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Introduction

The purpose of inductive argument is to take evidence from observed cases and draw probable conclusions about unobserved cases. Inductive arguments move beyond what the premises contain. This means there is always an element of uncertainty with induction. It is possible for the premises of an inductive argument to be true and still have a conclusion that is false.

Generalizations

Inductive arguments offered in support of a general claim. This is a broad category which includes the more specific category of statistical induction (discussed below). It is an argument where some observations are made (sample) and then conclusions are made concerning the larger category (population).

Example: All the ducks we've seen have feathers. Therefore, it is likely that all ducks have feathers.

Analogy

A comparison in which something which is easily understood is used to explain something more difficult to understand by comparing similar attributes.

Example: "The president is the captain of the ship of state." This implies that there are certain similarities between overseeing the operation of a ship and being the chief executive of a nation. Some of these similarities are metaphorical, for instance a ship heads in a literal direction, while a nation doesn't actually move, but figuratively "changes direction" according to changes in policies.

Example: What do frog legs taste like? You might say they taste like a combination of chicken and shrimp. Though not perfect in describing the flavor, it at least helps the person to understand by referring to something that they know about.

Even the strongest analogies have dissimilarities as well as similarities. One must be careful about analogies in several ways:

Are the similarities really similar?

Are the similarities relevant?

What are the relevant dissimilarities?

Fallacy of Faulty Analogy

A bad analogy is considered a fallacy because it leads to a false conclusion. For instance, Vice-president Bush was once asked why he did not argue with President Reagan about the Iran-Contra policy. He responded, "You don't tackle your own quarterback." He suggested that being the president is similar to being the quarterback of a football team and the vice-president is similar to another player on the same team. Now it is true that one doesn't normally tackle their own quarterback. However, it might be appropriate if the quarterback was running for the wrong end zone.

Statistical Induction

Statistical induction is a particular type of generalization where statistical evidence from a sample is said to give meaningful information about the target population. Statistics are often very useful, but there can be pitfalls. The subject of statistics is quite complex, requiring entire courses to fully understand. For this course is will be useful to have several simple questions which one can ask regarding any statistic.

Who says so?
Is this a disinterested source? or do they have something to prove?

How do they know?
How was the data gathered? Is it possible to know? Is the sample large enough? Were all the relevant considerations taken into account?

Did somebody change the subject?
This is especially important there are statistics being compared. For instance, more people died in traffic accidents in the U.S. than in the Vietnam war during the same period. These things aren't comparable for several reasons. First, accidents are just that - accidents, while war is intentional killing. Second, there were more people driving than engaged in the war. Third, it is unclear whether the statistic refers only to American soldiers or if it includes all the soldiers on both sides and civilian casualties.

Does it make sense?
Example: A statistic that continues to crop up says that 150,000 girls die each year from anorexia. It is clear that this could not be true when one compares that to the number of highway fatalities in the U.S., which happens to be around 40,000 each year. Common sense tells us that the 150,000 figure cannot be correct. It doesn't make sense.

Higher Induction

Higher induction combines evidence of various kinds with reasoning. For instance, let's suppose you just bought a new car. It's so new that nothing has ever gone wrong with it. That's the data. Generalizing from our current data to the future, we would conclude that because the car has never broken down, that it will probably never break down. Well, we know that isn't the way things work. Higher induction combines the information about this car with what we know about mechanical things in general. We know from higher induction that mechanical things wear out and tend to eventually break. So, we infer that this car will eventually require repair