Big Ideas for Little People

Wartenberg

Chapter Fourteen

Morris the Moose: Teaching Logic

As you probably have already noticed, one of the central skills required of a philosopher is the ability to present a well-reasoned argument to justify one's beliefs. So it won't come as a big surprise to discover that philosophers have a special field devoted to the study of reasoning: logic. What is likely to be more surprising is finding out that human beings are not naturally very good reasoners.

Consider the following bit of reasoning: Only lawyers lie. Jacques is a lawyer. Therefore, Jacques lies. Now, you might not be fooled by this example of bad reasoning, but many people are. The problem is that, even if the only people who lie are lawyers, this does not entail that every lawyer is a liar, only that anyone who is not a lawyer is not a liar. Although it may be easy to spot the problem in this form of reasoning when I explicitly call your attention to it, many people use similar reasoning in their daily lives, with unfortunate consequences. It's for this reason that logicians develop lists of the typical *fallacies* involved in reasoning. Fallacies are basic patterns of reasoning that people often accept but that are not valid.

Logic as a philosophical concern goes almost all the way back to the origin of philosophy. Aristotle (384–322 BCE) invented the field by cataloging the correct forms of deductive reasoning—that is, reasoning that yields true conclusions from true premises. His idea was that good reasoning did not tell us what statements were true, only how to reason in a way that preserves the truth of one's assumptions. He held that logic concerned the *form* of arguments, not their *content*.

It was not until the end of the nineteenth century that Gottlob Frege (1848–1925), an obscure German mathematician, realized that Aristotle had made a mistaken assumption in his logical system, so that a more adequate formal

system was needed to capture the nature of valid reasoning. All contemporary logic can trace its roots back to Frege's ideas.

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Gottlob Frege was a German mathematician and philosopher who taught at the University of Jena. It was only through the influence of the great British philosopher Bertrand Russell (1872–1970) that Frege's views were transmitted to the broader philosophical community. Despite being relatively ignored in his own lifetime, Frege exerted a huge influence on the development of philosophy in the twentieth century.

Central to Frege's project was the idea that our ordinary statements—like "All liars are lawyers"—could be represented in a formal system that abstracts from the specific concepts involved in the statement. In this case, if we let "F" stand for "lawyers" and "G" stand for "liars," then we get the following "translation" of the statement into logical notation, where "x" is a variable that ranges over all people:

$$(x)\ Fx \rightarrow Gx$$

where (-) is the logical notation for "all" and → is the logical symbol that stands for "implies that." So the logical version of our simple English statement reads as follows: "For all people, if the person is an F (lawyer), then that person is also a G (liar).

Even if you find this symbolization confusing, the important point should be clear: Frege thought that, by using this formal notation, the logical relationships between our concepts would be clearly represented. This allows us to better analyze the reasoning that is being used without being distracted by the content of the claims being reasoned about.

Frege thought that it would be possible to reduce all of mathematics to logic alone. Another very important logician, Kurt Gödel (1906–1978), showed this to be impossible. Nonetheless, Frege remains an important influence on contemporary analytic philosophy. During the twentieth century, logic was one of the fastest developing fields of philosophy, with philosophers using Frege's ideas to capture a wide range of types of reasoning that could not previously be adequately represented formally.

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Morris, the eponymous hero of Bernard Wiseman's book *Morris the Moose* (1989), is a good example of someone who makes mistakes in his reasoning. Morris repeatedly makes the same error: He thinks that every animal he encounters is a moose like him. But what's fascinating about him, at least from a philosophical point of view, is that he constructs a variety of fallacious arguments to support his erroneous view. An enjoyable way for

children to learn about fallacious forms of reasoning is for them to analyz Morris's mistakes.[1]

Morris runs into a number of different animals. When they attempt t show him that his belief that they are moose is false, Morris is always read with a response, one that shows him to be an exemplary bad reasoner. Fo example, when the cow Morris encounters tells Morris that she gives milk t humans in order to prove to Morris that she is a cow and not a moose, Mor ris is nonplussed, simply responding that she happens to be a moose with milk-giving-to-humans ability. From Morris's point of view, the cow is jus an unusual moose, one that has an ability that most moose lack. But she i a moose nonetheless. Morris can view any animal as a moose, so long as h is willing to adjust his concept of moose in such a way that all of the othe animals' nonmoosey characteristics are treated as simply unusual forms c "moosedom."

