

Science: Distinguishing Between Sound and Flawed Science

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In both print and broadcast media, as well as in everyday conversations, we regularly hear one or more of several common, but inaccurate, terms pertaining to science. These terms include, but are not limited to, “The science,” “Follow the science,” and “Science says.” Whenever we hear such terms, we should ask ourselves, and teach others to ask, “What science?” (There is a plethora of scientific studies that are contorted casuistries rather than an objective honest search for truth.) “Who did it?” “How well was it done?”

“Science” is a term that encompasses a very broad set of meanings. The word literally means knowledge, its origin coming from the Latin word *scientia*, which means knowledge, understanding, and learning. The modern scientific method was begun by Christian scholars in the Middle Ages and added to by Christians and others in the Renaissance and later. Such scholars included, but were not limited to, Albertus Magnus (1193-1250), Thomas Aquinas (1225-1274), Roger Bacon (ca. 1210-ca. 1293), Nicolaus Copernicus (1473-1543), Francis Bacon (1561-1626), Galileo Galilei (1564-1642), Isaac Newton (1642-1727), Gottfried von Leibniz (1646-1716).

Many, if not most, people are unaware of a significant reality pertaining to the scientific method: Not all science is true; some science is false, and we must discern which is which. The scientific method, when carefully followed as intended and designed, tends to produce valid and reliable results. However, very frequently, and for a variety of reasons, this methodology is circumvented, many times intentionally and sometimes unintentionally, and the results of doing so lead to very flawed “findings,” and additional flaws are added by others, with their own biases, who report those errors as truth.

Compounding the misinformation and promotion of these double-flawed reports is their receptivity by a significant (and in the West growing) number of people who are ignoring God and the truth he has revealed in his Word, the Bible, which is the key criterion for discerning truth from error. Since most human beings, whether they admit it or not, intuitively sense a need for a higher entity than themselves, those who ignore God make their own gods shaped in their image, in contrast to the triune God who has made humans in his image (e.g., Genesis 1:26-28). For many people, one of these human-made false gods is science, especially the “science” with which they agree. They practice selective science, rejecting the true science that conflicts with their biases.

The Bible teaches that God has called believers in and followers of the Lord Jesus Christ, God’s only begotten Son (John 3:16), to teach God’s revelation of himself and his will in his Word to all people (e.g., Matthew 28:18-20; Ephesians 4:11-16). Historic Christian systematic theology distinguishes between God’s special revelation and his general revelation.

- God’s *special revelation* is his disclosure that comes to us in His Word in the revelation of Jesus Christ as the only way to salvation; he is the way, the truth, and the life. (Psalm 19:7-11; John 14:6; 2 Timothy 3:14-17) The Bible is the standard of truth against which we measure, assess, and evaluate all else, including that purported to be “science.” If

something we read or hear contradicts the Bible, we believe the Bible, for many reasons, one being its verification by Jesus Christ, who authenticated his divinity and the main message of the Bible by many miracles including being the only human being to rise from the dead. See the brief list of reasons why the Bible is the Word of God, which I've presented in [Essential Christianity: Historic Christian Systematic Theology](#).

- God's *general revelation* is his disclosure of some aspects of his being, that all people on earth can observe, which disclosure is sufficient for coming to some knowledge of God, enough to render all without excuse for not believing in him. (Psalm 19:1-6; Romans 1:18-32) As important and useful as is general revelation, it is insufficient for salvation. General revelation includes true science, and it never contradicts special revelation. All truth comes from God, and God does not contradict himself.¹ The key question pertaining to the science aspect of general revelation is whether the science is accurate; if not, it is not true and therefore not part of God's general revelation.

Remember, this calling God has given to believers in and followers of the Lord and Savior Jesus Christ, to teach the Gospel and these related matters, is not an option for Christians. It is not something we can ignore, only do if and when we feel like it, or leave to someone else. The following are key points the Lord's people need to mention as we explain the truth about science in the discussions we are privileged to have with people who do not know.

