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I. Introduction: Why Gilkey?

When Langdon Gilkey began his engagement with religion and science, the primary concern was the implication of contemporary science for religious faith. He focused on the intellectual and cognitive challenges of a scientific worldview to a religious worldview, on the challenges of a world that can be known through science to the idea of God at work in the world. The problems being engaged by much of the dominant literature on religion and science today continue to revolve around the ontological and epistemological implications of science and of the scientific method to faith claims of particular religious traditions. At the same time, there continues to be increasing engagement with the ethical questions raised by what science enables humanity to do to and with the world through technology. Whether the approaches are apologetic, constructive, or historical, the dominant perspectives in the dialogue between religion and science continue to assume the existence of robust science and technological activities that create and sustain an established scientific-technological culture that has led to secularization (and the offshoot of religious fundamentalism—at least in the case of the United States).

Notwithstanding the widespread recognition of the importance of the global and religiously plural context in which the religion and science discourse takes place, what is still commonly overlooked is the reality that science and religion come into contact also in contexts where science and technology have not yet led to an established scientific and technological culture or to the problem of secularization. Today, in many parts of the world (such as the Philippines), religion remains the dominant cultural force, and science is perceived as something alien and a threat to faith. While technology has had a significant impact on the lives of people, it has not necessarily led to a shift in worldview. In such a prescientific and explicitly religious culture, the influence of science and technology creates different sets of challenges from those confronted by theologians of science in the developed North. The issues of economic underdevelopment and the prevalence of poverty constitute the dominant concerns. In these contexts, science and technology may prove beneficial in the efforts to overcome poverty

and disease but are regarded with suspicion as signs of hubris and instruments of dominant foreign powers. Often, science and technology are imported as tools to combat pressing social and economic crises with little or no regard for the impact they have on the local culture, particularly the religious dimension of that culture. Or, conversely, the utilization of scientific and technological know-how to address concrete problems is curtailed precisely because of fear of their impact on the religiousness of the culture.¹

Langdon Gilkey, as a theologian of culture, is an exemplar of one who explores the impact of science and technology on the religiousness of culture.² His engagement of scientific and technological culture, particularly as found in the United States, is perhaps surprisingly fruitful in suggesting a strategy for engaging religion and science in prescientific, economically underdeveloped, and implicitly religious cultures. Gilkey argues against the secular self-understanding of American culture and, following the lead of Paul Tillich, demonstrates the inescapability of the religious even in the scientific and technological United States. At the same time, the movement of his own theological thinking on religion and science, from independence to consonance, presents a guide for moving beyond a reconciliatory to a constructive approach to the religion and science discourse. His engagement of this topic from within the larger socio-political reality of the United States can further illuminate the importance of understanding the power of science and scientific knowledge along with the dangers of the failure of doing so.

Thus, this paper examines the development of Gilkey's understanding of the relationship between religion and science, focusing on Gilkey's attention to cultural context and to his efforts to make room for science and technology in a culture without endangering the religiousness of that culture. I will further argue that the articulation of a theology of nature and a theology of science are the logical next steps to Gilkey's theology; drawing on my own experience as a Filipina, I contend that these steps are meaningful entry points for a non-scientific and explicitly religious culture like the Philippines to contribute to the predominantly Northern conversation on religion and science.

An examination of Gilkey's theological works reveals that he engages science as part of his larger project of developing a theology of culture. His theological corpus is an example of a contextual approach to the religion and science discourse, addressing the concrete challenges that science and especially a particular form of the scientific culture present to the religiousness of the United States.

1. Richardo Abad, "Religion in the Philippines," *SWS Occasional Paper* (January 2002).

2. See Brian Walsh, *Langdon Gilkey: Theologian for a Culture in Decline* (Lanham, MD: University Press of America, 1991).

While his ideas reflect the broader context of western culture, he responds to specific difficulties born in U.S. culture and in the U.S. academy by the intersection of religion and science in American culture. Three elements of his theology are particularly helpful guides for reflecting on the shape of a meaningful religion and science discourse in non-Western, nonsecular contexts. First, his argument for the inescapability of the religious dimension of culture, including a scientific and technological culture, helps address the fear of the threat of science to religious faith. Second, his explication of the ambiguity of technology (due to the ambiguity of the human beings who direct the technology) serves as a poignant caution against assuming instruments of economic progress will necessarily bring with them solutions to the situation of social injustice and massive poverty. Finally, Gilkey turns to a theology of nature in the last decade of his life and points toward reclaiming the wisdom of indigenous religious traditions and bringing these into meaningful conversation with traditional Christian symbols. While these three elements are particularly significant, the overall history of his engagement with science and religion, particularly the concrete historical circumstances that led to these elements, is critical, for it exemplifies the work of a theologian, which is “to interpret the message of a religious community for the contemporary situation,” and to critically engage the questions and answers raised by the various dimensions of a community’s cultural life.³

