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The Science-Religion Connection

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When I sent the following essay by Kevin J. Sharpe to a respected colleague, he asked why I had chosen the topic of the science-religion connection. Actually, I've been contemplating the subject for a few decades. Among other things, I had hoped to pursue the citation links between science and theology journals as in previous studies of the science-humanities connection.¹

I've long had a fascination with scientific connections to the Bible. I even presented a paper in 1955 on a citation index to the Bible.² Since then, I've never even found the time to examine the references to the Bible to be found in the *Science Citation Index*® and the *Social Sciences Citation Index*®, much less other scholarly monographs.

More recently, Sol Katz, the anthropologist/biologist at the University of Pennsylvania, introduced me to the Institute on Religion in an Age of Science (IRAS), and to Sharpe, a theologian and mathematician. Sharpe's essay suggests that theology can adapt to the latest findings in sociobiology, which E.O. Wilson at Harvard has defined "as the systematic study of the biological basis for all social behavior."³

The scope of this subject is so vast that it may be folly even to touch on it briefly. My late friend and mentor Chauncey D. Leake,⁴ poet/scientist out of the University of California, San Francisco, might have winced at our failure to include humanism in the discussion. But humanism, like ethical culture, agnosticism, atheism, etc., deserves separate treatment. My purpose in publishing this essay is to touch on many areas that will



Kevin J. Sharpe

pique the curiosity of readers infrequently exposed to the science-religion connection.

The Far East Connection

Certainly, the connection between science and religion is apparent in many fields in the social and natural sciences, particularly physics and biology. For example, well respected scientists have suggested links between modern physics and Eastern religious thought—specifically, the shared notion of the unity and interrelationship of all phenomena.⁵

Werner Heisenberg, in *Physics and Philosophy*,⁶ wrote: "The great scientific contribution in theoretical physics that has come from Japan since the last war may be an indication of a certain relationship between

philosophical ideas in the tradition of the Far East and the philosophical substance of quantum theory." J.R. Oppenheimer and Niels Bohr have made similar allusions to Buddhist, Tao, and Hindu thought having links to atomic theory.^{7,8}

A Historical Perspective

Modern science has its roots in the seventeenth-century philosophy of René Descartes and his division of spirit and matter into two fundamentally separate and independent realms.⁹ This led scientists to view the world as a machine composed of a multitude of different parts. This mechanistic view was held by Isaac Newton, who made it the foundation of classical physics. From the second half of the seventeenth century to the end of the nineteenth century, this Newtonian model of the universe was paralleled by the image of a God who ruled from above by divine law. The laws of nature were thus interpreted as the laws of God.

The idea of dividing spirit and matter, of course, did not spring full blown from Descartes. The notion can be traced back to the thirteenth century and St. Thomas Aquinas, the Catholic church's foremost philosopher and theologian. Incorporating Aristotelian thinking into his philosophy, he forced the theologians of his day to apply the rigorous demands of scientific rationalism for the first time to their reasoning. Thomas Aquinas told Christian believers that reason could operate within faith yet according to its own laws. Of course, it was Aristotle himself who believed that questions concerning the human soul were much more important than investigations of the material world.

The division between religion and science, always an uneasy relationship at best, turned outright contentious in the early seventeenth century. Many readers of *Current Contents*® are familiar with the Galileo story. The first man to use a telescope to study the sky, this Italian mathematician, as-

tronomer, and physicist became a victim of the infamous Inquisition after proving that the Earth revolves around the sun, a notion too radical for the church in Rome to accept at the time. And it was Galileo who informally stated the principles of motion and gravity later attributed to Newton. Indeed, this scientific giant has been described in the literature as the founder of modern mechanics and experimental physics.⁹

The Gaia Hypothesis

More recently, James Lovelock¹⁰ in England and Lynn Margulis at the University of Massachusetts, Amherst, have proposed a "Gaia theory," which extends some of the evolutionary notions of Darwin. The theory, in a nutshell, holds that the Earth is a living organism, actively maintained and regulated by life on the surface. Gaia is a word the ancient Greeks used for "Earth Goddess."