1. Inform people about the meaning and parameters of science. Today many people substitute science for faith and trust in God; it is readily evident in the news media and elsewhere that many people have made science (i.e., the "science" they agree with) their god.
 - a. To begin, science is limited. Science, by definition, involves the study of that which can be observed and measured. Much of life, even the most important parts of life, are positioned outside that parameter. Many people are unaware of, and many others disregard, that essential distinction. We must draw that reality to their attention.
 - 1) Science, therefore, cannot inform us on such questions as who God is and what he is like and on what follows this phase of life, the future for us as individuals and the future of the world.
 - 2) Neither can science determine values, such as what is good and what is bad. It cannot answer what is right and what is wrong.
 - b. Science can, and does, reveal observable and measurable truths such as biological realities.
 - 1) The science of biology and its subfields such as genetics reveal that life begins at fertilization, when a new human being is conceived; therefore, abortion at any stage

¹ For more on the similarities and differences between special and general revelation, see [Essential Christianity: Historic Christian Systematic Theology—With a Focus on Its Very Practical Dimensions, Including God's Answers to Our Great Questions of Life—for Now and Eternity](#) on my general Website.

from conception through birth constitutes the killing of a human being. Furthermore, abortion fits the legal definition of first-degree murder, which involves human killing that is deliberate and premeditated.² But, while sound science reveals the evidence that this effect of abortion is true, is it bad? Many people, especially those with a postmodern philosophical worldview that rejects objective truth, and therefore God, don't think it's wrong.

Since the answer for that question, whether abortion is bad, involves a value and a criterion for that value, science cannot answer the question. For the answer, we need to turn to the criterion, which, for Christians worldwide, is God and his Word. This reality is why the Founders of the United States of America and subsequent generations have put that understanding in official writing.

As I have written elsewhere,³ the Founders thus recognized, as stated in the Declaration of Independence, that the country had to function under God for many reasons, including to have a moral base that would sustain the republic. This is also why we say the words, "under God," when reciting the Pledge of Allegiance, and why our nation's motto, "In God We Trust," is visible every time we handle U. S. currency, important reminders of vital aspects of our nation, necessary for successfully functioning as a republic. If God is ignored, there is no ultimate criterion and rationale for righteousness or for appeal and reconciliation of moral disharmony, which ultimately leads to chaos, disintegration, and tyranny.

- 2) To cite just one more example applicable to a current issue impacting a growing number of people today, especially in the West, careful scientific research discloses that normal human beings have either an XX (female) chromosome or an XY (male) chromosome which cannot be changed, and that they will have that chromosome throughout their whole life. Thus, contrary to LGBTQ+ activists advocating so-called transgenderism, sexuality is in fact binary.⁴ Furthermore, sound science reveals that promoting the prescription of puberty blockers and the surgical removal of healthy female and male sex organs results in irreversible lifelong changes many later regret, often a short time later. But is this bad? How do you know?

No true science can answer that question, since it essentially involves a value, and thus is positioned outside the purview of scientific inquiry, which is limited to that which is observable and measurable. The answers to value-laden questions require a criterion reference (an authoritative standard above humanity to which to appeal) and not a norm reference (an appeal to human opinion with which some people, but not all, agree, the discussion often temporarily ended unsatisfactorily with the snarled quip, "Who are you to tell me what is right and wrong?!"), which leaves the matter unsettled for those with only a norm reference.

² See "[Is Abortion a Viable Option? An Abbreviated Fact Sheet for Speaking the Truth in Love?](#)"

³ See "[Homosexuality: An Abbreviated Fact Sheet for Speaking the Truth in Love.](#)"

⁴ See "[Transgenderism: Genetic Evidence of Binary Biology](#)" and "[Transgenderism: Medical Doctor Explains Why Transgenderism Is a Mental Illness and Not a Civil Right.](#)"

Thanks be to God, we do have a criterion. However, first we have to help people understand that there is such a phenomenon as false science as well as true science. Second, we have to help them discern which is which. The above helps, but there is more.

