1.3 Deduction vs. Induction

1. Inductive Arguments: So far in this course, we have only studied **deductive** arguments. These are the sorts of arguments where the conclusion NECESSARILY follows from the premises. In other words, in a deductive argument, it is IMPOSSIBLE for the premises to be true and the conclusion false. In this lesson, we will study another kind of argument: Inductive.

> **Inductive Argument:** An inductive argument is one where the conclusion does not NECESSARILY follow from the premises, but rather, it PROBABLY follows from the premises. In other words, it is POSSIBLE that the premises could be true and the conclusion false. However, this is unlikely to be the case.

There are several varieties of inductive argument. Your textbook lists six. This list should not be seen as a complete list of entirely distinct categories of argument. Rather, it is provided merely to give you a wide range of examples of what an inductive argument can look like. Here are the six examples:

(1) **Prediction:** When a conclusion follows from our knowledge of the past to a claim about the future.

Example: "Every time I've ever worn these socks, I get shocked when I shut the light switch. I'm wearing these socks, so I'm probably going to get shocked again."

The fact that something has happened repeatedly in the past DOES provide us with evidence for the conclusion that it will happen again—however, we do not know FOR SURE that it will happen again. At best, we can only say that it will PROBABLY happen again. So, predictive arguments are inductive.

(2) **Analogy:** When a conclusion is drawn about something because it is very similar to something else that you already know about. If you've already concluded that something is true about thing A, and thing B is a **lot like thing A** in all of the relevant respects, then it is probably safe to conclude the same thing about B.

Example 1: "My first iphone could play mp3's. It broke, but I'm buying another one just like it. I haven't even looked, but I'm sure that it can play mp3's too."

Example 2: "I know for sure that it would be wrong to raise puppies in horrible conditions where they suffer for their entire lives. But, it is also known that pigs are just as smart as dogs, and capable of the same wide range of emotions, and feel pain and suffering in the same way that dogs do. So, it is probably ALSO wrong to raise pigs in horrible conditions (e.g., the sorts of conditions that exist in factory farms)."

Arguments from analogy are very common in Ethics. This argument about animals given above is actually a synopsis of a real argument given in a published article by professor [Alastair Norcross](). However, since analogies do not prove WITH CERTAINTY that we can conclude the same thing about the 2 things that the analogy is drawn between, arguments by analogy are only inductive, not deductive.

(3) **Generalization:** When a conclusion about a WHOLE GROUP is drawn after only examining SOME of the members of that group.

Example: "I've personally examined 90% of the cheetahs that live in the wild in Africa, and all of them were incredibly fast. It stands to reason that ALL cheetahs are incredibly fast."

Here, though you don't know FOR SURE that ALL of the cheetahs in Africa are fast, it's a pretty safe assumption, considering that you HAVE already examined MOST of them, and THEY were all fast.

(4) **Authority:** When a conclusion is drawn because some expert in the field SAID that this conclusion was true.

Example: "My chemistry teacher told us today that salt is sodium-chloride. So, all of this salty food has chlorine in it."

Since we do not KNOW FOR SURE that the chemistry teacher was right (she could have been lying, or mistaken, etc.), the conclusion only PROBABLY follows from the fact that the teacher said so.

(5) **Signs:** This is a bit like "**Authority**", except it is when a conclusion is drawn because a SIGN said that this conclusion was true.

Example: "I don't think you should dig there. If you do, you'll be electrocuted. That sign says, 'Danger. High-Voltage Underground Cable.'"

The conclusion about the cables is LIKELY to be true, but we do not know FOR SURE, since the sign could be mistaken (it could be a prank, or accidentally misplaced, etc.).

(6) **Causal Inference:** When a conclusion follows from knowledge of a cause to an effect, or else from knowledge of an effect to a cause.

<u>Example 1:</u> "I just dropped my backpack in a puddle, and all of my notes are in there. I'm sure that they got wet."

While it is POSSIBLE that the notes inside the bag are dry, it is safe to conclude from what we know about the CAUSE (dropping the backpack in the puddle) that the effect (wet notes) is very likely.

<u>Example 2:</u> "Hey! The notes that I left on this table are all wet, and there is an overturned cup, and a puddle of water on the floor. Someone must have spilled water on my notes!"

Again, while it is POSSIBLE that the conclusion is false (perhaps the correct explanation is NOT that someone spilled water on the notes). However, this conclusion about what the cause was is fairly safe to assume, since it seems very likely to be true, given what we know about the EFFECTS (the wet notes, the cup, the puddle, etc.).

2. Detecting Inductive Arguments: There are several tips for recognizing inductive arguments, and being able to tell them apart from deductive arguments. An argument is most likely inductive if:

a) The conclusion is VERY LIKELY to follow from the premises, but it does not NECESSARILY follow from them.
b) The argument contains keywords commonly used in inductive arguments, such as "probably", "likely", "plausible", "improbable", "unlikely", "implausible", etc.
c) The argument has one of the inductive argument forms (e.g., prediction, analogy, generalization, and so on).

*Note: The rules above do not ALWAYS follow. For instance, if an argument is mathematical, it is probably deductive—EVEN IF it has one of the inductive argument forms. For example, if I know that one circle with a diameter of 2 inches has a circumference of π (3.14) inches, then, if I come across another circle with a diameter of 2 inches, I may conclude that IT TOO has a circumference of π inches. While this DOES resemble an argument by **analogy**, it is nevertheless **deductive**, because **the conclusion necessarily follows from the premises**.*

Note: Do homework for section 1.3 at this time.