II. The Independence of Religion and Science

In *Maker of Heaven and Earth*, Gilkey’s earliest published volume,⁴ he addresses the issue of the perceived conflict between the doctrine of creation and what science tells us about the natural order. His approach reflects a Niebuhrian neoorthodoxy that marked his theological thinking at this stage. His argument rests on the idea of distinct forms of knowing and distinct objects of knowledge in religion and science. Because of the clear line of demarcation he draws between religious and scientific knowledge, conflict between the truth claims of each can never be contradictory because they are always mutually exclusive. The difficulties that the natural sciences present for the doctrine of creation are readily overcome, or more accurately, dismissed by stating simply that scientific hypotheses and statements are “by definition *about* relationships between finite

3. Donald Musser, “Sovereigns Past and Present: The Sciences and Religious in the Theology of Langdon Gilkey,” in *The Theology of Langdon B. Gilkey: Systematic and Critical Studies*, ed. Kyle A. Pasewark and Jeff B. Pool (Macon, GA: Mercer University Press, 1999), 223–25.

4. Langdon B. Gilkey, *Maker of Heaven and Earth: the Christian Doctrine of Creation in Light of Modern Knowledge* (Garden City, NY: Doubleday and Company, 1965).

things in space and time. They assume that the process of events in space and time is already going on, and they ask about their character and the laws of their interrelationships. They cannot and do not wish to ask questions about the origins of the whole system of finite things . . . In science there is nothing that corresponds to or can conceivably conflict with either a metaphysical understanding of origins or with the theological doctrine of creation.”⁵

His argument distinguishes the kinds of questions that can be asked about origins. Scientific questions inquire into the causes that precede an existing state of affairs. Religious questions are “a much more burning, personal sort of question . . . because we are asking about the ultimate security, the meaning and destiny of our own existence.”⁶ Where areas of inquiry ask questions that have no real point of intersection, they cannot come into conflict. Gilkey makes it clear that “truth about the observable character, structure, processes, and facts of the created world, and truth about its development in history, is scientific truth—it is not ‘religious truth’—for its concern is God’s creation, not God and His activities. And let us always remember that no *truth* about God’s creation can be antithetical to Christian truth.”⁷ Such confidence that science can pose no threat to Christian truth is possible when these truths are seen as being totally independent. There is no conflict because in the end there is no meeting in which such a conflict can arise. Faith is a given. Science and knowledge of the natural world do not shape theology. The only challenges that science can present are scientific and never theological. It would not take long for Gilkey to discover the limitations of this approach and to critique neoorthodoxy’s refusal to accommodate theology to scientific knowledge while unconsciously submitting itself to it.⁸

5. Ibid., 17. The approach he takes in this work is what Ian Barbour describes as “independence” and John Haught calls “contrast.” The key idea is that science and religion are concerned with two distinct and separate areas of human knowledge and as such can never come into conflict because they never come into contact. Cf. Ian Barbour, *Religion in an Age of Science* (New York: Harper and Row, 1990), 84–89, and John Haught, *Science and Religion: From Conflict to Conversation* (Mahwah, NJ: Paulist Press, 1995), 12–17.

6. Gilkey, *Maker*, 19.

7. Ibid., 150. This is a classical understanding about the truth of revelation and the truth of human reason that finds its roots as far back as Augustine when he grappled with the challenge of interpreting the Genesis accounts of creation and the Hellenistic cosmology that was replacing the Babylonian cosmology that shaped these texts. Cf. *On Genesis: A Refutation of the Manichees, Unfinished Literal Commentary on Genesis, the Literal Meaning of Genesis (Works of St. Augustine, a Translation for the 21st Century)*, ed. Boniface Ramsey, trans. Edmund Hill (Hyde Park, NY: New City Press, 2002).

8. Langdon Gilkey, *Naming the Whirlwind: The Renewal of God-Language* (Indianapolis:

III. The Challenge of the Modern Secular Spirit

While Gilkey's assessment of the relative independence of the disciplines is correct as far as it goes, it lacks a nuanced understanding of the dynamic relationship between science and theology that is found in his later writings. In these he recognizes that theology cannot proceed in a credible way without taking seriously the challenges scientific knowledge poses to the understanding of fundamental Christian symbols like creation. His descriptive rather than prescriptive look at science as a cultural phenomenon reveals that even on the side of science the neat division he articulates in the early work is not maintained. Science has given birth to metaphysical naturalism and ultimately to a philosophical worldview that denies the meaningfulness of any metaphysics. When science is recognized as a profound cultural force, its metaphysical and theological consequences become evident. This historical reality challenges Gilkey's simple methodological distinction between religion and science.

