

The Beautiful Nature of Science and Theology:

Theologians and Scientists Collaborating on Common Values of Beauty and Nature

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Abstract: *Theologians and scientists need to focus more on collaboration through common values than on theoretical integration. This article presents two such values: the enjoyment of beauty (the major theme) and secondly (minor theme), the appreciation and sustaining of the natural world. To some degree, it develops an ethic of sustaining nature through the value of beauty. It begins with a Reformed theology of beauty and then draws in related insights from scientists. In the second section, it unfolds the value of sustaining and appreciating the natural world. It concludes with questions for theologians and scientists as they pursue collaboration.*

Key words: Beauty; Sustainability; Nature; Values; Theology; Religion and Science

To begin by impugning the contributions of Ian Barbour in a paper on theology and science approaches impertinence. Since, therefore, this paper veers into such dangerous territory, I will submit my thesis gently. I begin with a problem and sketch a solution. The remainder of this paper will be the latter's exposition.

The problem is this: It is well over four decades since Ian Barbour's seminal *Issues in Science and Religion*¹ inaugurated the contemporary era of the study of science and religion, and yet the actual integration of these two disciplines remains limited. As I study academic research and publication, as I talk with members of various church congregations (including my own), and as I read popular media in websites and print, I can discover places where religion and science find integration—and even where theologians and scientists utilize each others' insights—but it remains spotty and inconsistent. Why is this the case? I maintain that science and religion have been locked too often in discussions of theory and method, which lead to Barbour's highest stage of the interaction of science and religion, namely "integration," and too little on human values and motivations, which promote *collaboration*.

Therefore it is time for another direction. Theologians and scientists need to focus on the common values that motivate and direct them as they pursue their disciplines. It seems to me that Barbour has spoken as an academic, frustrated by dialogue only—where the two sides simply sit in academic meetings and talk. In this setting, integration represents something more compelling. But the simple fact remains that most scientists and Christian believers do not live in the academy. In fact, I enter from a different location. As an academically trained theologian who spends most of my time serving as a Presbyterian pastor, collaboration affects my community more than intellectual integration. In other words, it is more important to steward the earth's resources well than to produce a paper on the theological themes of proper stewardship.

Consequently, I propose this solution: *Theologians and scientists need to focus more on collaboration through common values than on theoretical integration*. In this paper, I will elaborate these two values, the enjoyment and pursuit of beauty (my major theme) and secondly (as a minor theme), the appreciation and sustaining of the natural world. These two values are

linked since theologians and scientists who seek beauty agree that beauty can be discovered in nature. In fact, to some degree, I will develop an ethic of nature’s preservation on the conviction and value of beauty. (Incidentally, I will use “sustaining” and “preserving” as reasonably synonymous.) The pursuit of beauty is the pursuit of nature’s ways. Those who love beauty—whether through theology or through science—find it in the natural world, and thus they want to sustain it. Sustaining nature simultaneously preserves beauty.

Fully aware of Hans Urs Von Balthasar’s contention that “Contemporary Protestant theology nowhere deals with the beautiful as a theological category,”ⁱⁱ I will nonetheless begin by presenting a Reformed theological perspective on beauty. I then draw in related insights from natural scientists, by analyzing several key comments on the role of beauty in their work. I will then work out the value of sustaining and appreciating the natural world. In both of these sections, I will describe concrete experiences of collaboration. I will conclude with questions for this research programⁱⁱⁱ as it directs theologians and scientists to pursue these two common human values.

Theologians and Scientists on Beauty

Beauty occurs when we perceive reality rightly.^{iv} It arises for both theologians and scientists through rightly grasping and theorizing about their objects of study. Beauty thus leads to truth, and beauty provides a lure for study. In this sense, it is *telic*, leading human beings toward a preferred future. For theologians, it means grasping God’s true nature, God’s creation, and our ethical life. For scientists, it is rightly perceiving, and theorizing about, nature. When this perception is made there is discovery, which is accompanied by a sense of completeness.

Therefore, the disciplines and vocations of theology and of science can be particularly beautiful. In these and other ways, beauty represents a common value for scientists and theologians.

I begin with the pursuit of beauty from the preeminent twentieth-century Reformed theologian Karl Barth, the thinker who has most influenced my conceptions of beauty even with his rather restrained and brief exposition in *Church Dogmatics II/1, The Doctrine of God*.^v Here Barth focuses on divine beauty and offers important insight into the value of beauty in the discipline of theology. Barth describes divine beauty within the doctrine of God’s glory. Barth sets glory as a locus of theological reflection within the divine attributes, or what he terms the “divine perfections.” Glory for Barth constitutes “the sum of the divine perfections.”^{vi} It certainly includes power, but it is not exhausted by power. There is another feature of glory, namely beauty. God is not worshipped solely because of divine power—that would lead to pious fear—but because of inexhaustible beauty, which leads to joy.