Supporting this view in *The Lives of a Cell*,¹¹ Lewis Thomas wrote:

Viewed from the distance of the moon, the astonishing thing about the earth, catching the breath, is that it is alive. The photographs show the dry, pounded surface of the moon in the foreground, dead as an old bone. Aloft, floating free beneath the moist, gleaming membrane of bright blue sky, is the rising earth, the only exuberant thing in this part of the cosmos. If you could look long enough, you would see the swirling of the great drifts of white cloud, covering and uncovering the half-hidden masses of land. If you had been looking a very long, geologic time, you could have seen the continents themselves in motion, drifting apart on their crustal plates, held aloft by the fire beneath. It has the organized, self-contained look of a live creature, full of information, marvelously skilled in handling the sun.

The Gaia theory as expounded by Lovelock and Margulis has its origins in observations Lovelock originally made from 1961 onward while working for the National Aeronautics and Space Administration at the

Jet Propulsion Laboratory in Pasadena, California. Lovelock, with a background in biology and medicine, had the job of designing instruments that could detect life on other planets.

In the second edition of *The Ages of Gaia*,¹² Lovelock expresses surprise at the widespread interpretation of the first edition as a religious work. He devotes a chapter in the new edition to "God and Gaia" with the purpose of explaining his views on religion. He comments:

...For me, Gaia is a religious as well as a scientific concept, and in both spheres it is manageable. Theology is also a science, but if it is to operate by the same rules as the rest of science, there is no place for creeds or dogma. By this I mean theology should not state that God exists and then proceed to investigate his nature and his interactions with the universe and living organisms. Such an approach is prescriptive, presupposes his existence, and closes the mind to such questions as: What would the Universe be like without God?

...For the present, my belief in God rests at the stage of a positive agnosticism. I am too deeply committed to science for undiluted faith; equally unacceptable to me spiritually is the materialist world of undiluted fact. Art and science seem interconnected with each other and with religion, and to be mutually enlarging. That Gaia can be both spiritual and scientific is, for me, deeply satisfying.

Lasch on Science and Religion

My interest was piqued recently by Christopher Lasch, the historian from the University of Rochester. Addressing the Jewish Theological Seminary in New York, he spoke on the last century's search "for a substitute for religious faiths now widely regarded as offensive to the modern mind."

According to Peter Steinfels's column "Beliefs" in *The New York Times*,¹³ Lasch argued that "religion is constantly treated as a source of intellectual and emotional security, not as a challenge to complacency

and pride. Its ethical teachings are misconstrued as a body of simple commandments leaving no room for ambiguity or doubt." A typical example of this, according to Lasch, could be found in Joseph Wood Krutch's 1929 book *The Modern Temper*,¹⁴ which argued that "medieval theology had reduced the conduct of life to an exact, delightfully simple science."

"What has to be questioned here," Lasch asserted, "is the assumption that religion ever provided a set of comprehensive and unambiguous answers to ethical questions, answers completely resistant to skepticism; or that it forestalled speculation about the meaning and purpose of life; or that religious people in the past were unacquainted with existential despair."

During question time, Lasch acknowledged that science had brought genuine relief from some natural evils, though infrequently in his view, adding that the relief was usually not without further complications. An excellent book that relates to the discussion above is V.V. Nalimov's *Realms of the Unconscious: The Enchanted Frontier*.¹⁵

The Journal Zygon

One of the major forums for the expression of ideas on the nature of the science-religion relationship is the journal *Zygon*, a term meaning the coupling of two entities or processes that must work together. The journal's three sponsoring organizations are IRAS, the Center for Advanced Study in Religion and Science, and Rollins College, in Winter Park, Florida. There are a few other journals that devote themselves to this topic, but all espouse a particular religious point of view.

A "statement of perspective" in *Zygon* asserts its "hypothesis is that when long-evolved religious wisdom is yoked with significant, recent scientific discoveries about the world and human nature there results

credible expression of basic meaning, values, and moral convictions that provides valid and effective guidance for enhancing human life.”

Sharpe, whose essay on science and religion appears below, is a New Zealander who is now in the process of becoming an American citizen. He has earned two PhDs, one in Science, Philosophy, and Religion from Boston University in 1987, and the other from La Trobe University in Melbourne, Australia, in Mathematics in 1974.

He also holds divinity, theological, and other mathematics degrees.

Most recently, Sharpe was the founding editor in 1990 of *Science & Religious News* and is on the Editorial Advisory Board of *Zygon*. He has written extensively on the subject of science and religion.