The problem with this way of reasoning is that it is *ad hoc*. That is, whe confronted with a problem about his belief that the cow is a moose—she pro duces milk for human consumption—Morris revises his concept of moose i an arbitrary way that allows him to maintain his belief. Arbitrarily adjustin our concepts to take account of problems with them will not produce the so of correct theories that we are attempting to produce and needs to be avoide

Sometimes, however, it is all right to adjust our concepts to take accou of new evidence. In fact, many scientific discoveries involve us changing ou concepts in just this way. But these are cases of legitimate conceptual chang or clarification, ones in which the change has a broader justification than th it simply saves a belief we want to save.

Morris's fundamental blunder, then, is a logical one, and children can enjo discovering the fallacy he uses for themselves. But because the philosophic issues raised by *Morris the Moose* can be hard to grasp, it's important to thin carefully about how to raise this issue.

For example, you might ask them, while showing them photos of a cow ar a moose, if they think the two look alike. Presumably, they will say, "No You can respond by saying something like, "OK, that's very interesting. B you know, Morris thinks the cow is a moose. Because he's a philosophical inclined moose, he always backs up his ideas with reasons. Do you rememb what his reasons are for thinking that the cow is a moose?" (You can rea them page 7 of the book again.) As they answer, put their answers into th story matrix for the book (see table 14.1). And it would be useful to inclu both the cow's responses and Morris's replies, so that the children can ref to them during the discussion.

One way to move the discussion along is to ask the children why Mor thinks the fact that the cow has those three characteristics means she is

Table 14.1. Story Matrix for *Morris the Moose*: Is the Cow Really a Moose?

What Reasons Does Morris Give for Thinking the Cow Is a Moose?	*How Does the Cow Try to Convince Morris That She Is a Cow?*	*How Does Morris Respond to Her?*
She has four legs.	She says she moos.	He says he can moo, too.
She has things on her head (horns).	She says she gives milk to humans.	He says she's just a moose who gives milk to humans.
She has a tail.	She says her mother is a cow.	He says her mother can't be a cow because she's a moose.

moose. If they immediately respond by saying that Morris thinks that anything that has four legs, a tail, and things on its head is a moose, you're set, for they have just put forward a general definition of a moose as being an animal with those three properties. If they don't immediately go there, you might ask them if those three things also apply to Morris, and thus moose in general. Once they realize that they do, you might try asking them why Morris makes the assumption that the cow is a moose.

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I want to take a short detour here in order to explain Morris's mistake. Here is the general pattern of his fallacious reasoning:

All As are B.
C is a B.
Therefore C is an A.

This is known as "the fallacy of affirming the consequent." Let's see why it is a fallacy.

Morris begins with a true claim:

> All moose have four legs, a tail, and funny things on their head.

He also makes a correct observation:

> This animal has four legs, a tail, and funny things on its head.

Given the truth of the first statement, the following hypothetical statement is also true:

> If this animal were a moose, it would have four legs, a tail, and funny things on its head.

From this, Morris makes an invalid inference:

> This animal is a moose.

As I have said, this is an example of the fallacy of affirming the consequent. When one has a conditional statement—something of the form "If one thing is true, then something else is also"—it is a mistake to reason that if the "something else" is true, the "one thing" is also true. And that's exactly what Morris does.

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Now that you understand this fallacy, you can decide whether you think it's something that the children will be able to discover for themselves. One way to help them do this is to ask them what's wrong with the following inference:

All peaches are fruit.
This apple is a fruit.
Therefore this apple is a peach.

They will recognize that something has gone wrong here and so will try to find an explanation for the problem.

Less difficult is asking whether Morris is right to believe that anything that has four legs, a tail, and things on its head is a moose. Here, you can ask them for examples of four-legged horned creatures with tails that are not moose, besides cows and deer. This might help them understand his mistake.

A different discussion would result from focusing on how the cow tries to show Morris that his reasoning is wrong. The matrix already has the answer: She points out three properties that she has that Morris lacks. The first is that she says "MOO!" The second is that she gives milk to humans. The final one is that her mother is a cow.

At this point, you might ask the students if the cow is a good philosopher or not. More pointedly, you can ask them why the cow mentions those three features and whether they do similar things in their philosophy discussions. The cow here attempts to provide a *counterexample* to Morris's proposed definition of a moose. The reason that the cow herself is a counterexample to Morris's moose definition is that, although the cow has all the properties that Morris says moose do, she also has some features that moose lack: mooing, giving milk to humans, and having a mother who is a cow. Her point is that moose don't do these things.

Morris's responses to what the cow says show three different ways to respond to a proposed counterexample. First, Morris says that he can moo, too. This is a straightforward rejection of the claim that there is a feature of one

thing that is not a feature of the other. A counterexample can sometimes be rejected because you don't think it really is a counterexample. That's Morris's first strategy.

