

# Philosophical impediments to citizens' use of science

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# Individual differences in basic beliefs

Why do people differ in the role that science plays in their political identity?

- ▶ Utilitarianism
- ▶ Actively open-minded thinking (AOT)
- ▶ Understanding of why science works
- ▶ Cosmopolitanism (vs. parochialism)
- ▶ Religious authoritarianism (culture, identity)

All these affect each other. When they are missing, communication of science alone is difficult.

All these show large individual differences.

## Science policy forums and an editorial, Aug.-Oct., 2014

- ▶ Implementing Pasteur's vision for rabies elimination
- ▶ Pursuit of the common good
- ▶ The pope tackles sustainability
- ▶ Putting women and girls at the center of development
- ▶ The state of global health in 2014
- ▶ A global strategy for protecting vulnerable coastal populations
- ▶ Applying scientific principles in international law on whaling
- ▶ Boosting GDP growth by accounting for the environment
- ▶ Global manufacturing and the future of technology

# Interests of scientists

- ▶ Long term
- ▶ World
- ▶ About consequences
- ▶ Big issues that affect many people

Science is relevant to policy exactly because it tells us about expected consequences.

If you think in terms of other kinds of moral principles (property, rights, freedom, dignity, repugnance, fairness), you will care less about science. Or you will argue against its implications for the sake of consistency.

Science is also based on AOT, and AOT is correlated with utilitarianism.

## A utilitarian dilemma

X is the inspector of a nuclear power plant that X suspect has not met its safety requirements. The plant foreman and X are touring the facility when one of the nuclear fuel rods overheats. The emergency coolant system fails to activate, and a chain reaction is about to begin, which will result in a nuclear meltdown. This will release lethal radiation into the nearby town, killing many people.

X realizes that the only way to stop the meltdown is to manually release liquid nitrogen into the fuel rod chamber.

This will remove just enough heat energy from the rod assembly to prevent the nuclear chain reaction. However, it will also instantly kill an employee trapped nearby.

Should X kill the employee in order to save the people in the nearby town?

## A utilitarian vs. rule dilemma with two acts

X is asked to testify for the prosecution at an insider trading trial. X knows that the defendant is innocent. But other witnesses have provided damaging testimony in which they distorted the truth. X also knows that, if he says what he knows, then the defendant will be wrongly convicted, because X's testimony will be mis-interpreted as consistent with the distorted testimony of others. If X says he knows nothing, despite swearing to tell "the whole truth", then the defendant will be acquitted, and nobody will find out that X lied about knowing nothing. What should X do?

Lie, saying that he knows nothing, in which case the court will correctly acquit the defendant.

Tell what he knows, as he swore under oath that he would do, in which case the defendant will be wrongly convicted.

## Utilitarian beliefs (Uscale): “Choices” ( $\alpha = .60$ )

Response scale: Always . . . Never (4 points)

- ▶ When a moral rule leads to outcomes that are worse than those from breaking the rule, we should **follow** the rule. (-)
- ▶ When a moral rule leads to outcomes that are worse than those from breaking the rule, we should **break** the rule.
- ▶ When two options harm other people in the same ways, we should choose the option that harms fewer people.
- ▶ When one option has better effects on some people and worse effects on nobody than any other option, then we should choose this option.
- ▶ When we can help some people a lot by harming fewer people a little, we should do this.

## Utilitarian beliefs: “Choices”

Response scale: Agree ... Disagree (4 points)

- ▶ We should not harm some people in order to help other people.
- ▶ For decision making that affects other people, all that matters is doing good and preventing harm.
- ▶ Sometimes we should follow rules that require us to do things that are harmful on the whole. (-)
- ▶ Sometimes we should follow rules that prevent us from doing what is best on the whole. (-)



## Utilitarian beliefs: “Morality questions”

Response scale: Agree . . . Disagree (4 points)

- ▶ Killing someone can be morally right if it is for the greater good.
- ▶ It is always morally wrong to assist people in ending their lives. (-)
- ▶ Torture can sometimes be morally right, if it is for the greater good.
- ▶ It is always morally wrong to have sexual relations with a family member. (-)
- ▶ It is always morally wrong to betray your country. (-)

