How Christian Scientist or Practical Atheist? With all the excitement surrounding the anticipated addition of a new, state-of-the-art science center on Trinity's campus, it's perhaps a good time to remind ourselves why scientific study is such an important component of the curriculum of a Christian college. Our reformed world-and-life-view demands that we participate in the sciences as part of our cultural mandate (Genesis 1:27-29—see sidebar). I'd like to share with you some thoughts as to how our activities as Christian scientists differ from those of non-Christians.

THE CULTURAL MANDATE

So God created man in his own image, in the image of God he created him; male and female he created them. God blessed them and said to them, “Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish of the sea and the birds of the air and over every living creature that moves on the ground.” Then God said, “I give you every seed-bearing plant on the face of the whole earth and every tree that has fruit with seed in it. They will be yours for food.”

THE QUESTION

In a recent post-tenure lecture at Trinity titled, “Are Christian Scientists Practical Atheists?” I addressed the question of whether faith in God has any effect on the way Christians do scientific research. Is science the same for Christians as for non-Christians? I was not concerned with scientific “issues.” Christians already spend a lot of energy debating issues: creation vs. evolution, human cloning, genetic engineering, etc. But if debating issues is the only place we Christians interact with science, then we are not fulfilling our cultural mandate. Instead, we are relegating ourselves to the borders of science rather than penetrating its core. Issues often involve our theological or philosophical reactions to the products of science. I was trying to explore the very core of science—how our faith impacts the doing of science.

DISSECTING SCIENCE

To better understand how Christian faith affects scientific practice, it is helpful to look at science and how it works. So let's begin by dissecting science itself. Science has been equated with knowledge, or at least defined as one way of knowing. But perhaps more helpful is to view science as those disciplines which utilize the “scientific method,” the formalized and systematic gathering and interpreting of data. As a process this includes making assumptions, forming a hypothesis and a line of questioning, collecting data, and interpreting the data to make conclusions. The scientific method's credibility is based on its identity as a rational, empirical (using experimentation and observation) and objective activity. While the scientific method attempts to be rational and empirical, it's not as objective as many think. Biases may affect assumptions, hypotheses, and interpretations, and therefore affect the outcome of experiments. However, there are checks and balances since scientists don't uncritically accept what other scientists may say.

For me, it is most useful to define science as “natural” science—discerning natural explanations for physical phenomena. Scientists look at the physical world and limit their inquiry to the properties of those things that are empir-
ically discernible. This understanding of science does not mean we've eliminated God from our understanding of the physical world. From a confessional standpoint, we acknowledge a sovereign God, creator of all things who has made Himself known to us through the Bible and His creation. Scientists, Christian and non-Christian alike, spend their time exploring and unraveling the complexities and wonders of God's "creative genius." Physical fact (knowledge) is not separated into Christian and non-Christian knowledge. It is singular and consistent, and discernible by believer and unbeliever alike. The goal of natural science is to understand phenomena as functional constituents of the natural created order.

What role does God's special revelation in Scripture play in science? In order to answer that, we should first say what the Bible is: the holy, inspired Word of God. It is the story of our eternal identities and purposes, created in God's image, called to be His children, corrupted by our sin, and restored through the redeeming blood of Jesus. I have no "empirical data" supporting that statement, but I believe it to be true. Science can not and will not give me an answer to a question like, "What must I do to be saved?" Likewise, I cannot use the Bible as a science textbook to tell me the workings of the polymerase chain reaction. Science seeks to understand the processes by which God rules over his creation. The Bible provides us with insights into the status, origins, governance, values, and other "transcendent properties" of that creation. The scientific method helps us to discern the physical properties of the universe while Biblical insight fully informs our "natural" explanations. Christianity enriches our understanding of the universe, particularly in the areas of meaning and purpose.

SO, WHAT'S THE DIFFERENCE?
What is the difference, then, between scientific work done by a Christian and that of a non-Christian? To see where the practices of the believer and unbeliever converge and diverge, I will use my research on the reproductive system in the lab of another Christian scientist, Dr. Harold Verhage, as an example.

An important step in the scientific process is the formation of a hypothesis, a summary description of how things seem to work. From this a line of questioning can be developed. These are framed in very "natural" terms.

EXAMPLE:

Ovarian steroids control the development of the endometrium. What effect does progesterone, a hormone, have on the cell structure of the endometrial glands?

Note that I didn't hypothesize that "God causes the endometri-

um to..." or ask, "What effect does God have on the cell structure..." I believe God governs the process in question, but my question addresses the natural processes He may use to carry out his purposes.

Another important part of the process is choosing a model to study. Because this question may provide significant insight into aspects of human reproduction, I must determine if a human, animal or some alternative system will be useful to answer the question. If a human model is chosen, our belief that we are created in God's image will affect the types of experiments performed. How one uses humans as experimental subjects, and decisions regarding whether or not to use aborted fetal tissue or eggs fertilized in a dish must take into account our relationship to the Creator. Often experimental animals are used to allow for certain types of experimentation. I have worked with cats, rodents, and primates. What does this choice say about our beliefs regarding the order and place of animals in creation and our responsibility for them? I am comfortable in my decision to use cat tissue. However, what is our role, exactly, as stewards of God's creations? How does our stewardship of creation affect our use of animals in scientific practice? Many scientists impose limits on how animals will be used in research. Ultimately, the selection process is based on the world-view of the scientist. Often the use of animals is justified in pragmatic terms: for example, "It helps cure disease." We need to continually ask ourselves how the use of animals fits with our call to be stewards of creation.

In contrast to the choice of a model, methodology (the process of experimentation or gathering data) offers little in the way of distinctiveness between Christians and non-Christians. Science is continued on page 16
a field of precision and accountability and demands integrity. All scientists measure with the same standards and instrumentation. A gram is the same to a Christian as it is anyone else. All good experiments have good controls, and the recording and summarizing of data is as mechanical as mathematics.

The interpretation of data is a step where significant subjectivity can arise. Perceptions are directly impacted by welt-view—or in simpler terms, the interpretation of data is affected by bias. For example, scientists who study eggs and sperm may be predisposed to think that the oviduct plays a passive role in reproduction. Having studied the oviduct, I would differ in my opinion, and add how I think factors from the oviduct contribute to the reproductive process and development. Even more striking is the use of words in some summations. These words may be telltale indicators of a pre-existing belief. For example, it is often suggested that the similarity of a particular molecule in various species “proves” an evolutionary relationship. In fairness, it doesn’t prove that at all. It may “suggest” or “support” some relationship, but it doesn’t necessarily “prove” the theory. These types of examples abound in all areas of science.

A key place for me in the scientific process is the goal of the research and how scientific information is used. Why do we ask the questions in the first place? This is at the center of the whole process. One reason I do research is that I believe it is an act of worship—of praising and more completely seeing God. Another is to pursue God’s command to subdue the earth. Like the secular scientist, I also desire to know how things work. However, knowledge can be used for good or for evil. Unlocking the mysteries of the atom led to x-ray devices, cancer treatment, and energy resources, but also led to powerfully destructive weaponry. Reproductive research may help us find answers for infertile couples or birth control but may also lead to “improved” abortion methods, production of “spare” embryos or cloning of humans. Science is not value-neutral, and scientists should care about the use of their work. Christians should not fear the potential negative effects of scientific research, but should play a role in helping our society sort through what is appropriate and what is not.

**SALT AND LIGHT**

To conclude, a person’s world-view affects everything that a person does, even the process of pursuing “natural” science. It is important that we train Christian scientists to be “salt and light” at the core of the research endeavor. Christians need to become an integral part of scientific research, influencing its direction at every step.

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