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Science and Religion: From Warfare over Sociobiology to a Working Alliance

by

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Science continues to confront religion. Unfortunately, religion continues to respond defensively. A new discipline of science and religion is emerging, a primary aim of which is exploring constructively the interaction between the two areas. A current topic is sociobiology's relation to religion. Sociobiology could undermine religion's claim to truth; thus it threatens theology. Theologians frequently respond by separating sociobiology from religion, thus setting up a dualism. There are reasons, however, for questioning this response. Theology could embrace sociobiology's findings and work with it toward a better society.

During the Gulf War, a fellow faculty member at the Union Institute in Cincinnati, Ohio, Audrey Faulkner, wore a black band

of mourning. Her grief centered on the war's cleanliness. She mourned for those denied its full pain. High-tech weaponry produced

a conflict virtually bloodless for most of the American people. The war, with its "smart" technology, surgically removed a sense of suffering from the popular psyche as experienced in prior wars. Only the Iraqis, Kuwaitis, and Israelis felt pain as nations. Our absence of loss was heightened by prohibitions against the media's showing any pain or misery on the part of American soldiers.

Suffering and death often have to do with religion. In this war, science and technology cut contact with the deep religious side of our being.

Other science/religion issues emerged from the war. Westerners naively think Muslim culture, especially its fundamentalist wing, does not support technological and scientific knowledge. In reality, Islam is supportive, but on its own terms. It objects to science as Western scientists define it. It wrestles with how much one has to become Western to embrace technology and science.¹

There are many current interactions between science and religion besides those raised by recent events in the Middle East. The subject still causes hot debate in the pages of such publications as *Nature*² and *The Scientist*.³

Many of the interactions between science and religion suggest a state of war between the two historical antagonists. Scholars, however, now shy from battle imagery because they feel the two realms deal with distinct subjects.⁴ A more honest assessment of history may show the two realms were at war and that religion lost. Religion then re-defined itself so science could not touch it. But skirmishes still occur. They center on knowledge and belief, such as the Islamic example, and on the use of technology and science, as in the "clean" Gulf War.

Recent efforts at building constructive relations between the two constituencies, sometimes called the new interactionalism,⁵ represent a marked departure from the warfare mentality. Several theologians have developed theologies explicitly dependent on scientific findings or models (for example, Philip Hefner,⁶ Arthur Peacocke,⁷ John Polkinghorne,⁸ and Robert Russell⁹). Some

look to science for insight into theological method (including Ian Barbour,¹⁰ Sallie McFague,¹¹ and Nancey Murphy¹²). And, on the other side of the coin, scientific models are emerging in part inspired by spiritual or religious insight. David Bohm's holomovement theory^{13,14} and James Lovelock's Gaia hypothesis are examples.¹⁵

Sometimes scientists pour energy into hypotheses because they feel them close to their religious beliefs. Fritjof Capra and the bootstrap hypothesis fall into this category.¹⁶ Several centers and societies from a variety of religious backgrounds have sprung up to promote such interactions (for instance, the Institute on Religion in an Age of Science, the Center for Theology and the Natural Sciences, the Chicago Center for Religion and Science, the European Society for the Study of Science and Theology, and the American Scientific Affiliation). Journals and book series feed this growth. *Zygon: Journal of Religion and Science*, *Science and Religion News*, and the Fortress Press series in theology and the sciences are just three examples.

The development of models for the relation between science and religion is another active subject of exploration. Not only are scholars pursuing this historically (what the relation has been), they also seek an ideal future relation. Some suggest complementarity (for example, K. Helmut Reich^{17,18}) and others talk of a "consonance" (Ted Peters¹⁹). I subscribe to a ladder-like relation.²⁰ A new vision of how the realms might relate is essential to formulating a workable model.

Sociobiology is a science whose relation to religion is controversial. It is an ideal subject for illustrating what is going on in the emerging science and religion discipline.

Sociobiology

Human sociobiology is a new field that takes evolutionary theory beyond the biological into the social. It contends there is a biological basis for morality—a contention that is at the root of the controversy. To de-

scribe the debate, I will first introduce sociobiology and then look at positions that deny it can challenge theology.

