

**Précis**  
**Scientific Thinking and Fallacies of Scientific Thinking**  
**Presented by Randy Presley**  
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In this paper I will be discussing scientific thinking and fallacies of scientific thinking. As we begin this discussion, I want to share a few thoughts with you about science, and a few quotes from some of the great scientists of history about how science and the study of this material world reveals God to man. (pg. 1)

The ancient Greeks viewed science as a philosophical matter. Reason was the chief tool of science rather than experimentation. Much of this attitude came from their belief that the world was a corruption of perfection. The world was to them an uncreated, unknowable, yet necessary evil which God directed but did not really control. Only when the theistic view of Creation took over did science begin to study the world experimentally. It was the thought that God had created matter that made it a thing worth studying. In this view, matter was real, good, and knowable. By seeing God as the Creator in complete control, science could make the assumption that the universe made sense. Most of the scientists who formulated modern science were creationists. Without this basis, modern science would probably never have gotten started.<sup>1</sup> (pg.1)

Following is a list of Creationists who founded modern science:

Kepler- Astronomy  
Pascal - Hydrostatics  
Boyle – Chemistry  
Newton – Physics  
Steno – Stratigraphy  
Faraday – Magnetic theory  
Babbage – Computers  
Agassiz – Ichthyology  
Simpson – Gynecology  
Mendel – Genetics  
Pasteur – Cacteriology  
Kelvin – Thermodynamics  
Lister – Antiseptic surgery  
Maxwell – Electrodynamics  
Ramsay – Isotopic chemistry<sup>2</sup>

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<sup>1</sup> Norman L. Geisler and Ronald M. Brooks, *When Skeptics Ask*, (Baker Books 1996) pg. 212

<sup>2</sup> Geisler and Brooks, *When Skeptics Ask* pg. 214

Francis Bacon, the father of modern science, was inspired by the theistic doctrine of creation. He concentrated on the secondary scientific causes (natural laws) used by God to operate the universe. Bacon replaced the deductive method of Aristotle with a more inductive and experimental method that established a fresh new direction for modern science. Belief in a Creator who works through secondary causes did not harm science. In point of fact, this belief helped to inspire great thinkers and to advance science significantly.<sup>3</sup>

The very well known and respected American Scientist, George Washington Carver said the following:

“My prayers seem to be more of an attitude than anything else. I indulge in very little lip service, but ask the Great Creator silently, daily and often many times per day to permit me to speak to Him through the three great Kingdoms of the world, which He has created, viz. – the Animal, Mineral and Vegetable Kingdoms; their relations to each other, to us; our relations to them and the Great God who made all of us.”<sup>4</sup> (pg. 1-2)

Many in the scientific world today say that we must separate science and God. That is not true. There is no need to separate the two. The above quotes and information shows us that many of the great minds of science believed that nature and the study of this physical world would lead us right to the God who created it all, and isn't that exactly what the Word of God tells us: (pg. 2)

“The heavens declare the glory of God; and the firmament shows His handiwork.”<sup>5</sup> (pg. 2)

As Francis Bacon noted, science is the search for causes.<sup>6</sup> The scientific search for causes can be divided into two broad categories : *historical* and *empirical* or *origin science* and *operation science*. (pg. 2)

We will first look at the operation or empirical category of science. (pg. 3)

#### **Scientific Approaches to Events Present (pg. 4)**

Operation or Empirical Science: dealing with how the physical and biological worlds operate in the present. These approaches have one thing in common: they can measure their views against a regular pattern of events that can be observed in nature.<sup>7</sup> (pg. 4)

Hypothesis-and-Testing Method: (pg. 4)

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<sup>3</sup> Norman Geisler and Peter Bocchino, *Unshakable Foundations*, (Bethany House Publishers 2001) pg. 85

<sup>4</sup> National Park Service, U.S. Department of the Interior, George Washington Carver National Monument, *Trail Quotes*

<sup>5</sup> Psalm 19:1

<sup>6</sup> Geisler and Brooks, *Come, Let Us Reason* (Baker Book House, 1990) pg. 149

<sup>7</sup> Geisler and Brooks, *Come, Let us Reason*, (Baker Books 1990) pg. 149

There are at least eight steps in this method.

The situation: the first step is recognizing a situation that generates a problem or question.

Formulate the problem: narrowing the subject down to a bite-sized chunk.

Observation: All research starts with observation, very keen observation.

Reflection: Reflecting on previous knowledge.

Formulate the hypothesis: Formulating the hypothesis is the central feature of the scientific method. The hypothesis is a statement of what we expect to find.

Predictions: If our hypothesis is right, then what we are studying should behave in a certain way under certain conditions.

Testing: Test by experimentation and further observation.

Accept or reject the hypothesis: The hypothesis has been either confirmed or disconfirmed. (pg. 4)

### **The Experimental Method**

Experimentation is the method used to formulate and test a hypothesis. (pg. 5)

A Few Terms Defined:

Antecedent factor: something that happens before the effect is seen. The factor we believe to be the cause.

Effect: the event we are trying to understand.