Gilkey's confrontation with the "God is dead" theologians led him to realize the depth of the challenge to religious belief that flowed from a secular *Geist*, a spirit that is in large part rooted in the scientific culture found in the West. He describes how science actually functions in that culture rather than how it ought to be understood. He is forced to move from a prescriptive to a descriptive approach to the interaction between religion and science. He explicates the unexamined roots of the secular context for which and about which he theologizes. He states that: "science has been the *most important* formative factor in creating what we may call the modern *Geist*."⁹ Gilkey describes science as "a historical force of overwhelming creative power and significance, shaping the social existence of humankind in ever-new directions and transforming not only the character of the lives of men and women but

The Bobbs-Merrill Company, 1969), 91–101. It is interesting how in earlier encounters between religion and science (whether in the case of Augustine or in the case of Galileo, who follows Augustine among others), on issues in which the point of difficulty is the interpretation of Scripture and knowledge through natural reason, where the latter knowledge is demonstrated, it is the interpretation of Scripture that is adjusted. Gilkey's critique of neoorthodoxy suggests that the strategy of the latter is the rejection of the idea of Christian doctrines being reinterpreted in light of scientific knowledge of the world. Of course, the refusal to acknowledge the impact of a scientific worldview on one's religious worldview does not mean that such an impact does not exist.

9. As Gilkey stresses, "[science] has, of course, transformed both our world and our relationship to it. But it has also changed many of our ideas, ideas about the universe, about its history, about our place in it, and so on." Langdon B. Gilkey, *Society and the Sacred: Towards a Theology of Culture in Decline* (New York: Crossroad Publishing Company, 1981), 76.

also their understanding of themselves, of the history of which they are a part, their view of their destiny.”¹⁰

In the scientific and technological society that embodies the secular *Geist*, science has come to be accepted as sacred knowledge “for science represents to us *the* knowledge that promises well being.”¹¹ Science’s success in providing reliable knowledge about the world, as made evident in its application in technology and industry, earned it the appellation of the new queen of the academic disciplines.¹² Theology is displaced from its central and defining role in the University. Science’s way of coming to know the world is now seen by many academics as *the* way of knowing. The idea of objective knowledge, knowledge that is empirically verifiable or falsifiable through measurable observation, is suddenly deemed the only real form of knowledge. Scientific knowing becomes the only valid form of cognition. Many disciplines, including the social sciences tried to become “scientific”; others simply came to be viewed as invalid academic disciplines, like theology and philosophy (at least as metaphysics). In this view, science is not only the source of knowledge about the natural world, but what it knows about the natural world is all that there is to know. What it can tell us about the world is all there is, so the argument concludes.

In *Religion and the Scientific Future*, he foregoes the path of trying to reclaim the legitimacy of theological discourse by adapting theology to the discoveries and the language of science.¹³ He does not attempt to rearticulate Christian doctrines in light of contemporary scientific knowledge. While he acknowledges the value of such efforts, he asserts that they do not address what he saw as the more fundamental problem, namely that of *establishing the possibility of meaningful religious discourse*.¹⁴ Here, his neoorthodox as-

10. *Ibid.*, 75.

11. Langdon B. Gilkey, *Creationism on Trial: Evolution and God at Little Rock* (San Francisco: Harper and Row, 1985), 163.

12. Gilkey, *Society*, 79.

13. Langdon B. Gilkey, *Religion and the Scientific Future* (New York: Harper and Row, 1970), 38. Gilkey notes that this is the path that Teilhard takes. While Gilkey explicitly rejects Teilhard’s approach, it is not for lack of appreciation of the value and significance of this approach. Instead, he notes that Teilhard’s method does not address the fundamental theological challenges for the secular context for which he writes. The situation is markedly different for the Philippines where science is in greater danger of being rejected because it is seen as a threat to religion. In the Philippine context, the more appropriate task is to show how science is not a threat to faith but can actually be the fruit, in one sense, of a desire to live out one’s faith.

14. It is interesting to note that Ted Peters, writing more than two decades after Gilkey, argues that the contemporary and “revolutionary” conversations between religion and science call upon theologians to “engage scientists as laboratory researchers and theoreticians

sumptions about the givenness of faith are superseded by the reality of the modern secular *Geist*. No matter how much influence scientific knowledge of the natural world may have in the construction of a theology, even such a theology will not receive a hearing in a context where religious discourse is considered empty. Keeping in view his interlocutors—secular society and a secular academy—he examines the activity of science as an expression of human autonomy and creativity, uncovering the dimension of ultimacy or the unconditioned that he believes constitutes the background and presuppositions of such activity.

Gilkey rejects the image of science as the imposition of an impersonal method on the data of experience.¹⁵ He notes the irony of the fact that science has been the best evidence of “the power and vigor of human autonomy over against the imposition of supernatural authorities”¹⁶ and yet has in more recent times been understood to be so objective as to lose any human element “in favor of an impersonal logical system of inference, deduction, and verification.”¹⁷ He claims that science is not simply a cold, objective task that is mechanically executed.¹⁸ It is an activity propelled by the passion to know; it involves commitment to knowing for its own sake.¹⁹ Science involves faith in the continuing rationality of experience. The very passion to know and the faith that such knowledge is possible cannot be grounded on the empirically or rationally demonstrable. Here we get a first glimpse of something unconditioned in science. In Gilkey’s words, “It involves, if we may put it this way, an affirmation of the reality and value of the *Logos* in concrete existence: the reality of a rationality characterizing that which is to be known, and so which is there to be found even if I have not and cannot

who critically pursue truth about the natural realm . . . this knowledge about the physical world then becomes data for the theologian to assess, evaluate, and incorporate into their understanding of God’s creative and redeeming work.” Ted Peters, *Science, Theology and Ethics* (Burlington, VT: Ashgate, 2003), 1.