Built into the human mind are various patterns or rules. Sociobiologists call them epigenetic rules. These rules process information that comes into the mind from internal emotions and from the outside. There are two types of these patterns. Primary epigenetic rules process raw emotional and sense data. Secondary epigenetic rules assemble inner mental processes. These include conscious and deliberate decision making and the placing of values. Epigenetic rules guide people into thoughts and actions that ensure human survival. This theory can be found in the works of C.J. Lumsden and Edward O. Wilson²¹⁻²³ and others.²⁴

While epigenetic rules are important to sociobiology, they are speculative. More evidence for their reality and functioning appears necessary.²⁵ For the sake of this discussion, however, I assume their existence.

A second aspect of sociobiology has to do with reproductive success. From an evolutionary point of view, people are successful when they pass their genes to the next generation. One way to achieve this is through cooperative behavior called biological "altruism." Altruistic behavior enhances genetic success at risk or cost to oneself. For example, parents who promote their children's future success by limiting their family's size to provide an expensive college education are behaving "altruistically." People also practice reciprocal "altruism." This happens when they do something for others and their reward is that someone sometimes may help them. I stop at a red traffic signal even though it slows me down, because elsewhere others stop when they have red and I have green.

Further, humans have altruistic feelings that make them behave "altruistically." These feelings oppose selfish inclinations that also exist for biological reasons. Genes guide not only feelings but also moral reasoning. The rules give morality the feeling of objective truth. Thus, they can enforce "altruism."

This discussion of sociobiology indicates a link to theology. Both are concerned with morality. But this assumes that the ideas of sociobiology can and should interact at face value with those of theology. Several theologians think otherwise.

Theological Rejections of Sociobiology

An often-heard criticism of sociobiology is that it justifies existing injustices. For instance, segregationists say sociobiology supports the belief that blacks are intellectually inferior to whites. They believe that lower IQ scores are the result of evolution following sociobiological mechanisms. We cannot change this condition. Opponents of this view may then discard sociobiology because they feel it supports racism. Further discussion of this can be found in the works of P. Singer²⁶ and W.A. Rottschaefer and D. L. Martinsen.²⁷ But they need not reject sociobiology—it does not in fact support the segregationists' interpretation. Biological inclinations contain both good and bad behaviors, altruistic and evil. To discriminate between them and to emphasize the more appropriate (perhaps the altruistic, the anti-injustice behaviors) is the task of social reflection.

Most theological criticisms of sociobiology require more extensive treatment than the above. Many turn out to be variations on a few themes that continually occur in the science-and-religion dialogue.

The "is"/ "ought" question often rises in theological criticisms of sociobiology. Many critics claim that "is" and "ought" are separate. They think scientific investigation (in this case, sociobiology) can only say how humans have behaved or can behave. That is the "is." It cannot say how humans should behave (the "ought"). This is the task of ethicists.

To say the "is" has no role in determining the "ought" is to say genes have no control of culture. Nor do they contribute to it. There is a fear of reducing culture (including religion and morality) to being the result of biological mechanisms.

Peacocke is a theologian and biochemist at Oxford University who has this fear. He thinks sociobiologists believe genes determine most social behavior. They acknowledge only a lesser role for nonbiological social properties. While Peacocke admits research may confirm sociobiology, he cannot accept that genetics will explain all of culture. He also thinks sociobiology is not reductionist if it accepts some cultural explanations of social behavior.⁷

The difference between the positions of Peacocke and sociobiologists is the extent to which culture builds from biology. The reductionism question becomes whether or not culture can break away from biology. Theologians, such as Peacocke, say it can. Social behavior has genuinely emergent features. Sociobiologists say it cannot. Wilson, of Harvard University, is an example. He writes: "Can the cultural evolution of higher ethical values gain a direction and momentum of its own and completely replace genetic evolution? I think not. The genes hold culture on a leash."²⁸ My own view is that culture does go beyond biology but is always tethered to it.

Peacocke responds to sociobiology by saying it has a restricted range and needs to be part of something else. This larger framework is theistic.⁷

Discussion on survival,²⁹ Peacocke⁷ believes, belongs to the larger framework. Sociobiology says what needs doing if humans are to survive. Peacocke reacts: "Survival for what?"³⁰ Is survival the most urgent value? There are higher order questions that he thinks need answers before looking to sociobiology. A religious example is the belief that the chief end of humanity is to glorify God. God's values for humans may not rule out our extinction.

Similarly, Thomas King from Georgetown University asks if survival is a value. The latter is something that he thinks has no empirical proof. "Science has provided us with much, but it will give us an ethic on the same day that it gives us a square circle,"³¹ he commented at the National Conference of Catholic Bishops in 1987.