Barth tells his readers quite clearly the beauty drives human life forward: “If we can and must say that God is beautiful, to say this is to say how He enlightens and convinces and persuades us.”^{vii} He then offers the contours for God’s beauty. (I avoid calling this a “definition” since he brings forward the ancient tradition of beauty as a transcendental—like goodness, unity, and truth—all of which are thereby indefinable). To declare that God is beautiful is

To say that God has this superior force, this power of attraction, which speaks for itself, which wins and conquers, in the fact that He is beautiful, divinely beautiful.... [God has beauty] as a fact and a power in such a way that He acts as the *One who gives pleasure, creates desire and rewards with enjoyment*.... God loves us as the One who is worthy of love as God. This is what we mean when we say that God is beautiful. [emphasis mine]^{viii}

Thus, God's worthiness for human love is the basis of God's beauty. God is not only glorious because God is powerful. Instead human beings are drawn by God's beauty, and they are motivated and given a telos. God's beauty, Beauty Itself, draws us. Or as Barth puts it, God is one "who gives pleasure, creates desire and rewards with enjoyment."

Barth builds these theological reflections on biblical conceptions of beauty. For example, he points out that Psalm 104 includes a declaration that praises God's beauty, "Bless the Lord, O my soul. O Lord my God, you are very great. You are clothed with honor and majesty," or as he phrases it, this is a psalm "where magnificence and sublimity and especially light are mentioned as God's garment and apparel."^{ix} Similarly, Psalm 96:9 quite clearly enjoins beauty and God's nature: "O worship the Lord in the beauty of holiness!" Divine glory involves God's very character of holiness, and holiness is first of all God's otherness because the nature of deity is perfection. God's holiness thus evokes our awe and praise. In both Hebrew (*kabod*) and Greek (*doxa*), God's glory also includes God's beauty. The Reformation finds God's glory throughout the deep grammar of Scripture as well as in specific biblical texts. For example, Isaiah 6:1-8 describes the prophet's famous call; Isaiah finds himself in a divine throne room a profoundly holy place where YHWH's presence evokes wonder and fear. Similarly, the Reformed understanding of worship builds on Isaiah 6 as it seeks to evoke God's majesty and power. In other texts, such as Moses's experience with YHWH in Exodus 40:34ff., God's glory even includes a certain luminosity. So to summarize: glory implies wonder and fear, and the human response to God in worship seeks to mirror this experience. From a Reformed perspective, a Christian life lived in response to God as the Subject of beauty is itself an object of beauty. There human beings find joy and human flourishing; there we find motivation.

Beauty therefore represents a critical value for the work of theologians since their specific task is to describe, or at least point to, divine beauty. I do have some contentions with Barth, not with his reflections on beauty—they are provocative and generative—but that he did not integrate them more fully into his theology. The very character of theology ought to be what the Eastern Orthodox Church has defined as *philokalia*, the “love of beauty.”^x The centrality of beauty in understanding the character of God and the nature of life lived with a view to divine beauty. These themes are echoed in the substantial Catholic voice of Hans Urs von Balthasar, specifically through his magisterial *The Glory of the Lord: A Theological Aesthetics*. I cannot overestimate von Balthasar’s contributions to a theological aesthetics, and my debt to his theological aesthetics is substantial.

Nonetheless, though von Balthasar greatly admired Barth’s work because it reaches back to “pre-Reformation” concepts,^{xi} he was not able to break free from his Catholic bias and too easily dismissed the contributions of Reformed theology. For example, in this gargantuan seven-volume undertaking, he missed the profound insights of the eighteenth century Puritan theologian Jonathan Edwards, who was captivated by beauty—the beauty of the natural world, of God, and of life lived to God’s glory. Edwards spoke of a particular early experience where contemplation led him “into a kind of vision... of being alone in the mountains, or some solitary wilderness, far from all mankind, sweetly conversing with Christ, and wrapped and swallowed up in God.”^{xii} Steeped in the observation of nature that marked the exuberant scientific explosion following Newton’s impressive discoveries and seminal theories, Edwards gloried in the beauty of nature. (It is worth noting Puritan pastors, as some of the most educated members of their day, regularly found numerous causes for reflection on God, nature, and their relationship through “natural philosophy.”) Edwards’s *natural beauty* “consists of a very complicated harmony; and

all the motions and tendencies and figures of bodies in the universe are done according to *proportion*, and therein lies their beauty" (emphasis mine).^{xiii} The echoes of the classical tradition of beauty as *proportio* are unmistakable. He also underscored the importance of God's work as Creator of this cosmos:

For as God is infinitely the greatest being, so he is allowed to be infinitely the most beautiful and excellent: and all the beauty to be found throughout the whole creation is but the reflection of the diffused beams of that Being who hath an infinite fullness of brightness and glory.^{xiv}

In his philosophical-theological writings, Edwards maintained a lifelong "preoccupation with beauty, excellence, and the goodness of creation."^{xv} Finding beauty is at the core of his definition of the spiritual life. To be fully alive as a human being is to be drawn into Beauty. From Edwards, I have learned, among other things,^{xvi} that beauty in nature evokes a deeper praise for Beauty itself, that creation leads back to the Creator.^{xvii}

In this light, I find myself returning to a central Reformed theological conviction and value that glorifying God in life comes through responding to God with utter devotion to God's calling. In fact, this motivates human action. *Vocation*—and I intend with this word to evoke its root meaning of "calling," that is, God's directing of human life—becomes the means by which we give God glory. Our deepest longings find fulfillment in displaying, enjoying, and responding to God's glory and beauty. Since responding to God's call is beautiful and therefore pleases us, it is a joyful task. Or as Barth himself wrote, the enterprise of theology—and thus the work of the theologian—is intertwined with the pursuit of beauty:

[T]heology as a whole, in its parts and in their interconnexion, in its content and method, is, apart from anything else, *a peculiarly beautiful science*. Indeed, we can confidently say that it is the most beautiful of all the sciences. To find the sciences distasteful is the mark of the Philistine. It is an extreme form of Philistinism to find, or to be able to find, theology distasteful. The theologian who has no joy in his work is not a theologian at all. Sulky faces, morose thoughts and boring ways of speaking are intolerable in this science. May God deliver us from what the Catholic Church reckons one of the seven sins of the monk—*taedium*—in respect of the great spiritual truths with which theology has to do. (emphasis mine)^{xviii}

Barth then offered Anselm as an example, a theologian who spoke of his discipline as both *pulchritude* and *delectio*.