2. It is important to cite as a premise that, when followed carefully by trustworthy scientists, the scientific method can produce sound and significant results. It not only can, but, as we've seen above, it has. For only one more example, the natural sciences have been able to successfully put human beings on the moon and bring them back to earth safely and well.

However, two key realities often compromise the validity of findings in the natural sciences, which means that we must be careful to distinguish between careful, sound science and flawed, inaccurate natural science as we need to do in social science research. First, we humans are not, and will never be, unlimited; we don't, and can't, know everything. Second, together with that reality, we are not infallible; we do make mistakes. Even when scientists try to do what is right, and carefully follow each step of the scientific method, they sometimes make mistakes. Columnist George Will, quotes astronomer Adam Frank, commenting on the James Webb Space Telescope that is sending a constant and voluminous amount of data from 940,000 miles from earth in its study of the origins of the universe. Will writes "...Webb has done what, Frank says, science should do, which is 'force us to confront false assumptions we hadn't even known we'd made.'"⁵ Keep in mind that these are scientists who are truly trying to get it right. But even they make mistakes that have serious and costly consequences.

Consider one more glaring example of flawed science that is not being acknowledged or reported. I am old enough to have in have in my files newspaper articles from the 1960s and 1970s reporting on scientists predicting another ice age by the 1990s.⁶ By the time the 1990s arrived, the news media was full of stories about the exact opposite, global warming. But noticeably missing was, and still is, any reporting in the so-called "mainstream media" of the earlier scientists being wrong about an ice age soon to arrive, or the many current scientists whose research indicates that there is insufficient evidence that unprecedented global warming is occurring to an alarming degree.

⁵ George Will, "The Webb Space Telescope is telling humanity the history of everything," *Reporter-Herald*, January 29, 2023, p. A4.

⁶ See also Christopher Tremoglie, "On this date 51 years ago, climate scientists predicted a new ice age was coming," *The Washington Examiner*, March 21, 2022, at <https://www.washingtonexaminer.com/opinion/on-this-date-51-years-ago-climate-scientists-predicted-a-new-ice-age-was-coming>; Victor Cohn, "U. S. Scientist Sees New Ice Age Coming," *Washington Post*, July 9, 1971, p. A4; Alan Anderson Jr., "Forecasting: Cloudy," *The New York Times*, December 29, 1974, p. 156. "A number of climatologists,...point to signs both great (a steady global cooling trend since World War II) and quaint (the southward retreat from Nebraska of the warmth-loving armadillo) to support their claim that the coming years will feature colder, more erratic weather." (<https://www.nytimes.com/1974/12/29/archives/forecast-for-forecasting-cloudy-in-the-long-term-climate-is-cooling.html>); Walter Sullivan, "SCIENTISTS AGREE WORLD IS COLDER," *The New York Times*, Monday, January 30, 1961, p. 46.

The basic problem is that scientists, like all human beings, have sinful natures, which have many motivations to produce results from their research that please certain people, primarily their benefactors, the ones paying them and who are hoping for findings that support their motives and purposes for paying for the research. One of the motivations for pleasing the benefactor is to obtain repeat business. (Recall the ancient axiom: “Follow the money.”)

Many other factors also corrupt the scientific method, such as the researcher’s prideful desire for fame, making a name for him- or herself, produced by publicity; career advancement by pleasing a superior, being first to produce a career-enhancing research result together with an accompanying salary increase; marketability for being hired by a more prestigious university with higher faculty status; prestige among and over peers; and the subject bias of the scientist. Other motivations for shortcutting the scientific method include meeting a deadline, ignorance, and laziness. All these and more are why leading professors and other scholars observe that much, and some say most, of the research in their field “is not worth the paper it’s printed on!”

There are ways to limit, control, and correct these corrupting factors, and true science builds those ways into the research plan. False science does not do so.

