"INDUCTIVE REASONING"

PHILOSOPHY II

Inductive reasoning goes from the small to the large, from the part to the whole, from one to the all.

If you were to measure 20 carrots, and found that they were all between six and eight inches long, you might conclude that **all** carrots were in that size range. The manner of logic you used to draw your conclusion is called **inductive reasoning**. According to the philosopher John Stuart Mill, its chief proponent, we are using inductive reasoning when we conclude "that **what is true of certain individuals** of a class, is **true of the whole class**, or what is true at a certain time will be true in similar circumstances at all times."

He argued that this logic is possible because there is a certain "uniformity" in nature which allows for such conclusions to be made. The classical example used to illustrate inductive reasoning is the "fact" that **all** human beings are mortal. To prove this "fact," however, **all** human beings would have to be dead already. Obviously, some of us are still around! How can we be sure that one of us won't live forever? We can't. However, through inductive reasoning, we can conclude that there is an extremely high *probability* that all human beings are mortal.

Many scientific "laws" are a result of inductive reasoning – even though it is, a matter of probability. Astronomer Johannes Kepler, for instance, noted the position of the planet Mars during several points of its orbit. Working on the assumption that natural orbits maintain a uniform geometry, he induced that the orbit had to be in the shape of an ellipse. In fact, if you were to actually calculate the planet's position during ALL of the points of its orbit, it would, in fact, trace an almost perfect ellipse. No one has ever discovered a planet that didn't follow his principle, which has become known as "Kepler's Law" of planetary orbit.

No one has discovered an exception **so far**, that is. As the study of the universe expands, we cannot know with certainty what we will encounter. Other scientific "facts," drawn from inductive logic, have crumbled as a new piece of evidence was found. The weakness with inductive reasoning, then, is that it relies on partial knowledge to draw conclusions about "truth." In the case of medical science, this weakness can be harmful, if not tragic. When medical researchers draw their conclusions on what is right for ALL people based on what they have observed to be right for SOME people, they run the risk of doing irreparable harm to many people.

Take the example of appendectomies. Medical doctors had studied this curious organ for a long time and had never found a useful purpose for it. They concluded therefore, that it **had** no useful purpose. When it became inflamed or otherwise troublesome, they removed it. It took years for the medical profession to admit that its reasoning was incorrect, and to seek other means of treating appendicitis.

Medical science still stands by most of its other conclusions, however, even though they were arrived at by the same reliance on inductive reasoning. Moreover, it adheres to the "rules" with a rigidity that often does not allow for individual differences. Scientists discovered that the average temperature for a human being is 98.6 degrees Fahrenheit. If you have a 99.3 degree temperature, you're said to be "running a fever" and you're given medications to bring the temperature back to "normal."

The problem with this type of reasoning is obvious. No one perfectly fits the profile of the "average" human being – not in height, weight, or even body temperature. It is incorrect to conclude that the correct temperature for all members of the human race is the same as the "average" temperature of a sample of individual members.

Long ago, clothing manufacturers realized that all people are different. They would love it if all size people were exactly the same. They wouldn't have to produce a size 12 petite as well as a size 12 tall, medium, and large. Even so, it seems impossible at times to find something that fits right! The only way to get a really good fit is to have the item custom-made. If you go to a tailor and order a new outfit, someone takes your exact measurements. Can you imagine the tailor saying, "The average human being is 5'7" tall, 180 pounds, with a 34" inseam. I'll use those measurements to make your wardrobe?" You would, no doubt, look for a new tailor. Yet, because of the total reliance on inductive reasoning, science – particularly medical science – uses "off-the-rack" diagnoses, remedies, and medications. They routinely begin to stitch a wardrobe together using only "average" measurements. Is it any wonder, then, that their suits seldom fit right?