Does the theology as “a peculiarly beautiful science” relate to the natural sciences and specifically the work of natural scientists? This question ushers me back to a critical theme in this paper: my focus is on *theologians* and *scientists*—first, how and why the former do their work, then on how the latter have described beauty in the practice of science. In fact, these are *human* values, and my emphasis in this proposal builds on the conviction that human beings pursue these disciplines. In some sense, knowledge is personal.^{xix} Theologians are seeking to find beauty in their study. I know this personally. I have realized beauty and joy in my own work as a theologian when the perception, and even formulation, of God’s truth asymptotically approaches God’s reality. It is never quite there, but continues to move closer.

Remarkably, in reading some scientists’ descriptions of their own work, I have discovered a remarkable similarity, such that I could transpose words between theology and science and the statements would sound nearly identical. Scientists, as I will unfold below, have also described their work as the pursuit of beauty. Can a natural science—whether biology, physics, chemistry, etc.—also be a “peculiarly beautiful science”? Yes. The beauty of scientific work is to understand nature rightly and the way it fits together. This common value provides a stimulating locus for collaboration of theology and science. Beauty leads to truth—both in that its innate pleasure motivates human beings to discover truth and that beauty and truth conform to one another. As Thomas Aquinas wrote, “The supreme beauty of human nature consists in the splendor of knowledge.”^{xx} Beauty is critical to all human knowledge, including the natural sciences. Richard Feynman once wrote, “You can recognize truth by its beauty and simplicity.”^{xxi} Beauty, as both scientists and theologians know, leads to truth.

The Nobel laureate, Subrahmanyam Chandrasekhar, in his seminal 1979 lecture delivered at the Fermi National Accelerator Laboratory, offers an important study in “Beauty and the Quest for Beauty in Science” by pursuing the “the extent to which the quest for beauty is an aim in the pursuit of science.”^{xxii} After analyzing Henri Poincaré, Werner Heisenberg, and Albert Einstein, he closes by suggesting that scientists can achieve satisfaction in their quest for beauty like the players in an intricate and joyful game.^{xxiii}

It is worth hearing each of these influential scientists in his own voice. Poincaré himself, when answering the question of why scientists study nature at all and how they select the facts they do in formulating scientific theory: “The scientist does not study nature because it is useful to do so.” He continued and thereby countered a purely instrumentalist approach to scientific

work and simultaneously described the way that beauty motivates scientific discovery, or to use my terminology, offers scientists a telos or motivation:

He studies it because he takes pleasure in it; and he takes pleasure in it because it is beautiful. If nature were not beautiful, it would not be worth knowing and life would not be worth living.... I mean the intimate beauty which comes from the harmonious order of its parts and which a pure intelligence can grasp.^{xxiv}

Poincaré points to harmony or consonance as a central feature of beauty. Beauty also implies pleasure (which has constituted key elements of theories of beauty for centuries), and thus scientists realize the pleasure of their work in the realization of harmony. This beauty sustains scientists' research even in spite of the rigors of their work: "Intellectual beauty," he continued, "is self-sufficing, and it is for it, more perhaps than for the future good of humanity, that the scientist condemns himself to long and painful labors."^{xxv}

Heisenberg also wrote about the connection between discovering the nature of quantum reality and its beauty. One should note the relationship between beauty and Heisenberg's "coherence," which is parallel to my formulation of rightly perceiving nature. Beauty for Heisenberg is surprising and objective. As he describes it, he did not impose beauty, but *discovered*—or perhaps better, un-covered—this beauty in the midst of looking at energy at the quantum level:

The energy principle had held for all the terms, and I could no longer doubt the mathematical consistency and coherence of the kind of quantum mechanics to which my calculations

pointed. At first, I was deeply alarmed. I had the feeling that, through the surface of atomic phenomena, I was looking at a strangely beautiful interior, and felt almost giddy at the thought that I know had to probe this wealth of mathematical structure nature had so generously spread out before me.

This pursuit and discovery of beauty has certainly motivated key scientists. I could multiply quotes, but will simply note Einstein's use of beauty in formulating both the special and general theories of relativity. Helen Dukas and Banesh Hoffmann summarized Einstein's work: "The essence of Einstein's profundity lay in his simplicity; and the essence of his science lay in his artistry—his phenomenal sense of beauty."^{xxvi} It was that sense of beauty that led him to reformulate our understanding of the cosmos.

