ANALOGY AND ANALOGICAL REASONING

LEC…09

An analogy is a comparison between two objects, or systems of objects,that highlights respects in which they are thought to be similar.

**N oun' Analogy (An inference that if things agree in some respects they probably agree in others' Drawing a comparison in order to show a similarity in some respect'**

Analogical reasoning is any type of thinking that relies upon an analogy. An analogical argument is an explicit representation of a form of analogical reasoning that cites accepted similarities between two systems to support the conclusion that some further similarity exists.

In general (but not always), such arguments belong in the category of implicative reasoning, since their conclusions do not follow with certainty but are only supported with varying degrees of strength. However, the proper characterization of analogical arguments is subject to debate

Analogical reasoning is fundamental to human thought and, arguably, to some nonhuman animals as well. Historically, analogical reasoning has played an important, but sometimes mysterious, role in a wide range of problem-solving contexts. The explicit use of analogical arguments, since antiquity (ancient times), has been a distinctive feature of scientific, philosophical and legal reasoning.

Analogies are widely recognized as playing an important heuristic role, as aids to discovery. They have been employed, in a wide variety of settings and with considerable success, to generate insight and to formulate possible solutions to problems. According to Joseph Priestley, a pioneer in chemistry and electricity,

**“analogy is our best guide in all philosophical investigations; and all discoveries, which were not made by mere accident, have been made by the help of it.”**

An analogical argument may provide very weak support for its conclusion. **For example** Thomas Reid’s (1785) argument for the existence of life on other planets. Reid notes a number of similarities between Earth and the other planets in our solar system: all orbit and are illuminated by the sun; several have moons; all revolve on an axis. In consequence, he concludes, it is “not unreasonable to think, that those planets may, like our earth, be the habitation of various orders of living creatures”

To give an analogy is to claim that two distinct things are alike or similar in some respect. Here are two examples :

* Capitalists are like vampires.
* Like the Earth, Europa has an atmosphere containing oxygen.

The analogies above are not arguments. But analogies are often used in arguments. To argue by analogy is to argue that because two things are similar, what is true of one is also true of the other. Such arguments are called "*analogical arguments*" or "*arguments by analogy*". Here are some examples :

* There might be life on Europa because it has an atmosphere that contains oxygen just like the Earth.
* This novel is supposed to have a similar plot like the other one we have read, so probably it is also very boring.
* The universe is a complex system like a watch. We wouldn't think that a watch can come about by accident. Something so complicated must have been created by someone. The universe is a lot more complicated, so it must have been created by a being who is a lot more intelligent.

Analogical arguments rely on analogies, and the first point to note about analogies is that any two objects are bound to be similar in some ways and not others. A sparrow is very different from a car, but they are still similar in that they can both move. A washing machine is very different from a society, but they both contain parts and produce waste. So in general, when we make use of analogical arguments, it is important to make clear in what ways are two things supposed to be similar. We can then proceed to determine whether the two things are indeed similar in the relevant respects, and whether those aspetcs of similarity supports the conclusion.

GUIDELINES FOR EVALUATING ANALOGICAL ARGUMENT

Logicians and philosophers of science have identified ‘textbook-style’ general guidelines for evaluating analogical arguments.

* (G1)The more similarities (between two domains), the stronger the analogy.
* (G2)The more differences, the weaker the analogy.
* (G3)The greater the extent of our ignorance about the two domains, the weaker the analogy.
* (G4)The weaker the conclusion, the more plausible the analogy.
* (G5)Analogies involving causal relations are more plausible than those not involving causal relations.
* (G6)Structural analogies are stronger than those based on superficial similarities.
* (G7)The relevance of the similarities and differences to the conclusion (i.e., to the hypothetical analogy) must be taken into account.
* (G8)Multiple analogies supporting the same conclusion make the argument stronger.

Evaluating analogical arguments

* **Truth** : First of all we need to check that the two objects being compared are indeed similar in the way assumed. For example, in the argument we just looked at, if the two novels actually have completely different plots, one being an office romance and the other is a horror story, then the argument is obviously unacceptable.
* **Relevance** : Even if two objects are similar, we also need to make sure that those aspects in which they are similar are actually relevant to the conclusion. For example, suppose two books are alike in that their covers are both green. Just because one of them is boring does not mean that the other one is also boring, since the color of a book's cover is completely irelevant to its contents. In other words, in terms of the explicit form of an analogical argument presented above, we need to ensure that having properties Q1, ... Qn increases the probability of an object having property P.
* **Number** : If we discover a lot of shared properties between two objects, and they are all relevant to the conclusion, then the analogical argument is stronger than when we can only identify one or a few shared properties. Suppose we find out that novel X is not just similar to another boring novel Y with a similar plot. We discover that the two novels are written by the same author, and that very few of both novels have been sold. Then we can justifiably be more confident in concluding that X is likely to be boring novel.
* **Diversity** : Here the issue is whether the shared properties are of the same kind or of different types. Suppose we have two Italian restaurants A and B, and A is very good. We then find out that restaurant B uses the same olive oil in cooking as A, and buys meat and vegetables of the same quality from the same supplier. Such information of course increases the probability that B also serves good food. But the information we have so far are all of the same kind having to do with the quality of the raw cooking ingredients. If we are further told that A and B use the same brand of pasta, this will increase our confidence in B further still, but not by much. But if we are told that both restaurants have lots of customers, and that both restaurants have obtained Michelin star awards, then these different aspects of similarities are going to increase our confidence in the conclusion a lot more.
* **Disanalogy** : Even if two objects X and Y are similar in lots of relevant respects, we should also consider whether there are dissimilarities between X and Y which might cast doubt on the conclusion. For example, returning to the restaurant example, if we find out that restaurant B now has a new owner who has just hired a team of very bad cooks, we would think that the food is probably not going to be good anymore despite being the same as A in many other ways.

EXERCISE

Evaluate these arguments from analogy. See if you can identify any aspects in which the two things being compared are not relevantly similar :

1. We should not blame the media for deteriorating moral standards. Newspapers and TV are like weather reporters who report the facts. We do not blame weather reports for telling us that the weather is bad.
2. Democracy does not work in a family. Parents should have the ultimate say because they are wiser and their children do not know what is best for themselves. Similarly the best form of government for a society is not a democractic one but one where the leaders are more like parents.
3. In the early 17th century, astronomer Francesco Sizi argued that there are only seven planets: "There are seven windows in the head, two nostrils, two ears, two eyes and a mouth; so in the heavens there are two favorable stars, two unpropitious, two luminaries, and Mercury alone undecided and indifferent. From which and many similar phenomena of nature such as the seven metals, etc., which it were tedious to enumerate, we gather that the number of planets is necessarily seven."

ANSWERS

1. Weather reports do not change the weather, but newspaper reports and the public media can influence people and have an indirect effect on moral standards.
2. There are many relevant ways in which a family is different from a society. First, the government officials need not be wiser than the citizens. Also, many parents might care for their children out of love and affection but government officials might not always have the interests of the people at heart.
3. It is not clear why the universe should be compared to the head. If the eyes and mouth are similar to planets, what about the hair, brain, eyelashes, etc?