Morris also takes a different approach, one that I have already mentioned. He revises his notion of moose. Before meeting the cow, Morris probably didn't think about whether a moose could give milk to humans. But now, confronted by an animal that he thinks is a moose and that claims to give milk to humans, Morris simply revises one of the features he thought was characteristic of moose. From now on, Morris would have to claim that there are two types of moose: those that give milk to humans and those that don't. Rather than rejecting his belief that the cow is a moose, Morris simply revises his notion of what a moose is.

Morris's final move is simply to deny the claim made by the cow, using his own belief to deduce the falseness of her assertion. Since he knows that the cow is a moose, he confidently asserts that her mother *could not be a cow* since she has a daughter who is a moose. This fallacy is called *begging the question*. You can prove anything to be true if you start out by assuming it and then "deducing" its truth from that very assumption. This is another familiar type of logical fallacy, though people do not often make it in as bald a fashion as our friendly but misguided moose, Morris.

At this point, it's advisable to skip to the end of the story, when Morris and the other animals look at their reflections in a pool of water. Here, the focus moves away from pure logic into the realm of epistemology and metaphysics. One issue is why, after looking in the stream, Morris no longer thinks that the cow (or the deer or horse) is a moose. He actually supplies the answer directly: "You . . . do not look at all like me. . . . You cannot be [a] moose" (Wiseman 1989, 28).

Morris is now implicitly proceeding by means of the following principle:

> Principle D: Two things that do not look at all alike cannot be the same type of thing.

This is actually a *metaphysical* principle, since it concerns the nature of reality.

In fact, there are actually two issues here:

1. What determines whether two things look alike?
2. If two things look different, are they necessarily different *types* of things?

Let's reflect on each of these questions separately.

The first question is whether it is a matter of fact that two things look alike or whether that determination depends on a context that must be assumed

at least implicitly. One way to raise this issue is to show the children t pictures—one of a painting of a man, one of a sculpture of a man, and or a painting of a cow—asking them which two things look alike. The ide first, to see if some of the kids disagree about which two things look alik they do, ask them to explain why. If they all agree, you can play the de advocate by saying that you disagree. Then ask them to explain why they swered as they did and to say why they think you answered the way you

The idea is for the children to think about whether determining *likenes resemblance* depends on the context one assumes in making the determ tion. If they are thinking about what the artworks are *of*, then the sculpt and painting of a man look alike in terms of their *subject*. But if they thinking about the type of objects that they are, the two paintings look m like each other than either of them to the sculpture. Context here is crucia

The second issue raised is whether Principle D is valid. You can begi discussion of this question by asking the children to think of other examp of Morris's principle. Here, too, you can help them along by showing them apple and a banana, and asking whether they look anything alike. Hopeful they will say no, although if they don't, you can ask them why they thi that. If they do, you can follow up by asking whether that means they are both fruit. If they say no, that shows that Principle D does not hold in gener

But in the context of the book, Principle D yields sound results. After a Morris did come to the right conclusion using it. So you can follow up l asking when it is all right to conclude that two things that don't look alike a different types of things and when not. This is actually a real philosophic puzzle that the kids may enjoy thinking about.

One attempt to answer this question claims that *science* tells us whe That is, when science says that two things that look different are really th same type of thing, they are; and when science says that two things that loo different really are different, they are. To see the plausibility of this answe consider whether steam and snow look at all alike. What about snow and ice If you think not—which I hope you do—do you also believe that they reall are the same type of thing—namely, water? If so, how do you know that One answer might be that you have experienced, say, ice melting. But anothe answer is that science explains this by showing that they both are composed of the same type of molecule, H_2O.

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One of the uncanny features of *Morris the Moose* is that the different animals—Morris, the cow, the deer, and the horse—sound like they are participating in a philosophy discussion, despite all having the delusion that all the other animals are members of their own species. To justify their beliefs, they express their ideas and then attempt to convince the others to accept their

view. But they don't just say, "You're wrong and I'm right." They present what are in essence *arguments* to justify their views. And this is precisely what we are hoping the students will do in *their* philosophical discussions. So you can end your discussion of *Morris* by calling the children's attention to the philosophical character of the animals' discussion with one another. You can do this by asking them whether the way that the animals talk to one another reminds them of what they are doing in their philosophy lesson. Hopefully it will, and you can ask them to explain exactly what features of the animals' discussion they think are philosophical and which are not.

MORRIS THE MOOSE, BY BERNARD WISEMAN

Questions for Philosophical Discussion

Topic: Reasoning and Truth

When Morris sees a cow, he thinks that the cow is a moose. When the cow says she's not a moose, Morris explains to her why he knows that she is one.

1. What reasons does Morris give for the cow being a moose?
2. Explain the reasoning that Morris uses to conclude that the cow is a moose.
3. What is wrong with Morris's reasoning?