The particular motivation of beauty for scientists, as Poincaré describes it, is grasping the harmonious order of the cosmos. Indeed, in *Adventure of Ideas*, Alfred North Whitehead pointed to this ordering function of scientific and artistic pursuits. As he wrote, "Science and art are the consciously determined pursuit of Truth and of Beauty."^{xxvii} Whitehead then connected this ordering with God's work with the world (and this connects directly back to my reflections, spurred on by Barth's, as a theologian). At the heart of Whitehead's understanding of the God-world relation, he concluded that God "does not create the world, he saves it: or, more accurately, he is the poet of the world, with tender patience leading it by his vision of truth, beauty, and goodness."^{xxviii}

We are coming to a point where it becomes less fruitful to speak of separate directions for theology and science, but in fact, the locus of common understanding and more importantly, motivation. Recently, the noted physicist George Ellis, has presented beauty as the highest level

of human knowledge. In a recent lecture presented to the Australia Yearly Meeting of the Religious Society of Friends (Quakers), entitled "Faith, Hope, and Doubt in Times of Uncertainty: Combining the Realms of Scientific and Spiritual Inquiry," he spoke of his study of nature as a scientist and the way it ultimately led to discovering beauty. "I believe that for many the experience of great beauty is an immediate striking way of experiencing transcendence."^{xxix} Ellis noted that this leads many people to "genuinely spiritual experience."^{xxx} In Ellis (and to some degree in Whitehead), I see the confluence of these disciplines, science and theology, in one person. For that reason, his comments are worth noting.

But perhaps unwittingly, I have backed into a problem: These are thinkers that operate at a fairly prominent level. Do their reflections have any resonance with a wider group of scientists? Without presenting this as a comprehensive proof, I can speak from a smaller sample group: I am chairing a "local society" (supported by a Metanexus Institute grant) called the Chico Triad on Philosophy, Theology, and Science, which draws together scientists, theologians, and philosophers from two academic institutions near Chico, California, as well as independent scholars from the broader community. In the past five years of convening and discussion, we have often pondered beauty. In one meeting, one of physicists made this provocative and representative declaration: "I spend a lot of time thinking about the beauty of how it all comes together." In other words, the observation of beauty inspires theologians and scientists. Does it motivate them to sustain the natural world they are observing? That is the nature of the next section of this proposal.

Theologians and Scientists on Sustaining Nature

Appreciating and therefore sustaining nature is critical to both theologians and scientists. If nature is beauty and if nature is necessary for the work of theologians and scientists, then it must be preserved. As Jay McDaniel writes in the recent *Berkshire Encyclopedia of Sustainability*, "Beauty is part of the sustenance of a sustainable community" because "beauty's subjective side—the emotional and intellectual happiness humans gain as they interact with the world... provides an inner sense of caring about and for the Earth and its inhabitants."^{xxxix} In this proposal, I will use a common definition of sustainability as "a capacity to maintain some entity, outcome, or process over time."^{xxxix}

And this definition leads to a critical question: Have theologians and scientists worked to preserve the natural world?

At this point, my project faces the persistent challenge of Lynn White, professor of medieval history whose "The Historical Roots of Our Ecologic Crisis" first appeared in *Science* in 1967.^{xxxix} I mention the publication date because this short, pithy, and fascinating piece still continues to resonate to this day (a fact made more remarkable when one considers how much global ecological concerns have changed in these four decades). Therefore, White's arguments need to be answered.

Historically, White argues, the Christian church has been a significant player in Western society's abuse of our world's ecology. White particularly bases this contention on a widely held reading of crucial biblical texts, such as Genesis 1:28, which calls for humankind to have "dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth" (emphasis mine).^{xxxix} Nonetheless, his argument does not stop with the first chapter of the Bible. White argues that this theological conviction, and its further

embodiment in Christendom, led to the rise of modern science and technology and thus contributed to the "ecologic crisis."

Notably, in linking Genesis 1 to the rise of western Christianity society and thus to technology, White ties the ecological crisis with growth of science, which he argues itself is based on Christian theology. Today, however, critics commonly maintain that the history of Christian is the narrative of suppressing scientific insight. This is inaccurate and simplistic. I agree with White's stance against a commonly held view. Christian theology, because it has emphasized a good Creator who created a rationally comprehensible universe, *is* a seedbed for the rise of modern science. Really, this is not a new argument. As the Nobel laureate Charles Towne put it: "For successful science of the type we know, we must have faith that the universe is governed by reliable laws and, further, that these laws can be discovered by human inquiry."^{xxxv} White's theological and biblical limitations are evident because ecological misuse is not consistent with a properly constituted and elaborated theology. Other threads of Western history have caused the degradation of our natural environment. White does not note the growth of consumerism—as an alternative to Christian practice and spiritual life—whose consumption has greatly inflamed the ecological problem. For example, the relentless marketing over the past century and the American love affair with the automobile has resulted in 765 vehicles per 1000 persons. This is hardly a sustainable condition.^{xxxvi}

Within Christian history, assuredly White is correct at points. Christianity has often stood against preservation of nature. But there are counter examples to be sure, and White does note the life of Francis of Assisi, who lived in relative harmony with the natural world. White could have pursued the biblical traditions more deeply. First of all, the notorious texts that speak of *dominion*—particularly Genesis 1:28—have a much richer and subtle meaning. "Dominion" is

more closely related to stewardship, to the concept that the people of Israel were to act as God's viceroy on earth, to "bear his image" as Genesis 1:27 says. In fact, taking a canonical approach to Genesis in which I read the text in its final form without dicing it up into Yahwist, Elohist, Deuteronmic, and Priestly slices,^{xxxvii} Adam's role of "dominion" is defined in the next chapter: "to till and keep the garden" (Genesis 2:15). This hardly represents a call to despoil nature. The critical exemplum for dominion in the history of Israel was the king, who was judged, according to the tradition of the mercy code in the Torah, by his concern for the least, always exemplified in the "widow and the orphan." Exodus 22:21-22, in the midst of detailing Jewish law that governs even the king's actions, commands quite simply, "You shall not wrong or oppress a resident alien, for you were aliens in the land of Egypt. You shall not abuse any widow or orphan."^{xxxviii} This is even elaborated to a greater degree in Jesus's understanding of a ruling not as domination, but as service, "But Jesus called them to him and said in Matthew 20:25-28.

