



Science has limits: A few things that science does not do

Science is powerful. It has generated the knowledge that allows us to call a friend halfway around the world with a cell phone, vaccinate a baby against polio, build a skyscraper, and drive a car. And science helps us answer important questions like which areas might be hit by a tsunami after an earthquake, how did the hole in the ozone layer form, how can we protect our crops from pests, and who were our evolutionary ancestors? With such breadth, the reach of science might seem to be endless, but it is not. Science has definite limits.

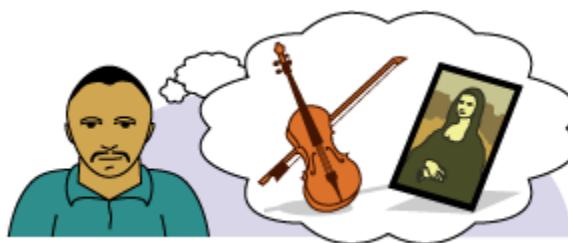
Science doesn't make moral judgments

When is euthanasia the right thing to do? What universal rights should humans have? Should other animals have rights? Questions like these are important, but scientific research will not answer them. Science can help us learn about terminal illnesses and the history of human and animal rights—and that knowledge can inform our opinions and decisions. But ultimately, individual people must make moral judgments. Science helps us describe how the world is, but it cannot make any judgments about whether that state of affairs is right, wrong, good, or bad.



Science doesn't make aesthetic judgments

Science can reveal the frequency of a G-flat and how our eyes relay information about color to our brains, but science cannot tell us whether a Beethoven symphony, a Kabuki performance, or a Jackson Pollock painting is beautiful or dreadful. Individuals make those decisions for themselves based on their own aesthetic criteria.



Science doesn't tell you how to use scientific knowledge

Although scientists often care deeply about how their discoveries are used, science itself doesn't indicate what should be done with scientific knowledge. Science, for example, can tell you how to recombine DNA in new ways, but it doesn't specify whether you should use that knowledge to correct a genetic disease, develop a bruise-resistant apple, or construct a new bacterium. For almost any important scientific advance, one can imagine both positive and negative ways that knowledge could be used. Again, science helps us describe how the world is, and then we have to decide how to use that knowledge.



Science doesn't draw conclusions about supernatural explanations

Do gods exist? Do supernatural entities intervene in human affairs? These questions may be important, but science won't help you answer them. Questions that deal with supernatural explanations are, by definition, beyond the realm of nature—and hence, also beyond the realm of what can be studied by science. For many, such





questions are matters of personal faith and spirituality.

Moral judgments, aesthetic judgments, decisions about applications of science, and conclusions about the supernatural are outside the realm of science, but that doesn't mean that these realms are unimportant. In fact, domains such as ethics, aesthetics, and religion fundamentally influence human societies and how those societies interact with science. Neither are such domains unscholarly. In fact, topics like aesthetics, morality, and theology are actively studied by philosophers, historians, and other scholars. However, questions that arise within these domains generally cannot be resolved by science.