## Divine Command theory: “Morality questions” ( $\alpha = .83$ )

Response scale: Agree . . . Disagree (4 points)

- ▶ The truth about morality is revealed only by God.
- ▶ It is possible to live a righteous life without knowledge of Gods laws. (-)
- ▶ Acts that are immoral are immoral because God forbids them.
- ▶ We dont need to try to figure out what is right and wrong, the answers have already been given to us by God.
- ▶ An atheist can still understand what is morally right and wrong. (-)
- ▶ Without God, humans still have a way to distinguish right from wrong. (-)

From Jared Piazza.

## Actively open-minded thinking: the essence of science and academic thought

“The essence of the experiment is that the holder of a pet theory does not just wait for events to come along and show whether or not [the theory] has a good predictive performance. He bombards it with artificially produced events in such a way that its merits or defects will show up as immediately and as clearly as possible.” Robin Horton.

“In the case of any person whose judgment is really deserving of confidence, how has it become so? Because he has kept his mind open to criticism of his opinions and conduct. Because it has been his practice to listen to all that could be said against him; to profit by as much of it as was just, and expound to himself . . . the fallacy of what was fallacious.” J. S. Mill

## AOT scale: “Questions about thinking” ( $\alpha = .67$ )

Response scale: Strongly agree ... Strongly disagree (5 points)

- ▶ Allowing oneself to be convinced by an opposing argument is a sign of good character.
- ▶ People should take into consideration evidence that goes against their beliefs.
- ▶ People should revise their beliefs in response to new information or evidence.
- ▶ Changing your mind is a sign of weakness. (-)
- ▶ Intuition is the best guide in making decisions. (-)
- ▶ It is important to persevere in your beliefs even when evidence is brought to bear against them. (-)
- ▶ One should disregard evidence that conflicts with one's established beliefs. (-)
- ▶ People should search actively for reasons why their beliefs might be wrong.

## Correlations, disattenuated correlations on top

	Relig	AOT	Uscale	ActRule	ActOmit
Relig	<b>0.83</b>	-0.817	-0.808	-0.264	-0.346
AOT	-0.609	<b>0.67</b>	0.683	0.417	0.285
Uscale	-0.570	0.433	<b>0.60</b>	0.318	0.611
ActRule	-0.200	0.284	0.205	<b>0.69</b>	0.436
ActNum	-0.270	0.200	0.404	0.310	<b>0.73</b>

Reliabilities in bold. Raw  $r = .200$  is  $p = .05$  2-tailed.

## Parochialism: Moral judgments about non-parochial actions

“Private universities in the U.S. accept foreign students while rejecting some U.S. students who are almost as well qualified.”

What do you think of this action?

- ▶ It is not a moral issue. [25]
- ▶ It is morally acceptable. [10]
- ▶ It is a moral issue, but I cannot say in general whether it is wrong or not. [12]
- ▶ It is morally wrong, but it should be allowed. [9]
- ▶ It is morally wrong, and it should be banned in most cases. [20]
- ▶ It is morally wrong, and it should be banned in all cases, regardless of the benefits to the outsiders. [13]
- ▶ ... regardless of the benefits to the outsiders and citizens. [11]

## Parochialism and duty

Jim thinks that the main issue in the election is a tax on carbon fuels in the U.S. Jim thinks that the tax would be bad for the U.S. because of its effects on the economy, but would be good for the world on the whole because it would reduce the harm caused by global warming, harm that would fall mostly on other countries.

What is Jim's duty as a citizen in this case?

## The expanding circle

*Beginning to reason is like stepping onto an escalator that leads upward and out of sight. Once we take the first step, the distance to be traveled is independent of our will and we cannot know in advance where we shall end.*

If Peter Singer is correct, then AOT should lead to cosmopolitanism.

Conclusion: In teaching science, and in conveying it to citizens, we need to simultaneously teach how scientific knowledge is attained, and thus why, despite its continuing development, it is based on a type of thinking that is more likely to lead to correct beliefs and good decisions than any alternative.