You know that the rulers of the Gentiles lord it over them, and their great ones are tyrants over them. It will not be so among you; but whoever wishes to be great among you must be your servant, and whoever wishes to be first among you must be your slave; just as the Son of Man came not to be served but to serve, and to give his life a ransom for many.

Here Christian theology would have been a severe critic of the later practice of Christendom's leaders, though it seems they lost Jesus as a standard of proper dominion. As the church forsook the nature of Jesus's form of ruling, White is right to criticize the effects of this leadership on the earth. Nonetheless, it is not the full story, nor can it be presented as the example of suitable Christian dominion.

Proper “dominion”—even to use the lexicon of Genesis—is stewardship and care, not domination. Power ought to lead to the empowerment of the weak. God’s command to Adam actually issues in an appreciation for nature in its connection with its appropriate stewardship and maintenance. Douglas John Hall has described *imperial Christianity*, which did not pursue “stewardship but lordliness that appealed to the mentality of the church’s policy makers.” Hall argues for reclaiming the concept of human stewardship: it means that we must take in action role in tending creation and abandon “forms of religion that denigrate the natural world, that view the world as primarily a cache of resources to be exploited for human ends.”^{xxxix} In other words, faithful theology and practice lead to care for nature as stewards, not exploit it as consumers. As I have mentioned, Francis of Assisi is an excellent model, especially in his resplendent praise and appreciation for creation. Another, perhaps less obvious choice, is John Calvin and the Calvinist tradition generally, which has always highlighted the call to Christian *simplicity* and a life without ostentation. Calvin himself reflected this most poignantly—and in marked contrast to the popes of his day with their artistically commissioned, ornate tombs—by being buried in an unmarked grave.

But what of the responsibility of science, which arose during an era that produced the infamous proclamation of René Descartes that humankind is “master and possessor” of nature? And what of the kin of science, technology, and how it brought on the ecological problems of our planet? Are scientists willing to accept their responsibility and to formulate more definitively the value of preserving this planet? The challenge of Lynn White is also placed at the feet of scientists.

It seems obvious to me that the appreciation for the natural world ought to represent a locus of common values for scientists too. It is axiomatic that natural scientists need nature preserved

in order to do their work. If nature becomes marred by pollution, if species become extinct, and if our planet becomes altered irreparably by global warming, how can scientists profitably study it?^{x1} Some thinkers have begun to work on elaborating what the preservation of nature means. As the effects of technology have taken their toll on the natural world, scientists have begun to take greater note of the need to preserve nature in the past several decades. For example, philosophers such as Charles Birch have labored to develop a "greening" of science.^{xli} In the same way, Holmes Rolston, III, often referred to as "the father of environmental ethics" and even its "grandfather,"^{xlii} has addressed the need for a sustained preservation of nature as an ethical duty for philosophers and scientists. His personal path toward these conclusions instructs: Rolston became increasingly dissatisfied with the human mistreatment of nature and the insistence that nature is value neutral and therefore destined to be exploited by humankind. In his four decade tenure in the Philosophy Department at Colorado State University, he developed himself to creating a philosophy "that could undergird a richer appreciation of life on earth,"^{xliii} positions he developed in his 1997-98 Gifford Lectures published as *Genes, Genesis, and God: Values and Their Origins in Natural and Human History*,^{xliv} as well as his *Environmental Ethics: Duties to and Values in The Natural World*,^{xlv} among his many other published books and articles. Rolston argues that "humans have *responsibility for nature* is among the more recent philosophical discoveries, although not without precedent in the past."^{xlvi} He maintains that nature has "intrinsic value," enumerating no less than fourteen discrete values in nature.^{xlvii} Among these intrinsic values, Rolston finds both "scientific value" and, interestingly, "aesthetic value."^{xlviii} He calls humankind to be "moral overseers" of the natural world.

Rolston is surely correct in many of his assertions, and I champion his endeavors to create an ethic that sustains our planet. Nonetheless, I do have a few reservations. In *Environmental*

Ethics, Rolston speaks of "values" that lead to "duties" in a manner reminiscent of Immanuel Kant. I would rather say, in a manner consonant with the value of beauty, that ethics leads to human and natural flourishing. The lure of beauty and human flourishing provide a more sustainable motivation for women and men than bare duty. To lean on Greek etymology that goes back at least as far as Plato, beauty (*kalos*) calls out (*kallein*) to humankind to respond beautifully. When we sustain nature, we engage in a beautiful life. There we find joy.^{xlix}

Thankfully, both scientists and theologians are becoming convinced that the natural world needs to be preserved. Niles Eldridge, the noted paleontologist working at New York City's American Museum of Natural History, once offered the environment as the critical topic for religion and science in a conference entitled "Religion and Ecology: Discovering the Common Ground." The *New York Times* reported a comment from Eldridge in 1998, "There's an ecological component to all concepts of God."¹ One can conclude that the same component exists in most concepts of science. If this can be assumed, the next step is deciding what to do.

