

## Origins: Non-scientific methods

To see why we need the scientific method, let's take a look at what people base their knowledge on in day-to-day life.

People can accept something as true based on **intuition** or **belief**. Let's consider my own strong belief that my cat Misha loves *me* most of all people in his life. I just *know* he loves me more than anyone else, I feel this in my heart of hearts.

Is such a belief a good basis for knowledge? Well no, simply believing something doesn't make it so. Things we believe in strongly can turn out to be false. Also, what if someone else holds an opposing belief? What if my fiancé believes that Misha loves *him* more? There is no way to settle who is right *just* by pitting our beliefs against each other.

We could count the number of supporters for each belief and require a majority or **consensus**. But this isn't a very solid basis for knowledge either. Just because most people accept something as true doesn't mean it *is* true. For centuries practically everybody thought the earth was flat. Turns out they were wrong; it's round.

Another source of knowledge is an **authority's** opinion; also not a very good source. The opinion of authority figures like political leaders, experts, scientists, is just that, an opinion.

Authorities may have access to more or better knowledge but they also have an important personal stake in getting their views accepted. Their careers and reputation depend on it.

Suppose my fiancé gets a so-called cat-whisperer to declare that Misha loves him more. Of course I'm going to be skeptical about this expert opinion, especially if my fiancé paid for it.

I could find my own cat expert to oppose my fiancé's cat whisperer but then we would just have two opposing opinions again. What we need is **evidence**.

So how do we use evidence to settle the argument of whom Misha loves more? Well, suppose I regularly *observe* that after getting home from work, Misha always comes to sit on *my* lap and not my fiancé's.

I'm supporting my *statement about the world*, that Misha loves me more, with an *observation of the world*, namely on whose lap he sits after work.

This gathering of evidence through **casual observation** is a better foundation of knowledge than the previous ones, but still not good enough. This is because people just aren't very good at observing.

We tend to selectively observe and remember things that agree with our beliefs. For example, I might have forgotten - very conveniently - that Misha always sits on my fiancé's lap at breakfast. There are many biases besides selective perception that make casual observation a tricky source of knowledge.

The same goes for our ability to use logic. Logical reasoning would seem like a solid basis for knowledge. But our informal logical reasoning isn't always consistent. There's an almost endless list of 'fallacies' or logical inconsistencies that people regularly make in their day-to-day reasoning.

If we want to develop accurate knowledge, make sure that our explanations of the world are valid, then we need something more. We cannot depend on subjective and unverifiable sources like beliefs, opinions and consensus; and we can't trust casual observation and informal logic because they can be heavily distorted by our beliefs.

We need **systematic observation**, free from any bias, combined with **consistently applied logic**. In other words, we need the **scientific method**.