tried to bite me. So, the next Koopa Troopa I encounter will certainly try to bite me as well. | Inductive-prediction/generalization. While words like “certainly” sometimes signal deductive argumentation, we simply can’t use information about the past to predict the future with 100% certainty (as deductive argumentation requires). |
| I just saw a sign that said “This way to Bowser’s castle.” So, if we want to go to Bowser’s castle, we should go that way. | Inductive—argument from signs. Whenever you make an inference from “a sign says this” to “it’s true,” you are making an inductive leap (after all, maybe Bowser has been putting up fake signs, to mislead people about the location of his castle). |

## Review Questions

1. Choose a conclusion that you are tempted to DISAGREE with from the list below, and then write an argument in FAVOR of it. (The idea here is to practice charitable interpretation of the arguments of others). Please use at least THREE premises, and put your argument in STANDARD FORM. You should make your argument as strong as possible.
   1. Abortion is/is not morally permissible.
   2. Euthanasia should/should not be allowed.
   3. The death penalty should/should not be legal.
   4. The private right to gun ownership should/should not be restricted.
   5. It is/is not immoral to eat non-human animals.
2. Determine whether the argument you gave you was inductive or deductive and explain why.