And so, I have returned to the common value of collaborating. Along the way, I will also be forced to pose some final, challenging questions.

The Beautiful Nature of Collaboration and Some Remaining Questions

This paper can only begin the process of scientists' and theologians' collaborating on common values. Put another way, papers can achieve proper *theoria*, but collaboration requires *praxis*.

The best effect of this research program is to initiate further work. Full disclosure requires me to admit that it also leaves some questions for future reflection.

First to critical questions: for one thing, I realize that collaborating on these two common values for a research program obviates a purely instrumental approach to science. It requires that

scientists do not simply reply, "It works, why ask more?" Not every scientist fits this essential criterion. It also means that theologians do not propose they possess the definitive aesthetics and thus that they present their convictions with humility and do not swagger into the room.^{li}

More materially, evolutionary views might argue that beauty is epiphenomenal—perhaps useful for our survival, but not particularly significant at the core of science. The prominent biologist and anthropologist David Sloan Wilson has spent significant research time in analyzing religion as an evolutionary phenomenon, thereby developing a theory of religion as an evolutionary "group-level adaptation" under the banner of Evolutionary Religious Studies. In pondering the question of whether it is possible to acknowledge functionality and beauty in nature, he concludes this:

The attitude that usefulness is ugly is actually quite peculiar. Evolution offers a theory of aesthetics that predicts the opposite. Far from a uniquely human capacity, a sense of beauty is probably the emotional output of ancient brain mechanisms designed to evaluate *fitness* associated with features of the environment. These mechanisms are computationally sophisticated but operate beneath conscious awareness. Just as the act of seeing appears effortless but in fact belies an enormously sophisticated cognitive process, we are emotionally attracted to features of the physical and social environment that are likely to increase our *fitness*, which we experience as beautiful. This theory has enjoyed considerable success predicting the features of sexual partners and natural landscapes (reviewed by Thornhill 1998). In the present context, we can predict that social groups will be regarded as very beautiful indeed when they offer the ingredients of survival and reproduction that their members otherwise lack (emphasis mine).^{lii}

Since, in Wilson's work, ultimate causation is "functional," it is not entirely surprising that beauty is set against the more important value of fitness.

Wilson's framework is incomplete, or perhaps better, restrictive. To be sure, being fit for survival is beautiful. When I see deer gracefully, and without excess effort, climbing the steep walls of Chico's Upper Bidwell Park, I almost unconsciously utter, "That's beautiful." It is that beauty which offers deer the escape from predators. But we must widen the circle: beauty is the larger category, survival the smaller. Survival is tautological: we must survive in order to exist. But beauty has created the entire nature world which longs for beauty and hears its call. When life does what it is meant to do—including, but much more than, surviving—there is beauty.^{liii}

Put another way, theologian and philosopher Keith Ward places beauty at the center of his doctrine of God and consequently as the goal of the world. In his book *Pascal's Fire*,^{liv} which describes his integration of religion and science, Ward has written that beauty may be the ultimate goal of the cosmos.

It is plausible to see this process [of the development of the cosmos] as planned by a supreme intelligence that put in place the cosmos's intelligible structure and directs its progress towards the final goal of conscious knowledge and co-operative action.... In that case, the story of the cosmos will be the story of a mind that actualises the cosmos for the sake of its *beauty* and also for the sake of actualising within the cosmos finite minds that can experience and creatively add to that beauty. (emphasis mine)^{lv}

For Ward, beauty remains at the center of the purpose of the world, which differs markedly with the centrality of fitness for Wilson.

The question for this paper is this: Does it matter if Wilson and Ward disagree? In the research program I am outlining, collaboration begins to obviate such differences, provided that we both admit the importance of preserving beauty. There will be a time for metaphysics and for deeper theoretical integration. While that discussion continues, we need not forget the deep values we possess that can lead to collaborate endeavors. Will it matter? These questions are not yet fully answered, but are nevertheless joyful and compelling. Their responses will be best realized as scientists and theologians actually work together.

And so secondly, to *collaboration*: If beauty is a common value for theologians and scientists, what does collaboration look like? My research leads to scientists, philosophers, and theologians coming together to discuss their various conceptions of beauty. I do not entirely know what this collaboration looks like, simply because it has not often taken place. Nevertheless, I do have some examples. In May 2008, I participated in a meeting at Berkeley's Jesuit School of Theology, "Beauty the Color of Truth," under the guidance of the noted theological aesthetician, Alex Garcia-Rivera. It featured presentations on von Balthasar's aesthetics and justice, another on the beauty of social action through protest music (including a live performance), and one on beauty in science from the scientist-theologian, Robert J. Russell. Russell pointed to quantum mechanics (which is veiled and open and not deterministic), chaos and complexity theory (where nature is unpredictable), and evolutionary biology (life as interconnected and interdependent), as examples of beauty in science. Russell concluded that aesthetics is a major criterion of theory choice, citing the physicist Paul Davies—it is "widely believed among scientists that beauty is a reliable criterion of truth."

This conference raised some questions about collaboration. Does this work from common values require a *tertium quid*, such as the beauty produced by artists? I maintain that beauty, since it is transcendental, is bigger than art. The collaboration could start with artistic representations, but would also require something more personal about motivation and vocation and the place of beauty and joy in the work of theologians and scientists.