- a. Therefore, we need to help people construct a realistic and helpful view of science. They need to understand and be able to do the following:
 - 1) explain the value of science, including that sound science, not faulty science, is a part of God’s general revelation (cf., e.g., Romans 1:18ff.);
 - 2) explain the limits of science; and
 - 3) explain how to distinguish between sound science and false science. Include a few examples for illustration from what follows.
- b. Help others learn the reality of some science being true and much being false, by explaining the steps of the scientific method. Show how easy it is in every step to omit all or part of each step, or falsify one or more procedures in each step, in order to produce the desired results, not the actual reality that exists within the realm supposedly being investigated and to which the findings are being generalized.

In addition to these intentional errors are unintended human errors that the scientist, his or her supervisor(s), and peers have not caught. Since most people, including news and feature reporters, are not sufficiently trained in the scientific method and do not examine the actual study, only the findings are reported, and the general public is unaware of the (often deeply) flawed study that frequently renders it misleading and virtually worthless, and worse, misleading.

Even those studies that are “peer reviewed” are often unreliable for many reasons. Examples of such reasons include the desire of peers to be liked by their peers, the fear of being publicly rebuked by questioning a study that has a popular public favorability

rating, and the fear of being shunned by other possible employers, not only corporations by individual solicitors of studies on specific issues and subjects. Again, recall the ancient axioms: “Follow the money” and also “You get what you pay for.” Think about those realities and their implications and applications!

- 1) Cite examples of such manipulation in each step of the scientific method. The following constitute the steps in social science research.⁷ Abuses of those steps include the following, but not all, errors in social science research, which render the results significantly flawed.
 - a) Step One: *State the Problem*. Incomplete statements that ignore key aspects of the problem, and thus go uninvestigated, produce study results that are misleading and fail to offer or at least suggest effective ways to either solve or even ameliorate the problem requiring the study.
 - b) Step Two: *Review Relevant Research*. Relevant precedent research is selectively ignored, especially that which conflicts with preconceived ideological biases, including expected, hoped for, and planned “findings” of the researcher.
 - c) Step Three: *Establish the Research Plan*. This step is manipulated in many ways. One of the major manners of manipulation is called sample bias: the selection of an unrepresentative segment of the population being studied. The primary purpose of a study is to generalize the findings to all, or at least to the majority, of the population, and there are two main ways to do this: to interview every member of the population or to interview a sample of the population. Since most populations under study are too numerous to interview everyone, and where too many people are unwilling to be interviewed or to answer a poll, a sample is usually used.

In careful, sound, social science, there are established procedures for selecting a large enough sample that is truly, to a sufficiently high percentage, representative of the whole population so that the researcher is able to legitimately generalize from that smaller number to the population as a whole. The main part of that sample-selection process is randomization, the use of different objective methods of selecting a significantly sufficient number of people to be in the sample, where the scientist has no ability to know ahead of time how the individuals in this sample will respond to the questions asked of them and therefore no way to know

⁷ The plan for research in the natural sciences includes the same steps together with a couple of additional steps involving the citing of hypotheses to be tested. The flaws cited herein, are also committed in natural science research. Thus, we see how easy and often both social and natural science is manipulated to produce desired results rather than an objective description of what truly constitutes reality in the matter being investigated. In this article, I focus on social science research for two main reasons: (1) many, if not most, of the sociopolitical conflicts and disharmony today include and are based on the flawed social science studies, and (2) social science research is an important part of my background; my Ph.D. is in curriculum development and instruction from Michigan State University, and I’ve conducted social science research, including on the national level.

whether the desired outcomes will be manifest. That reality is no problem to honest scientists who genuinely want to know and produce true findings.

However, researchers who have a strong motivation to produce certain preconceived outcomes or, more officially “findings,” use various methods to select their sample rather than the established random-selection process. There are even ways to manipulate randomizing in order to produce a sample that will provide the desired responses. They want, and can easily obtain, a sample that will produce the results which conform to the scientist’s own desires and especially which provide the preferred results his or her sponsor, who is paying for the study, wants to see. In order to make the study look legitimate to cursory inspection, some are selected who will respond differently, but who are in carefully controlled numbers to not significantly affect the desired “findings.”