Concomitant factor: happens at the same time as the cause, but does not really cause the effect. (pg. 5)

Method of Agreement:

There are both positive and negative aspects of this method. Approaching this method negatively, it can be presented as follows: the cause must be there to produce the effect. When the method of agreement is used positively, it says that the single antecedent factor common to all situations where the effect occurs is probably\* the cause. (\*There may be an unknown cause, and this common antecedent may only be a concomitant factor, not the real cause.) (pg. 5)

Method of Difference:

This is a reverse of the method of agreement. Negatively, no antecedent factor can be the cause in whose presence the effect fails to occur. If it really is the cause, then it must be able to produce the same effect over and over under the same circumstances. (pg. 5)

Joint Method:

The joint method is simply a combination of the first two methods. Ideally, all scientific evidence should be checked in this way, but that is not always possible.<sup>8</sup> (pg. 6)

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<sup>8</sup> Geisler and Brooks, *Come, Let Us Reason* (Baker Books, 1990) pg. 157

Method of Concomitant Variation:

The method of concomitant variation says that when one possible cause and the effect vary together, you may have found the cause.<sup>9</sup> (pg. 6)

Method of Residues:

Another name for this method is the process of elimination. (pg. 6)

### **A Scientific Approach to Events Past**

Now let's look at Origin or Historical Science. Again, Origin or Historical Science deals with unobserved and unrepeatable events of the past. (pg. 6)

Since the past, unlike the present, cannot be known by direct observation, it must be inferred by way of the principles of causality and uniformity.<sup>10</sup> (pg. 6)

The Principle of Causality:

It does not state that everything has a cause. It does state that everything that begins has a cause. (pg. 6)

The Principle of Uniformity ( Analogy)

For example, we know that coded messages (such as human language) are put together by intelligent beings. But if coded messages need an intelligent cause now, then we can reasonably conclude that they did in the past as well. This is reasoning by analogy, comparing the present with the past. It is called the *principle of uniformity* (or Analogy). The law of uniformity says that *the present is the key to understanding the past.* (pg. 7)

The Principle of Comprehensiveness

A good hypothesis must explain all the relevant data. It must be comprehensive. (pg. 8)

The Principle of Consistency

A hypothesis cannot contradict itself or other known facts. No two contradictory statements can both be true at the same time and in the same sense. For example, it is inconsistent to claim that everything in the universe is winding down but was never wound up, or that there is a cause for everything that begins but not for the beginning of the universe. (pg. 8)

The differences in scientific studies of the *origin* and those of the *operation* of the world have been overlooked by most of the scientific community. This leads to confusion, since they deal with different objects and use different principles. A failure to distinguish

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<sup>9</sup> Geisler and Brooks, *Come, Let Us Reason* (Baker Books, 1990) pg. 157-158

<sup>10</sup> See Norman L. Geisler, et al., *Origin Science* (Grand Rapids: Baker Book House, 1987) for further discussion on origin science.

these leads only to misunderstanding and misleading charges, such as, “Creationism is not scientific.”<sup>11</sup> (pg. 8-9)

Origin science works on different principles than operation science does. Since the past events that it studies cannot be repeated today, it uses analogies between the kinds of cause/effect relationships that we see today and the kind of effect that is being studied. Also, origin science does not claim to give definitive answers, but only plausible ones. We did not observe the events of origins, and we cannot repeat them. So the remaining evidence must be studied and interpretations of it measured by what seems most likely to explain the evidence. And just as operation science recognizes that some events demand an intelligent cause, origin science also admits an intelligent cause when the evidence calls for it.<sup>12</sup> (pg. 9)

Now we are going to look at several fallacies in scientific thinking. (pg. 9)

Post Hoc Fallacy – the name comes from an old Latin phrase that means After this; therefore, because of this. – this assumes that a common antecedent factor is the cause. The problem is that the mere fact that something happens before an event does not guarantee that it is the cause. If it did, then every time the national anthem was played a ball game would start. (pg. 9)

Fallacy of Emphasizing Irrelevant Factors. It assumes that a *common* antecedent factor that happen to be present is the *relevant* factor when it is not. (pg. 9)

Fallacy of Neglecting Negative Evidence. Overlooking instances where the supposed cause does not produce the effect. (pg. 9)

Fallacy of Neglecting Differences. We have to be sure that the causes we examine are identical, not just similar. (pg. 10)

Fallacy of Reversing Cause And Effect – This is a case of putting the cart before the horse. For example, at Podunk Bible College, it might be found that the students with the highest scholastic average are Christian education majors. The conclusion might be reached that Christian education develops the smartest people. But is that conclusion justified? It is just as likely that only smart people go into the Christian education department. How do you know whether the effect (higher grades) is caused by the department’s program, or if the people were smart to begin with? A cause must always exist before its effect. (pg. 10)

Fallacy of Reciprocal Causality – The fallacy of reciprocal causality is assuming that causality is only one-directional when it is two-way. Take the relationship between violence on television and violent crime. Does watching violence cause people to do violent things? Or does television simply reflect the violence that exists in society? It may be that both are true. (pg. 10)

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<sup>11</sup> Geisler and Brooks, *Come, Let Us Reason*, pg.163

<sup>12</sup> Geisler and Brooks, *When Skeptics Ask*, pgs. 215-216

Fallacy of Confusing Cause And Condition – There is a big difference between the things needed to set up an effect and making the effect happen. Let's say there is a grass fire in your front yard. After putting it out, the fireman comes to you and says, "it looks like what caused this fire was that pile of leaves you left by the road." Wait a minute! Since when can a pile of leaves start a fire all by itself? The dry leaves may have been a condition for the fire to start, but it was the cigarette thrown from a passing car that started the leaves on fire. The cigarette was the cause; the leaves were only a condition. (pg. 10)

Fallacy of Confusing Various Kinds of Causes – There are really six different kinds of causes for any event.

*Efficient Cause.* This is what we normally think of when we say "cause." It produces the effect.

*Final Cause.* This speaks of the purpose of an event or thing.

*Formal Cause,* This tells us what form the effect takes. Its essence.

*Material Cause.* What is it made of?

*Exemplar Cause.* Everything follows some kind of pattern. The pattern after which something is done.

*Instrumental Cause.* The instruments used to produce the effect are the instrumental cause.<sup>13</sup> (pg. 10-11)

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<sup>13</sup> Geisler and Brooks, *Come, Let Us Reason*, pgs. 166-175