On the value of preserving nature, I have spoken for the past three years at California State University at Chico's "This Way to Sustainability" presenting a Christian voice, which is often unknown to the wider field of sustainability. More importantly, I have sought to listen and learn. In addition, as a Christian, I have discovered what it means join hands in collaboration on issues of sustainability. But that is just once a year. So recently, I have been working with scientists on issues of the preservation of nature through our own church's Environmental Stewardship Committee formed in 2009. I have found this collaboration both encouraging and difficult. It is much easier to work on one's own (e.g., writing a paper) than to work together. The chair of the committee, Christine Brown, a geologist and faculty member at Chico State, and I have collaborated with our committee on educating the congregation on how to preserve nature through better gardening practices, leading a class on environmental stewardship at the church, working toward the use of shade-grown and organic coffee, and reducing or eliminating the use of plastic utensils and Styrofoam in our food service. Some of these initiatives sound frankly pedestrian—and in fact are when we encourage members to walk to church—nevertheless, with fifteen hundred church members, the impact of these changes can be worthwhile and significant. (And here it is worth adding that in 2006 my denomination, the Presbyterian Church (USA), committed itself to being carbon-neutral.) One hopes that these modest steps will resonate with other congregations.

In sum, my proposal for collaboration is a human, personal, and vocational approach to theology and science. It focuses on human practice, on scientists and theologians doing their work. Is it sustainable? If it produces beauty, I am convinced that it will also sustain our interest and collaboration in the long run. It might also produce human interaction; it might involve more than talking across the room, but in working side by side. And, if nature is beautiful and beauty indeed pleases, I propose that a collaboration on these two common values represents a pleasing task in which we discover more deeply that we pursue “peculiarly beautiful” sciences. The best summary of this quest for the beautiful and its importance comes from C.S. Lewis:

We do not want merely to see beauty, though, God knows, even that is bounty enough. We want something else that can hardly be put into words—to be united with the beauty we see, to pass into it, to receive it into ourselves, to bathe in it, to become part of it.^{lvi}

That goal inspires both scientists and theologians. It remains a common task, both sustainable and beautiful.

Endnotes

ⁱ (San Francisco: Harper, 1966). This is where Barbour first presented his typology for the relationship of science and religion as conflict, independence, dialogue, and integration.

ⁱⁱ *The Glory of the Lord: A Theological Aesthetics, I: Seeing the Form*, trans. Erasmo Leiva-Merikakis, ed. Joseph Fession, S.J. and John Riches (San Francisco and New York: Ignatius and Crossroad, 1982), 56. I could write another paper—really, an apologia—on why the Reformation has anything to say about beauty. For example, the Catholic theologian Sheridan Gilley offers this rather astounding assessment: “There are three great gateways to God, of goodness, truth, and beauty, yet in the Christian West, they have been sundered by the emergence *first of a Protestant* and then a secular culture.” One wonders how different those two enemies of beauty

are in Gilley's mind. (See *The Beauty of Holiness and the Holiness of Beauty: Art, Sanctity, and the Truth of Catholicism* [San Francisco: Ignatius, 1997], 11.).

ⁱⁱⁱ In proposing a "research program," I have in mind Imre Lakatos's theory of science. See especially, his chapter, "Falsification and the Methodology of Scientific Research Programmes," in *Criticism and the Growth of Knowledge*, ed. Lakatos and Alan Musgrave (Cambridge: Cambridge University, 1970), 91-106

^{iv} This comment puts me in good company with the classical tradition through Augustine, Denys, Aristotle, Boethius, and especially Thomas Aquinas, which highlighted beauty as *consonantia* and *proportio*.

^v Trans. T. H. L. Parker, W. B. Johnston, Harold Knight, J. L. M. Haire (Edinburgh: T. & T. Clark, 1957). Hereafter "CD II/1."

^{vi} *Ibid.*, 653. We could also look at Barth's comments on Mozart, sprinkled throughout *Church Dogmatics* and collected as *Wolfgang Amadeus Mozart* (forewords by John Updike and Paul Louis Metzger [Eugene: Wipf & Stock, 2003]) as additional elaborations of his theological aesthetics.

^{vii} *Ibid.*, 650.

^{viii} *Ibid.*, 651.

^{ix} *Ibid.*, 653.

^x I was reminded of this connection by David Bentley Hart in *The Beauty of the Infinite: The Aesthetics of Christian Truth* (Grand Rapids: Eerdmans, 2003), 30.

^{xi} Von Balthasar, *Glory of the Lord, I: Seeing the Form*, 56; cf. CD II/1, 651.

^{xii} George Marsden, *Jonathan Edwards: A Life* (Yale: Yale University, 2007), 42.

^{xiii} "The Mind," 335; cited in Louis J. Mitchell, *Jonathan Edwards: On the Experience of Beauty*, Studies in Reformed Theology and History (Princeton: Princeton Theological Seminary, 2003), 4.

^{xiv} *A Jonathan Edwards Reader*, edited by John E. Smith, Harry S. Stout, and Kenneth P. Minkem (Yale: Yale University, 2003), 252.

^{xv} *Edwards Reader*, xii.

^{xvi} For example, Edwards also linked the beauty of God and the beauty of creation with the beauty of our ethical life, a theme worth developing separately, although not sufficiently related to the topic at hand.