Topic: Logical Fallacies

The cow tells Morris that, among the reasons she is not a moose, is that she produces milk for humans and her mother is a cow.

1. How does Morris respond to the cow's claims?
2. What mistake does Morris make in his reasoning?
3. Can you think of other examples of logical fallacies—bad forms of reasoning?

Topic: Knowledge and Truth

Morris thinks that he knows *that the cow is a moose.*

1. Do you agree with Morris, that he *knows* that the cow is a moose?
2. Is there more to knowledge than having reasons?

Topic: Reasons and Truth

In order to explain why he thinks that the cow is a moose, Morris gives a reason for his belief, namely, that the cow has four legs, a tail, and things

1. Give an example of something that you know for which you have a good reason.
2. Give an example of something you know for which you don't have a good reason.
3. How do you know the thing you said in response to question 2?
4. As a result of what you've now said, do you think that everything you know you know for a reason?

Topic: Persuasion

The cow tries to persuade Morris that she's not a moose, but a cow.

1. How does the cow do this?
2. How does Morris respond?
3. Has anything like this ever happened to you?
4. Why do you think people keep saying they know something even though they don't?

Topic: Anger

When he sees Morris and the cow, the deer thinks they are both deer. When Morris hears this, he gets angry and yells at the deer.

1. Does yelling make Morris right?
2. Why does he yell?
3. What do you think he should have done to convince the deer that he is wrong and that Morris is not a deer?

Topic: Sensory Experience and Belief

When the animals drink, they see their own reflections.

1. Why does seeing their own reflections convince the animals that they were wrong?
2. There is a saying: "Seeing is believing." What might this saying mean? Do you agree with it?
3. Why isn't Morris convinced when the other animals tell him that he is wrong?
4. Can you think of other situations in which people have persisted in their mistakes despite having evidence that they are wrong?
5. Can you think of situations in which new evidence has made people change what they think?
6. Why is it so hard for Morris to admit that he made a mistake?
7. Do you think that people have a hard time admitting that the

Topic: The Nature of Philosophy

The animals all disagree with one another about who is what.

1. When the animals disagree with one another, how do they try to convince each other that they are right?
2. What are the specific ways in which the animals talk to each other that remind you of how you discuss philosophy?
3. Are there differences between having a philosophical discussion and the way the animals disagree with each other?
4. Can philosophical discussions be settled by looking?

Suggested Follow-Up Activity

Ask the children to draw pictures of two things that look different but are really the same underneath.

Ask the children to find examples of things that look really similar but are very different.

MORE PICTURE BOOKS ABOUT LOGIC

- *Alice's Adventures in Wonderland* by Lewis Carroll
- *Let's Do Nothing!* by Tony Fucile

NOTE

1. A word of warning. When I discussed this book with some precocious six-year-olds, they pointed out that adult female animals of different species are all called "cows." Clearly, this points to an ambiguity in how the word *cow* is used, for the book assumes that it applies to only female *bovines*. It's worth being prepared to explain how the book uses the word should this issue arise.

Chapter Fifteen

Many Moons: Teaching Epistemology

Whereas ancient Western philosophers took metaphysics and its attempt to understand the structure of what exists as the most basic field of philosophical inquiry, modern Western philosophy—which began in the early seventeenth century—is characterized by the view that epistemology, the theory of knowledge, is the fundamental area of philosophy. Epistemology seeks to establish the possibility, nature, and extent of human knowledge.

The reason that modern Western philosophers put epistemology ahead of metaphysics is that they believed we had to establish the trustworthiness of different sources of knowledge—perception, reason, and intuition being three such sources—before we could legitimately articulate the structure that reality had to have. After all, whatever structure reality actually has, we humans can only gain access to it by means of our mental and perceptual capacities.

One of the fundamental problems for the epistemologist is determining whether any of the standard sources of knowledge available to human beings is adequate to the task. Descartes (1596–1650), the "father" of modern philosophy, took reason, rather than sense perception, to be the only source of certain knowledge. Whereas the senses are liable to deceive us, Descartes argued, reason provides knowledge that is indubitable and, hence, true.

Descartes' reliance on reason goes hand in hand with his belief that God implanted that faculty within each one of us and that He did so in order for us to be able to distinguish truth from falsity. Modern epistemologists tend to eschew reliance on a divine being, which makes their task all the harder: How can you, in the absence of a divine guarantee, show that there is a source of knowledge that is reliable, one that won't lead to error?

One major line of thinking about a reliable source of knowledge takes issue with Descartes's claim that knowledge must be infallible. Recent philosophers have developed accounts of knowledge that don't require the use