Why is that especially important for the scientist? Think about it. He or she not only wants, but needs, repeat business. Again, “Follow the money.” Many other motives are also in play, as discussed above, which render the research significantly flawed.

- d) Step Four: *Report the Findings of Following the Plan*. You already know one main way this step in the study is manipulated in flawed science. First of all, the biased sample has produced the desired findings. Next, the scientist conveniently includes findings that match the desired outcome, ignores and disregards findings that conflict with the desired outcome, and distorts other data.
- e) Step Five: *State the Significance of the Research*. This step explains what the findings mean and offers suggestions for subsequent research on the matter under investigation. The first four steps in the scientific method are supposedly objective, and they are when they are carefully followed by honest scientists who follow established procedures and who do not engage in the above and other dishonest manipulations. This fifth step is the only subjective step, so it is the easiest of all the five to insert bias and misleading statements.

One very common misuse of this fifth step, and the related steps two, three, and four, is observed in one type of this research: polling. One of the unstated objectives in many polls, especially in elections is to mislead voters in key races. Sampling errors, in which those polled have been selected using means other than random sampling, are designed to have readers conclude that the other side is going to win, so they can stay home and not vote. For this and other reasons, don’t pay serious attention to pre-election polls. They can be very wrong, e.g., in the 2016 Presidential election in the United States, where all but two of the major polls predicted Hillary Clinton would beat Donald Trump by a large, even landslide, margin. On election night, the so-called “mainstream media” were stunned when the results showed that Donald Trump had won. Always vote; every vote counts. Many elections have been won by only one vote, and many more by just two or three votes. God’s people especially must vote.

- 2) Can you see how much of so-called “science” is so flawed that it is referred to as pseudoscience? I remember professors in my Ph.D. program at Michigan State University, which has never been accused of being a conservative institution, saying that “Over ninety percent of the research in the field of education isn’t worth the paper it’s printed on!” Now you know why. And now you also know why it is necessary to carefully distinguish between sound science and pseudoscience.

What does this mean? Always beware of and challenge such statements as, “Follow the science.” (What science?) “Research says....” (What research?) “Experts say....” (What “experts?” Are they truly experts in their field? Many people who have expertise in one area of science, or in another field altogether, speak out trying to be authoritative on specific issues that are outside their field of competency; thus, in that field they are addressing, they are only laymen or laywomen, just like anyone else.)

Be sure to keep these realities in mind, and help others do so as well, pertaining to the need to distinguish between sound science and false science. Too many, likely even most, people fail to make that distinction and treat all science the same. In so doing, they become greatly misinformed, misled, and misguided into sometimes serious, even tragic, decisions. For further information and examples, see the essays and other documents on the [Current Issues](#) page of my WordPress Website and my [academic Website](#).

- 3) For those who are unable or unwilling to learn how to examine a research study, in order to verify the findings, teach them the simplest, quickest, and most effective way to identify false science: compare a reported scientific research finding with God’s Word. If it is consistent with the Bible, it is possibly, even likely, true. If it conflicts with the Bible’s teaching, it is flawed and false; it is unworthy to be called science. We need to teach this reality and destroy the false god that many have made out of science, all science.
3. We need to remember ourselves, and teach others, to be alert and reflective. When listening to someone else speak, or when reading in the media, pay attention to what is being said, and respond to the red flag words, e.g., “Follow the science.” Reply with “What science?”
 - a. Ask for specifics. “To what study are you referring?”
 - b. Then ask if they’ve read the actual study. If they haven’t, which most have not, explain the above, depending on how much time you have with the person, either in a short form or with the more detailed explanation in this paper. Refer them to this paper, which is free, as are all the other resources, on my [general Website](#) and my [academic Website](#), both of which are also secure (https).
 - c. For further information, see [*Essential Christianity: Historic Christian Systematic Theology—With a Focus on Its Very Practical Dimensions.*](#)