^{xvii} Another more recent contribution comes from the contemporary English theologian and philosopher, Keith Ward, quite simply speaks of God as "absolute beauty and goodness" (*The Big Questions in Science and Religion* [West Conshohocken: Templeton, 2008] 192).

^{xviii} CD II/1, 658

^{xix} The allusion to Michael Polyani's work is intention. See *Personal Knowledge: Towards a Post-Critical Philosophy* (Chicago: University of Chicago, 1958).

^{xx} *Maxima pulchritudo humanae consistit in splendore scientiae* (*De Malo* 4.2 obj. 17).

^{xxi} Cited in Robert Augros and George Stanciu, *The New Story of Science* (1984), page 39.

^{xxii} In *Truth and Beauty: Aesthetic and Motivations in Science* (Chicago: University of Chicago, 1987), 59.

^{xxiii} *Ibid.*, 73.

^{xxiv} *Science and Method* (New York: Dover, 2003 [1914]), 22.

^{xxv} *Ibid.*

^{xxvi} Helen Dukas and Banesh Hoffmann, *Albert Einstein: Creator and Rebel* (New York: Penguin, 1972), 3.

^{xxvii} *Adventures in Ideas* (New York: Free Press, 1933), 272. Perhaps Whitehead did not know, or care to know, that a significant component of twentieth century art and aesthetics has abandoned the search for beauty. See Stolnitz, Jerome, "Beauty," *The Encyclopedia of Philosophy, Volumes 1 and 2* (New York: MacMillan and Free Press, 1967), 266. As Peter Schjeldahl wrote in July 1969 (and I read at an exhibit at the Contemporary Art Center in Cincinnati in spring 2004), "Art is not usually edible, but it is known to satisfy certain hungers. In the last century, it was thought that Beauty, that vitamin concentrate, was what we were after. More recently, Duchamp taught us that art is simply habit-forming, like salted peanuts, and that Beauty all along was the glutton's alibi.... Nothing about art has ever been honest except our hunger for it."

^{xxviii} *Process and Reality: Corrected Edition*, edited by David Ray Griffin and Donald W. Sherburne (New York: Free Press, 1978), 526 (346).

^{xxix} "Faith, Hope, and Doubt in Times of Uncertainty," 27.

^{xxx} *Ibid.*

^{xxxi} *The Berkshire Encyclopedia of Sustainability, Volume 1, The Spirit of Sustainability*, edited by Willis Jenkins and Whitney Bauman (Great Barrington, Massachusetts: Berkshire, 2010), 33.

^{xxxii} *Ibid.*, 380.

^{xxxiii} Von Balthasar, 56).

^{xxxiv} All citations are from the New Revised Standard Version.

^{xxxv} In Ted Peters, ed., *Science and Theology: The New Consonance* (Boulder: Westview, 1998), 46.

^{xxxvi} http://www.nationmaster.com/graph/tra_mot_veh-transportation-motor-vehicles.

^{xxxvii} The classic statement of this approach can be found in Brevard Childs, *Introduction to Old Testament as Scripture* (Minneapolis: Fortress, 1979).

^{xxxviii} Other sections of the Christian and Hebrew canon, biblical texts such as Ezekiel 34 speak of the connection between proper leadership and care for the earth: "As for you, my flock, thus says the Lord God: I shall judge between sheep and sheep, between rams and goats: Is it not enough for you to feed on the good pasture, but you must tread down with your feet the rest of your pasture? When you drink of clear water, must you foul the rest with your feet? And must my sheep eat what you have trodden with your feet, and drink what you have fouled with your feet?"

^{xxxix} *The Steward: A Biblical Symbol Come of Age* (Grand Rapids: Eerdmans, 1990), 82.

^{xl} Naturally, scientists can study an altered and despoiled nature, but this game ultimately is bound to end.

^{xli} See Ted Peters, ed. *Science and Theology: The New Consonance* (Boulder: Westview, 1998), chapter 14.

^{xlii} *Encyclopedia of Environmental Ethics and Philosophy*, J. Baird Callicott and Robert Frodeman, eds. (Farmington Hills, MI : Macmillan Reference USA/Gale Cengage Learning, 2009), 2:211.

^{xliii} *Encyclopedia of Environmental Ethics and Philosophy*, 2:211.

^{xliv} (Cambridge: Cambridge University, 1999).

^{xliv} (Philadelphia: Temple University, 1988).

^{xlvi} *Ibid.*, xi.

^{xlvi} *Ibid.*, 3-27.

^{xlviii} *Ibid.*, 8-12.

^{xlix} As the reader can probably discern, I am pursuing a virtue ethics approach, as opposed to a deontological or utilitarian one.

^l Religion Journal; "An Environmental Agenda for the World's Faiths," October 24, 1998.

^{li} I learned this conviction through John Templeton's argument in *The Humble Approach: Scientists Discover God* (West Conshohocken: Templeton, 1998).

^{lii} *Darwin's Cathedral: Evolution, Religion, and the Nature of Society* (Chicago and London: University of Chicago, 2002), 231.

^{liii} Within Christian theology, this beauty is also marred by fallenness and therefore ugliness, but, for reasons of space, I will merely mention this countervailing reality.

^{liv} *Scientific Faith and Religious Understanding* (Oxford: Oneworld, 2006).

^{lv} *Pascal's Fire*, 252.

^{lvi} "The Weight of Glory," in *The Weight of Glory and Other Addresses*, ed. Walter Hooper (New York: MacMillan, 1949), 16.