The Scientific Method – Analysis of Monty Python's "We Found a Witch" Experiment

In a scientific experiment, a hypothesis is a proposition that is formulated at the beginning of the experiment to provide a tentative solution to a problem based on knowledge of the subject and application of logic. Once a hypothesis is postulated, scientific experiments are designed and performed that ultimately prove or disprove the hypothesis. The statement of hypothesis predicts the outcomes that researchers expect to observe in their study (Kabir, 2016).

A strong well-formulated hypothesis describes the relationship between two or more variables in a study. In most cases, there is an independent variable that is manipulated by the researchers to observe the outcomes, and there is a dependent variable whose value or characteristic depends on the independent variable. Thus, an independent variable is presumed to affect the dependent variable. In a scientific experiment, the researchers manipulate the independent variable to analyze its effects on the dependent variable (Flannelly et al., 2014).

Apart from the dependent and independent variables, there may be several other factors that may affect the outcomes of the study. In order to ensure accuracy of the results obtained, researchers need to identify these factors or control variables and try to minimize their effect on the study results. Depending on the type of variables, they can be eliminated, neutralized, or standardized to control their effects in the study (Allen, 2017).

The various steps of a standard scientific process can be observed in a clip from the movie, "Monty Python and the Search for the Holy Grail" where an investigator tries to determine if a woman is a witch or not. The crowd declares her a witch based on her looks and dress; however, it is later confirmed that she is given the false nose and hat by the villagers. One person claims that the woman in question turned him into a newt, but he recovered. The investigator then hypothesizes that witches are punished by burning and wood also burns. As a result, witches must be made of wood. Then, the investigator attempts to prove that the witch is indeed made from wood by considering the properties of wood. The investigator hypothesizes that wood floats on water and something else that floats on water is a duck. Therefore, if the woman weighs the same as a duck, then she is made of wood, thereby proving that she is a witch.

There are several sources of error in the above experiment. The initial observation of the woman depicted her with a false nose and a hat, which was later proved to be given to her by the mob. Hence, the woman's appearance cannot be used as a valid argument for being a witch. One villager claimed that the woman turned him into a newt. However, he looks perfectly normal with no signs of being anything except a human. If this argument is to be considered, the villager needs to provide evidence that she, in fact, converted him into a newt. None of the evidence provided as part of the initial observation is sound and further inputs are needed to connect the woman to witchcraft.

The first hypothesis of the investigator is that witches are traditionally punished by burning and wood burns too, and so, the woman must be made of wood if she is a witch. This hypothesis follows the

reasoning that anything that burns is made of wood which is a false statement. Hence, this hypothesis is not valid due to illogical reasoning. Further, the investigator tries to prove that the woman is made of wood by hypothesizing that wood and ducks both float on water, so if the woman's weight is equivalent to the weight of the duck, then the woman must be made of wood. Again, this hypothesis follows the logic that anything that floats on water is either wood or a duck. This is, again, a false statement and therefore, not a valid hypothesis.

Any scientific experiment should be based on sound and valid hypotheses that should be drafted based on all available evidence. The initial observation of the woman does not suggest that she is a witch as she appears to be a completely normal human being. Therefore, the only thing that can possibly link a normal-looking woman to witchcraft is her activities. Based on this, the hypothesis that is formulated is that the woman is involved in specific witchcraft-related evil activities that can prove that she is a witch. In order to prove this hypothesis, qualitative data will be collected from the people of the village that can point towards possible evil activities of the woman.

In this case, the independent variable will be the evil activities of the woman and the dependent variable will be physical and/or mental effects on the people as a result of the evil activities. Confounding or control variables include any other physiological condition that can be a possible explanation for the physical or mental effects on the people. The data will be validated by ensuring that before the people started experiencing specific effects, they had come in contact with the woman physically. The effects across the people will be compared to identify similar patterns to prove the reliability and reproducibility of the data. If the qualitative data collected from the people prove beyond doubt that the woman has had evil effects on them, it can be concluded that the woman practices witchcraft. If no evil activities performed by the woman can be identified in the population, then it can be proved that the woman is not a witch.

References

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