15. Gilkey, *Religion*, 38–40.

16. *Ibid.*, 42.

17. *Ibid.*

18. Specifically, he points to “the most fundamental basis of scientific inquiry as a human enterprise, that urge, drive, or passion in man which it presupposes and so which makes it possible as a human act. . . . the sense of wonder . . . the unremitting *eros* to know, the unrestricted passion of the rational consciousness to explain, to understand, and to judge validly—that lies back of all science as a human activity.” *Ibid.*, 48.

19. He states that science as method of inquiry “demands *care*, a determination to know and so an unceasing dissatisfaction with not knowing; it thus requires also patience, rigor, self-discipline, and hope—all of these presuppose a deep passion to know, cool and untemperamental as inquiry may seem from the outside.” *Ibid.*, 49.

demonstrate its existence; and a commitment to the ultimate value of that search and that achievement.”²⁰

Secondly, the way theories function in science points to the fact that scientists must “believe *something* of ontological generality about the character of reality as such and the relation of their minds to it.”²¹ At the same time, they have to have some specific cosmology that allows them to determine what constitutes the problems, data, or relevant evidence in the doing of science. The confidence in the correlation between what we know and how we know points to something unconditioned.²²

Finally, the act of judgment, which is central to the activity of science, leads us to the unconditioned. Judgment is an act in which we claim to lay hold of a finite truth in the infinity of conditioning qualification. He sees this claim as overcoming an ultimate relativity in which no finite truth could be possible at all. Through this judgment we have somehow touched what is not relative, a prehension of the nonrelative. At the same time, the necessity of judging something to be so once the conditions are met presents a second element of ultimacy in the act of judgment. The determination that once the conditions for making a judgment are met then the judgment must follow, is inherently an unconditioned demand.²³ Once the judgment is made, we become aware that we know and can no longer go back to not knowing. One becomes aware of oneself as knower and one knows this with certainty. “This personal affirmation of oneself as a knower is, therefore, the foundation of the possibility of all rational judgment and in the end it grounds all science.”²⁴ All this challenges the secular rejection of ultimacy.

He goes on to point to the alternative myth of a “new scientific man” that emerges in this context. Where explicitly religious discourse, which includes mythic discourse, is rejected as meaningless, he points to the presence of such discourse found within the scientific community. The “new scientific man” can be construed as a new Adam coming to birth in the idealized laboratory of science and capable of existing in this idealized state in the world. The new man is one who is characterized by objectivity and rationality, free of unwanted biases and prejudices that can get in the way of a scientific approach to understanding and addressing problems.

20. Ibid., 50–51.

21. Ibid.

22. Ibid., 51–56.

23. Ibid., 58.

24. Ibid., 60–61, esp. 61.

The weakness of this myth of the “new scientific man,” even in the first stage, is evident when Gilkey examines how human beings have managed technology. The situation he describes is one in which the control over the natural world that scientific knowledge provides and that technology exemplifies are, in fact, often beyond human control. Here he describes how science and technology become self-perpetuating as technology leads to the need for more technology beyond the intention of the creators of the original technology. He challenges society’s confidence in a scientific and technological culture by demonstrating the failure of science and technology to fulfill the promise of addressing the most pressing needs of human beings. He points to the emergence of the demonic in technological society. Even with the immense good that technology has accomplished, the extent of unintended evil grows. At the same time, the human capacity to know nature through science has not translated to human control over technology. Technological expansion is not purely under rational determination and appears to be out of human hands to stop. The assumption that scientific culture will be driven by rationality, which was expected in turn to assure morality, has proven to be erroneous. Instead, technology appears to be driven more by human bondage, sinfulness, and greed than by rationality and morality.²⁵ In fact, what a technological society makes more evident is the fact that the ambiguity of society can be traced to the ambiguity of the human heart. Human control of nature has not led to greater control over the human heart. What Gilkey takes away from this is not that religion needs to temper science or even technology. Instead, religion needs to temper human beings who use science and technology and on whom these are used.²⁶ The ambiguity of a technological society reveals the inability of science and technology to address the most fundamental questions and longing of the human heart, questions that are, in the end, religious and existential questions.²⁷

IV. Confronting Creationism and Reductionism

Science’s pivotal role in the creation and spread of the modern secular spirit that Gilkey identified as characterizing contemporary western culture is only one dimension of the impact of science on American culture. What began as an academic problem proved to be a larger cultural reality, playing itself out in a unique way in the American context as demonstrated by the persistent

25. Ibid., 93–94; Gilkey, *Society*, 83–84.

26. Gilkey, *Society*, 103.

27. This is made especially clear in his account of his experience during World War II in China. Langdon B. Gilkey, *Shantung Compound: The Story of Men and Women Under Press* (New York: Harper Collins, 1966).

creationism debate. Science and religion do not occupy two distinct and clearly separate realms such that each can function as if the other did not exist. Arguments like those presented by the young Gilkey against the conflation of scientific and religious knowledge have been of little consequence for how these two disciplines have interacted and continue to interact in history and culture. And it is of little consequence when the ultimate threat of science to religion as it plays out in cultural life is not epistemological but ontological. The battle is not simply over how and what we can know. It has evolved into a battle over what is. While this conflict between religion and science is not new, the epistemological victory of science over religion has changed the battle.

