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Reason Notes

Post 8/17
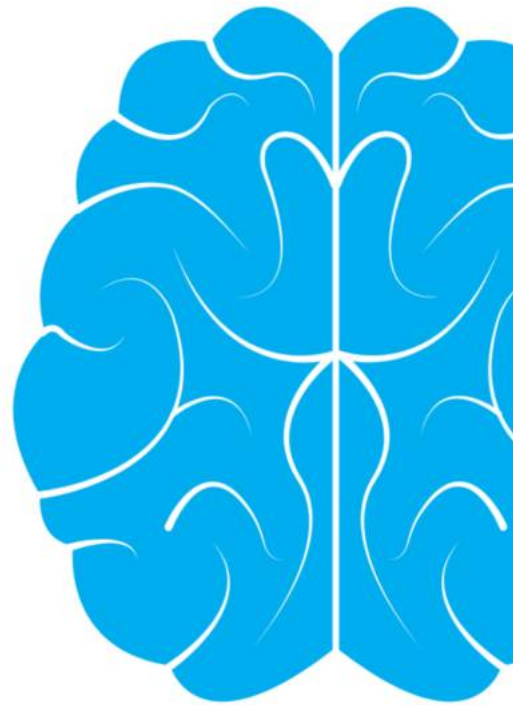
ToK Notes

Mark as Complete

Reason Quotes

- "Two extravagances: to exclude Reason, to admit only Reason." (Blaise Pascal)
- "It has been said that man is a rational animal. All my life I have been searching for evidence which could support this." (Bertrand Russell)
- "I do not feel obliged to believe that the same God who has endowed us with sense, reason, and intellect has intended us to forgo their use." (Galileo Galilei)
- "He that will not reason is a bigot; he that cannot reason is a fool; and he that dares not reason is a slave." (William Drummond)
- "Critical reason is the only alternative to violence so far discovered." (Karl Popper)
- "Reason itself is a matter of faith. It is an act of faith to assert that our thoughts have any relation to reality at all." (G K Chesterton)
- 'You do not reason a man out of something he was not reasoned into." (Jonathan Swift)

Definitions of Reasoning

- Reasoning is the process of thinking about something in a logical way in order to form a conclusion or judgement. (Merriam-Webster Online)
- The process of forming conclusions, judgements or inferences from facts or premises. (Dictionary.com)
- The act or process of drawing conclusions from facts, evidence, etc. (The Free Dictionary)
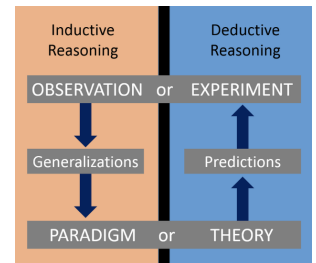
Deductive vs. Inductive Reasoning

Deductive Reasoning ('Top Down')

Deductive reasoning is a logical process in which a conclusion is based on the concordance of multiple premises that are generally assumed to be true. The eventual knowledge produced depends on which axioms or facts the thinker accepts.

When one reasons deductively, they start with a theory, or general principles and form a conclusion for a specific instance. For example, "all seals are cute; Franco is a seal; therefore Franco is cute". In many cases, deductive reasoning is also an example of syllogistic reasoning (referred to later).

Deductive reasoning is often very accurate, as long as the initial generalization/theory is true.

Inductive Reasoning

Inductive reasoning is a logical process in which multiple premises, all believed true or found true most of the time, are combined to obtain a specific conclusion.

When one reasons inductively, they start with a specific instance, and conclude on a general principle or theory. For example: "Jason has worn black socks to school everyday for the past year; Jason wears black socks everyday and he will wear them today."

Inductive reasoning is not always accurate, because it usually involves generalization. However, generalizations are often necessary.

In the case of language, generalizations are needed so that we don't treat each experience/object as unique one, and are able to generalize multiple experiences/objects into simple words.
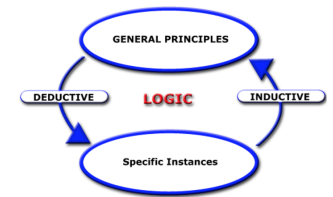
Language and Reason

The language that we use is often based on generalizations. At a young age, children will generalize specific objects and feelings into language. For example, a child might see a vehicle and say the word "car". If the child has generalized correctly, parents will confirm to the child that he or she is correct. If the child has generalized incorrectly, than the parents will correct the child, perhaps saying "No, that's a truck."

It is in this way that language is related to reason. It can be argued that language is used to generalize our experiences as individuals. This way, we don't treat each experience as unique, and are able to generalize multiple experiences into simple words.
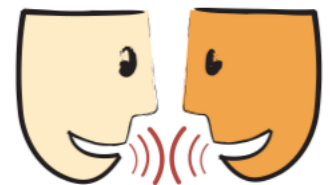
Truth vs. Validity

A very important concept related to reasoning is the difference between truth and validity.

An argument that is valid is only concerned about pure logic. In other words, does the argument make sense in terms of pure logic.

For example:

> "Lions eat zebras; a lion ate Dylan; therefore Dylan is a zebra"

Using syllogistic reasoning, this argument makes sense. It is logical. If A eats B, and A eats C, then B is C.

However, this statement, although valid is not necessarily true. Using deductive reasoning, one knows that no human can be a zebra.

This relationship between what is true and what is valid is often explored when discussing reasoning. It is often due to an individual's past experiences that they can rationalize what is true and what is valid.

