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The Societal Division between Politics and Science

Science, in its most general sense, is the pursuit to understand our world. Politics, correspondingly, is the deliberation of how we, as nations, should act in that world. Considering this relationship, it is apparent that society should enable science to have substantial influence in their governance. In many cases, we do; ranging from agroeconomics to meteorology, governments trust the intense scrutiny of scientists, economists, and statisticians and use their findings in the management of their countries. However, there are some issues at the forefront of political debate in which a wedge has been driven between politics and science. How can these two disciplines, which share such a dependence on each other, be so divided? It is imperative that these controversial topics -- which include climate science, nuclear energy, and vaccinations -- are speedily resolved, as the health of the public, environment, and economy will continue to be threatened until appropriate action is taken. Yet, each of these topics lies suspended in political debate, even if the scientific community has widespread consensus on its resolution.

This situation results from the public continuing to be divided on each issue, not due to any actual uncertainty on who is "right," -- some truly have a clear logical solution -- but rather because of a widespread illiteracy on the topic. Moreover, studies have shown that the reason many people remain uncertain about some issues may simply be a false perception that there is not scientific consensus. It can be easy to point fingers as to why mass misinformation endures --

blaming the problem on political parties, or "widespread stupidity" -- but the truth is, no one is stupid; every selfless citizen supports what they believe to be best for the public, given the information they have. Furthermore, name-calling is not going to lead to any solutions. Rather, the best method to reach agreement on controversial scientific topics is to build the public's trust of science, enable citizens to discern accurate findings from misinformation, and improve the population's scientific literacy.

One of the most significant factors in the divide between science and politics is the public's distrust of scientific findings. People feel that they cannot trust scientists' assertions, because there is a perception that with all the controversy the claims ensue, there must be a logical reason for their opposition. In reality, however, many debates that spark controversy actually have widespread agreement among the scientific community. Informing the public that this consensus exists can be a large leap forward in reaching widespread *public* agreement. In a 1,100-participant study published in the February 2015 journal PLOS One, subjects were asked to estimate the percentage of scientists who believe that climate change exists and is primarily caused by humans. They were also asked about their political ideology and level of concern for climate change. The researchers found that most subjects vastly underestimated the level of consensus among the scientific community. They then conducted the questionnaire again, this time exposing those same subjects to the statement, "97% of climate scientists have concluded that human-caused climate change is happening." They found that informing the participants about a high level of scientific consensus resulted in not only increased estimations of consensus, but elevated levels of concern and support for climate policies as well. Assuming the study accurately represents the sentiment of the American population, one can conclude that an

important step to take in closing the divide between science and politics is convincing the public that there is indeed consensus among the scientific community regarding issues perceived as controversial.

Restoring the public's trust in scientists' agreement should clearly be a goal of those who seek resolve on controversial topics. However, an important factor in addressing this problem is understanding its cause. Why don't people trust scientific claims and believe in scientists' consensus? A likely cause of this distrust is the vanishingly small, yet very vocal, minority of scientists who sow discord with erroneous findings, many times in the pursuit of popularity or self-gain. In 1998, Dr. Andrew Wakefield published a paper in the medical journal *Lancet,* making the shocking conclusion that vaccines cause autism. The problem with this paper is that it seems oblivious to the common statistics aphorism, "Correlation does not equal causation." Wakefield noticed that many children who showed signs of autism first started to do so shortly after being vaccinated for measles, mumps, and rubella. Yet Wakefield failed to admit that this connection probably stems from the fact that the age any autistic child would usually start showing signs of their conditions is shortly after the age they would receive these vaccinations. Rather, he went forward in claiming vaccines *certainly* cause autism, single-handedly creating the tremendous opposition many parents have to vaccination today. Despite the many experiments conducted properly in the following decades showing Wakefield's results were false, the opposition has remained, endangering not only the children whose parents chose against inoculation, but the population as a whole, especially those who cannot be vaccinated for various reasons and rely on the collective immunity of the "herd." These vocal minorities, whose erroneous claims misinform the public, occur in other areas of science as well. For example,

global warming deniers have long pointed to satellite data showing colder temperatures than those recorded on the ground; however, this anti-climate change evidence actually originated from an experiment in which researchers forgot to account for atmospheric drag in their measurements, erroneously reporting global warming rates 60% slower than reality. While this fallacy is largely outnumbered by experiments showing much faster rates, it gained a substantial following among climate change skeptics. Both of these instances — Wakefield's inaccurate results and erroneous satellite data — are especially detrimental in the efforts to close the science-politics divide because their popularity, grossly disproportionate to their acceptance among scientists, gives citizens a feeling that there is large dissension regarding these issues, making them much more reluctant to support the progressive side.

We are indeed able, and obliged, to close the gap of understanding between the scientific and political communities. As long as debates on scientific issues continue, the harm they present to the environment and public health will persist. It is true that false results like those of Wakefield can gain tremendous traction, mangling the issue's reputation of unanimity into an appearance of widespread disagreement among scientists. While fallacies like these will continue to be spread, their ill effect on the population can be diminished by training future generations to have an eye for legitimacy. In addition, we can move the masses toward agreement and action on an issue by educating the public of the accord scientists share on the matter. By approaching this divide with an empathy for, rather than intentions to criticize, the misunderstood, the public will certainly break the deadlocks it has on many contentious debates relating to science. Indeed, effective communication will be the key to bridging the rift between science and politics.

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