While theology's reign as "queen of the disciplines" was the source of many of the early clashes between science and religion, it is science's current reign that Gilkey identifies as the source of current problems. Whereas the 17th century difficulties arose from the intractability of the Church's claim to absolute authority, it is the equally stubborn claim by metaphysical naturalists of the absolute cognitive authority of science that is problematic today.²⁸ The first half of the 20th century saw the birth of logical positivism and scientism. While many contemporary historians and philosophers of science have moved the discourse beyond these positions, the common cultural perception of science, and even the apparent perception of most working scientists, appears unaffected by the new insights.²⁹ Gilkey identifies the cause of the persistent popular image of science and religion in conflict as the failure of both scientists and clergy to understand and articulate the proper relationship between the two. Working scientists are often not trained in either the history of science or the philosophy of science, disciplines that would enable them to understand the nature of what they do as scientists and what science qua science can and cannot tell us about reality. On the other hand, clergy, even if they feel adequately prepared to discuss the topic of the proper relationship between science and religion, avoid taking on what could be a controversial topic on the pulpit. But more often than not, they do not see themselves up to the task.³⁰ He points to the damage that has been done by this failure. Gilkey identifies the rapprochement between science and religion as "the best kept secret in our [American] cultural life."³¹

28. Gilkey, *Creationism*, 173–78.

29. Some of the more recent additions to the literature that reflect the rejection of religion in favor of science include: Richard Dawkins, *The God Delusion* (New York: Mariner Books, 2008); Daniel C. Dennett, *Breaking the Spell: Religion as Natural Phenomenon* (New York: Penguin Books, 2006); Victor J. Stenger and Christopher Hitchens, *God: The Failed Hypothesis. How Science Shows that God Does Not Exist* (Amherst, NY: Prometheus Books, 2007);

30. Gilkey, *Creationism*, 190.

31. *Ibid.*, 187.

The persistence of the creationism debate is the best evidence that this rapprochement is secret. The creationism debate of 1925 as expressed in the Scopes Trial was taking place just as the Vienna Circle began to gain ground. While creationism was not a direct response to the Vienna Circle, it was responding to what was perceived to be the negative influence of university education on Christian students.³² It was a strong religious position against what was perceived as science eroding the religious and moral fiber of society.³³ This would mark the start of a “culture war” that continues today. Gilkey had an important role to play in a key skirmish of this conflict when he acted as an expert witness for the plaintiff in the case of *McLean v. Arkansas Board of Education*³⁴ in 1981. In *Creationism on Trial*, he noted that there was a difference between what took place there and what took place in the Scopes trial in 1925. In the latter, the creationists were clearly antiscience. In the various creationism trials of the 1980’s, the opposite is true.³⁵ Creationists were intent on presenting their alternative to evolution as science: thus, creation science. By this time, creation science had an arsenal that included numerous credentialed scientists and various professional organizations.³⁶ So, unlike the earlier confrontations with evolutionists, contemporary creation scientists intend to present their theory as an alternative to evolutionary theory and thus as needing to be taught alongside it in the classroom. This shift shows that science no longer is being rejected but rather is accepted as a respected source of knowledge. Gilkey saw this as something that could only happen in a cultural context where science had become established and accepted as authoritative.³⁷

32. See Ronald Numbers, “The Creationists: The Evolution of Scientific Creationism” in *God and Evolution*, ed. Mary Kathleen Cunningham (New York: Routledge, 2007), 90–121.

33. See Edward J. Larson, *Summer for the gods: The Scopes Trial and America’s Continuing Debate over Science and Religion* (New York: Basics Book, 1997).

34. For access to the decision in this case, see William Overton, *McLean v. Arkansas Board of Education*, transcribed by Clark Dorman, Little Rock, AR, 1982, <http://www.talkorigins.org/faqs/mclean-v-arkansas.html> (last update January 30, 1996; accessed June 29, 2009).

35. Gilkey, *Creationism*, 165.

36. Numbers, “Creationists,” 106–11.

37. The evolution of the creationism debates into the intelligent design debates reached a head in *Kitzmiller v. Dover Area School District*, 400 F. Supp. 2d (M.D. Penn. 2005). It is fascinating to examine the arguments between intelligent design proponents and evolutionary theists because the arguments appear to be scientific but are in fact philosophical. Biologist Michael Behe’s idea of “irreducible complexity” is challenged by biologists like Kenneth Miller, giving the impression that it is a disagreement among scientists about science. But a closer look at the debate reveals it is a philosophical argument around epistemology and metaphysics. For a helpful collection of essays around evolution and religion, see Cunningham, *God and Evolution*.