Here is a great quote on truth vs reason from A.C. Grayling:

> "Logic as a science is not the science of truth, but of reasoning; in addition to reason, you need facts; getting the latter, and getting them straight, is a matter of care, common sense, discipline, hard work, and scrupulous enquiry. All these things are beyond the attention span of most, which is why there is so much folly in the world. This is because most reasoning - such as it is - operates not on facts but prejudices and superstitions, and thus it is that people go to war with one another, and spit in each other's eyes." (A.C. Grayling)

Other Types of Reasoning

Analogical Reasoning

Analogical reasoning uses past experiences to help rationalize new ones.

Analogical reasoning is based on two steps:

1. There is a recognition of similarities between two or more things.
2. There is an assumption that if two or more things are similar in one way, they will also be similar in other ways.

Analogical reasoning very heavily relies on past experiences. For example, lets say you are an avid Star Wars fan, who has seen all of the previous movies. After hearing that a new Star Wars movie has come out, you immediately recognize the similarity between the new Star Wars movie and the old ones which you have seen: they both are about the same topic. Due to your liking for the previous movies, you can assume that you will like the new movie.

Creative/Lateral Reasoning

Creative/lateral reasoning breaks the conventions of logical reasoning. Quite simply, it involves thinking outside of the box. Observe the riddle below:

There are six eggs in a basket. Six people each take one egg. How can it be that one egg is left in the basket?

Using deductive reasoning (very logical) we know that if you take six away from six, we are left with zero. So, if you take six eggs from the basket, there should be none left.

However, by thinking laterally, one can postulate that there are other solutions to this problem, that don't necessarily need mathematics. What if last person took the basket with the egg still inside of this. Although this solution is not necessarily obvious nor logical, it is still reasonable.

Logical fallacies

Cognitive biases are a big problem when we try to apply reason. Cognitive biases refers to all of the ways that our brain can make a mistake, when it's trying to reason. As Buster Benson explains, biases come about from four basic reasons (1-4 are direct quotes from here, as he explains his work organizing a hierarchy of biases):

- **Problem 1: Too much information.** There is just too much information in the world, we have no choice but to filter almost all of it out. Our brain uses a few simple tricks to pick out the bits of information that are most likely going to be useful in some way.
- **Problem 2: Not enough meaning.** The world is very confusing, and we end up only seeing a tiny sliver of it, but we need to make some sense of it in order to survive. Once the reduced stream of information comes in, we connect the dots, fill in the gaps with stuff we already think we know, and update our mental models of the world.

- **Problem 3: Need to act fast.** We're constrained by time and information, and yet we can't let that paralyze us. Without the ability to act fast in the face of uncertainty, we surely would have perished as a species long ago. With every piece of new information, we need to do our best to assess our ability to affect the situation, apply it to decisions, simulate the future to predict what might happen next, and otherwise act on our new insight.
- **Problem 4: What should we remember?** There's too much information in the universe. We can only afford to keep around the bits that are most likely to prove useful in the future. We need to make constant bets and trade-offs around what we try to remember and what we forget. For example, we prefer generalizations over specifics because they take up less space. When there are lots of irreducible details, we pick out a few standout items to save and discard the rest. What we save here is what is most likely to inform our filters related to problem 1's information overload, as well as inform what comes to mind during the processes mentioned in problem 2 around filling in incomplete information. It's all self-reinforcing.
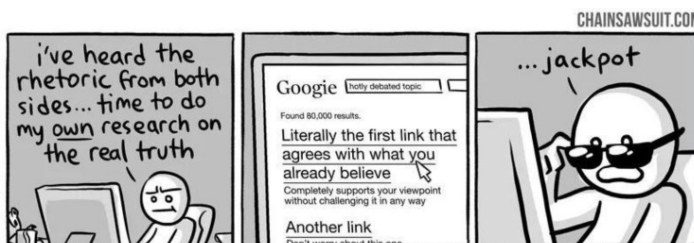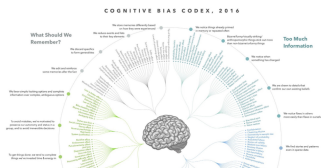
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Inductive vs Deductive Image Source
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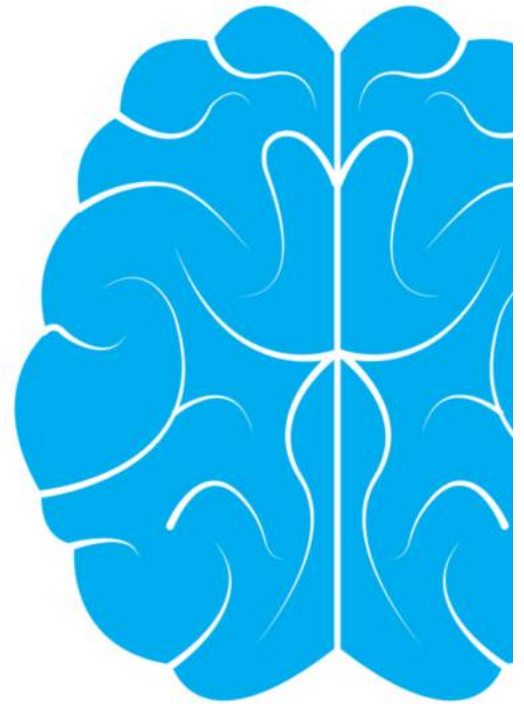
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