Peacocke raises another issue.⁷ He disagrees with Wilson and the University of Guelph philosopher Michael Ruse when they say morality is "an illusion fobbed off on us by our genes to get us to cooperate.... [It is] a shared illusion of the human race."³² King writes: "Just because religion enables people to survive does not mean that its content is illusion." The eyes, he suggests, are also "enabling mechanisms for survival." This does not imply, however, that what the eyes see is not there. Similarly, religion can refer to what really exists. He thinks Wilson sees religion as only adding "emotional fuzz to values developed elsewhere."³¹

Cambridge University's John Bowker criticizes sociobiology's poverty. It does not allow for the qualitative or aesthetic in religion. A religion like Christianity, he says, can agree that humans are "tunes sung by the genes." But it differs by saying humans can also become "tunes sung by God."³³ He even suggests God might act along with epigenetic rules to constrain human behavior and development.

The above objections to sociobiology say genes do not hold culture on a leash. The tethering question underlies most theologians' reactions to sociobiology. It is especially behind their strong negative responses. Their replies set up a dualism: theology deals with a world separate from science's. This belief is common among theologians when they try to defend their turf against science.

Deflecting Dualism

Sociobiology's conclusions may already have support among theologians. In approaching the "is"/"ought" question, the theologians might start with the following: God has brought humanity along the evolutionary path. The "is" must therefore say something about God's intentions for the human species. As Hefner, from the Lutheran School of Theology in Chicago, suggests, filling out the "ought" from a theological point of view, therefore, will draw

extensively on the "is." This is God's way of working.³⁴

Another example is that religion may support species survival as the most important value. Karl Peters, a philosopher from Rollins College, describes survival as perhaps central to a religious outlook.³⁵ Hefner also believes survival is a primary theological value.

Sociobiology says culture is an instrument of genetic survival. Meaning is not separate from the biological. Biology starts and drives any cultural activity, directing it with epigenetic rules. To help human survival even more, biology deceives people into thinking meaning comes first. So Peacocke's and other theologians' genes promote their belief in a dual world of meaning beyond biology's. They think and feel according to the channels of their epigenetic rules.

Thus, there is no complete release from genetic survival pressures to make really free decisions. Ethicists follow the "is" when debating what the "is" means. They also follow it when discussing what the "ought" should be in different situations. The "is" requires deciding the "ought."

Similarly, genes require that theology and similar cultural activities work out and promote what humans might aspire to. Biology through its epigenetic rules encourages humans to raise and answer "meaning" questions. It pressures them to do this so they will want to survive and reproduce. In trying to make sure his gene line continues, Peacocke's biology makes him ask "survival for what?" And it makes him insist that the truth of religious ideas comes before what sociobiology says.

There is only one way to maintain the position in which theology has a strictly

larger framework than sociobiology's. Supporters have to separate science from religion and morality. Such a stand splits the two areas into separate worlds or compartments or levels with theology higher in the hierarchy.

I have discussed in other publications why I believe this strategy is dangerous and inadequate.^{20,36} Further, modern society tends to accept the scientific method as the measure of truth over that of traditional theology. Most modern people, I imagine, prefer their world view informed by science rather than dominated by a traditional religion. In the final analysis, dualism does not hold up. Genes, it would seem, tether all that humans do. Culture adds to what the genes bring and seeks to enforce what they require.

Thus, theology must try to build on and with sociobiology rather than be afraid of it. This constructive dialogue has already started.

Some Final Words

The relation today between religion and science is still mostly one of warfare. Ruse's and Wilson's atheist attacks under the guise of sociobiology are examples. Theology, for the most part, huddles in underground bunkers safe from the advance and missiles of science. But to stay there is the end of theology's relevance to the modern world. It also means the loss of wisdom from the past.

Alternatively, religion might engage and form a partnership with science. Together, they could build a culture that speaks to the range of human needs, including the moral and religious.

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Editorial Schedule Change

With the first issue of 1991, ISI® implemented a schedule change in the front matter for *Current Contents*®, *Citation Classics*®, and the *ISI® Press Digest*, including *Hot Topics*, now appear every other week. They alternate with either an essay by Eugene Garfield, a reprint with an appropriate introduction, or an essay by an invited guest.