Gilkey understands creation science as the product of a scientific culture rather than its antagonist. It is an offspring of the misunderstanding of the scientific method combined with a literalization of religious belief. He tells us that “these errors have presided over the birth of that changeling, creation science, half-misinterpreted religion and half-misinterpreted science. This changeling could have been born only in a scientific culture where religious understanding takes on the lineaments of scientific truth and where much of science in turn aspires to have the global ultimacy of religion.”³⁸

Gilkey contends that creation science is a reaction to a misconception about science that is often perpetuated by scientists and science educators. As he puts it, “each time a child comes home and reports ‘I learned in science class today that Genesis is wrong,’ the seed is planted for the creationist reaction.”³⁹ At the same time, the arrow points in the opposite direction, because for every creationist or religious/Christian fundamentalist who rejects evolutionary theory on religious grounds, a hard line metaphysical naturalist is born. “On the practical level, one tends to breed and encourage the other in a strange and unfortunate evolutionary development.”⁴⁰

Gilkey argues that the misunderstanding of the nature of scientific knowledge one finds among religionists reflects a larger cultural situation; it is a situation that can be traced back to some working scientists. If in *Creationism on Trial* the creationists are the primary target of his critique, it is what he sees as the ill-informed scientists and cosmologists that are his interlocutors in *Nature, Reality, and the Sacred*. He focuses in particular on the tendency to espouse naïve realism in the writings of many modern cosmologists. This naïve realism is also reflected in the understanding of the nature of scientific knowledge in popular culture. Naïve realism understands science as providing isomorphic knowledge of the natural world that it seeks to know, and worse, the assumption that this knowledge of the world is a complete knowledge of reality. It is the error of the logical positivists that has become an implicit assumption of working scientists. Gilkey is clear: “My critique is not of science, its methods, or its results but of this way of knowing as understood in relation to other, complementary ways of knowing. The view of science that I criticize (1) sees science as the only way to know reality and so the only responsible means for defining reality for us and (2) views the results of science as providing an exhaustive account of reality or nature and hence as leaving no room for other

38. Gilkey *Creationism*, 40.

39. Langdon Gilkey, *Blue Twilight: Nature, Creationism and American Religion* (Minneapolis: Augsburg Fortress, 2001), 36.

40. *Ibid.*, 36–37.

modes of knowing.”⁴¹ Thus, his problem is not with science as such but with the tendency to absolutize the scientific method and scientific knowledge of the world. The points of contention are the philosophical presuppositions with which many scientists approach the activity of science and the metaphysical conclusions that they draw from it. He acknowledges the validity of scientific discoveries about the natural world. What he questions is the assumption that what scientific theories and their mathematical explications tell us about the world paint an exhaustive picture.

V. Moving Towards a Theology of Nature

Gilkey's concern is not simply a cognitive one. He wants to articulate an understanding of nature that overcomes the objectification and consequent indiscriminate manipulation perpetuated by a modern world. He challenges the view of the natural world as devoid of spirit, a world reduced to a world of things for human manipulation and use. He rejects the idea of nature simply as means, as object over against which the subject, the scientist, stands. In this modern view, the knower is always outside that which is known and the known is always known as it is in itself. In this vision, there is no real place for the knower as such. The human being is excluded from the natural world, except possibly as an object to be known and manipulated. This vision is dangerous because, as he points out, human actions against nature are a consequence of the attitude towards nature, which is in turn born of the understanding of what nature is.⁴²

Quantum physics offers a more complex understanding of reality. Science and nature now include the knower, the scientist. The natural world is seen as dynamic and mysterious. The world is no longer a deterministic machine but an indeterminate phenomenon/organism characterized by uncertainty, by the duality of chance and necessity, by openness and possibilities. The knowing subject helps give shape to that which is known and revealing itself. The science of the quantum world suggests that the more is known about the world the more mysterious it appears. The knower is able to grasp what *is* in the quantum world only by engaging that world. When nature is understood as including the human knower, then nature is not a mere object to be manipulated. For Gilkey, the world that quantum physics is discovering is a world that is characterized by life, by consciousness and spirit. It is not a machine but an organic

41. Langdon Gilkey, *Nature, Reality and the Sacred: The Nexus of Science and Religion* (Minneapolis: Fortress Press, 1993), 2.

42. *Ibid.*, 79–80.

world. It is a dynamic world that reveals power.⁴³ This is a retrieval of what he considered a long lost “alternative intuition of nature” found in “archaic religions” for which nature was “infinitely mysterious, awesome and terrifying, teeming with sacred and demonic powers humanity could barely understand, much less control.”⁴⁴ His theology of nature turns to the intuitions of archaic religions about the power, mystery, and sacredness of the natural world for insight about the world being discovered by contemporary cosmology.

By the time that Gilkey engages reductionists in *Nature, Reality and the Sacred*, he has moved from engaging science within a theology of culture to science as a source for a theology of nature. In an attempt to argue for the possibility of doing theology for a secular culture, he is found more and more explicitly examining the influence of science in shaping that culture. The multilayered ways in which science and religion can interact in a culture are illustrated in the development of his own understanding of the relationship of the two in American culture. At the same time, as he moves into a deeper understanding of the role of science in the shaping of that culture, his reflections move more explicitly towards how the insights of science can be read through a religious lens to arrive at a greater appreciation of what is revealed about creation through nature, including what is discovered about the human being. He develops not only a theology of scientific culture but a theological anthropology within such a culture.

VI. Learning from Gilkey in a Religious Context

Gilkey's insights on religion, science, and secularization provide a vantage point for grasping how the establishment of science in culture can endanger religious faith. However, his theology also shows that this danger is in large part due to the perception of a conflict between religion and science, at least as this has played out in the United States. The particular response to the perceived danger posed by science to faith is shaped by the particular cultural context in which science takes hold. The examples of creationist and intelligent design proponents and the “new Atheist” demonstrate the particular American character of the encounter.

43. It is interesting that in Gilkey's earlier engagement with religion and science, he explicitly rejects Teilhard de Chardin's approach to responding to the modern secular spirit and finds himself by the later part of his own theological engagement with religion and science calling for a theology of nature that points to spirit in the world, echoing the genius of Teilhard as found in all his writings, but particularly *The Human Phenomenon*, trans. Sarah Appleton-Weber (Sessux Academic Press, 1999). It is also worth noting that Gilkey has always had an appreciation of the sacramental principle that characterizes Catholicism, something that is profoundly embodied in Teilhard's writings. See, for example, Langdon B. Gilkey, *Catholicism Confronts Modernity: A Protestant Perspective* (New York: Seabury Press, 1975).

44. Gilkey, *Nature*, 80.

At the same time, Gilkey demonstrates the inescapability of a religious dimension in culture, even when it understands itself as secular and scientific. In fact, his final engagement with science shows how science can become a vehicle for knowing the world, and knowing it through the eyes of religious faith.

Gilkey's theology of culture includes insights into the contribution of science to the secular culture of the West. His examination of the cultural impact of science on the United States reveals that the rejection of religion or the religious is not a simple consequence of increasing scientific knowledge but of the complex interplay of social factors. The supposed conflict between religion and science that has plagued popular imagination is rooted in a misunderstanding about the nature of scientific and religious knowing. Rather than science and technology leading to the "death of God," his theology argues for the inescapability of the religious in a scientific culture. The failure to acknowledge the religious dimension of culture contributes to the tendency to confuse metaphysical claims about the nature of reality with the science that inspires these claims. If metaphysical naturalism is transcended, then the positive contribution that science can make to a deeper theological understanding of the natural world and of the role of human beings within it can emerge and lead to the creation of a culture of reverence for the earth and to the empowerment of the disempowered in communities.

If a particular scientific view of nature and reality gave birth to a secular scientific culture, might not the view of nature that is being inspired by contemporary science as Gilkey describes it in his later works open the door to a renewed scientific culture or to a new way of conceiving a scientific culture? The insights about the world to which the new physics gives birth harken to the wisdom of what Gilkey calls "archaic" religions. A space is open where insight inspired by contemporary science comes into contact with prescientific wisdom.

By examining the concrete ways in which science has shaped American culture and the concrete battles between science and religion that have emerged in that culture, Gilkey provides a cautionary tale of what happens when the limits of each form of human knowing, whether scientific or theological, are not acknowledged. He presents the danger of absolutism and the absence of a critical understanding of the nature of human knowing. At the same time, his journey brings out both the meaningfulness of religious discourse along with the power inherent in scientific knowledge of the world.⁴⁵ Not only can

45. Elsewhere, I have argued for the power of religion and science as cultural forces and that the key conflict is in terms of their role as powers to shape culture. Catherine Punsalan, "Science and Religion in Culture: In Search of a Reason to Dialogue," *East Asian Pastoral Review* 40(2003): 213–33. Reprinted in *Religion and Science . . . and Culture in the Jesuit Tradition: Perspectives from East Asian*, ed. Jose Mario Francisco, SJ and Ramon Miguel de Jesus (Hindmarsh, Australia: ATF Press, 2006), 23–48.

one hold on to religion in a scientific culture, but a scientific culture need not be a threat to religion. In fact, there is a religious dimension to science and there is theological insight that is inspired by scientific knowledge.⁴⁶ Further, Gilkey's examination of science and technology has revealed their inability to address the deepest ambiguities of the human heart. While human ingenuity in the form of science and technology can provide concrete answers to real problems faced by communities, they cannot, in and of themselves, solve these problems. Political and ideological interests have much more to do with overcoming poverty, ecological destruction, and social and environmental injustice than do science and technology as such. All these have been part and parcel of a North American academic's attempt to do theology in the face of real challenges to American religious life.

Gilkey calls attention to the cultural aspects of the encounter between religion and science, so that his work challenges the common assumption that the religion/science discussion is a monolithic conversation concerned with the issues of western, secularized cultures. His analysis of culture reminds us that that the U.S. situation differs from Europe, and it follows then that it is all the more the case that nonwestern and nonsecular cultures will engage this topic differently. For example, in the Philippines, the fact that science and technology are becoming important for a highly religious and economically underdeveloped culture suggests an opportunity to explore the religious implications of science and to engage this as a debate between two cultural/religious systems without assuming that science represents secularism. This is particularly important in the face of the ambiguity of the attitude of Filipinos towards science because it is perceived by many as a threat to religion. In fact, Gilkey's theological corpus suggests that an important initial step in understanding the relationship of science and religion in cultural life is an examination of how this encounter actually takes place. For the Philippine context, this means exploring questions such as: how is the religious dimension of culture concretely manifested and understood in everyday life? How do science and technology impact the self-understanding, including especially the religious self-understanding, of Filipinos/as as individuals and as a people? What is the perceived influence of science and technology on the religiousness of the culture? The theme of inculturation is a particularly

46. Ted Peters suggests that this is one of the revolutionary trends in the current discussion in religion and science today. Peters, *Science*, 1–12. For an example of a fascinating work that make use of insights from the natural sciences and Christian tradition to deep traditional understanding of Christology and Trinitarian theology, see Ilia Delio, *Christ in Evolution* (Maryknoll, NY: Orbis, 2008)

important one for Filipino/a theology given the link between the colonization and the Christianization of the country.⁴⁷ More recently, initial studies have been done to understand the impact of science on this religious culture.⁴⁸ These represent predominantly lowland culture's encounter with science and technology.⁴⁹ More specifically, it is Filipino/a Christianity that serves as the religious optic for the engagement.

Gilkey's work on the development of a theology of nature bringing together scientific insights and indigenous (or "archaic") religions is even more helpful for those beginning to engage religion and science in nonwestern cultures and who hope to avoid simply replicating the western debate. While the development of a Filipina theology of nature is beyond the scope of this work, I would like to note the importance of studying and retrieving the wisdom inherent in the indigenous religions and indigenized Catholicism found in the Philippines and bringing these into constructive conversation with contemporary scientific insights about nature in an attempt to articulate such a theology. This is a particularly empowering exercise for a nation whose indigenous religions were, in many cases, summarily repressed and suppressed with the introduction of Christianity.⁵⁰ These are two broad examples of possible directions for engaging religious and science inspired by Gilkey's example.

Of course, a Filipino/a discussion of religion and science will not simply repeat Gilkey's work. Nevertheless, his attention to the religio-cultural aspects

47. One of the most important theologians in this area is José de Mesa. See, for example, José de Mesa, *In Solidarity with the Culture: Studies in Theological Re-rooting*, vol. 4, *Maryhill Studies* (Quezon City: Maryhill School of Theology, 1991); José de Mesa, and Lode L. Wostyn, *Doing Theology* (Quezon City: Claretian Publications, 1990).

48. See especially José Mario Francisco, "Popular Perception of Science and Religion: Implications for the Science and Religion Dialogue," in *Religion and Science . . . and Culture in the Jesuit Tradition: Perspectives from East Asian*, ed. Jose Mario Francisco, SJ and Ramon Miguel de Jesus (Hindmarsh, Australia: ATF Press, 2006), 49–66.

49. Lowland Filipinos are those living in the urban and rural areas as differentiated from the indigenous communities, many of whom were driven up the mountain areas by the migration of Malays, Chinese, Spanish and other peoples to the Philippines. For a study on lowland Filipino religiosity, see José M. de Mesa, *And God Said "Bahala Na": The Theme of Providence in Lowland Filipino Context*, vol. 2, *Maryhill Studies* (Quezon City: Maryhill School of Theology, 1979).

50. José de Mesa argues that given the colonial history of the Philippines, it is necessary to begin with a sympathetic engagement, what he calls a "hermeneutics of appreciation," with Philippine culture before taking on a position of critique. José M. de Mesa, "Cultural Analysis and Inculturation in the Lowland Filipino Context," in *A Universal Faith?: Peoples, Cultures, Religions, and the Christ*, ed. Catherine Cornille and Valeer Neckebrouck (Louvain: Peeters Press, 1992), 111–25.

of science and of the science/religion debates provides a basis by which both western and nonwestern contributors to the religion and science discussion can see more clearly that this must be a pluralistic conversation in which nonwestern approaches are allowed to contribute their own insights into the multifaceted cultural dialectic between religion and science.⁵¹

51. I would like to thank Mary Doak of the University of San Diego for reading through early drafts of this essay and helping me organize my thoughts until the very end.