FINING CHARACTERISTICS of the modern research university is its emphasis on specialization. During my twenty years research group in Cambridge University’s department of applied mathematics and theoretical physics, I devoted my examples of relativistic quantum theory in seeking to understand the behavior of the smallest particles of matter. I do not regr eed, I regard it as having been part of my Christian vocation to use such talents as I had in this way. Engaging with a discourses one something about the nature of knowledge—its subtlety, its interlocking complexity, the boldness required in in that comes from attaining new understanding—insights that cannot be acquired through a more broad-brush approach t in this way must also be set within a wider context.

aware of this wider context in a rather pragmatic way when for a while it became my responsibility, through my members cience Research Council, to seek funding from the British taxpayer of some forty million pounds a year to support the w y. In discharging this task, I had to explain why an expenditure of this magnitude was needed so that we might be able to and gluons, entities utterly remote from direct apprehension in everyday life. When all was explained about possible tec ities of our community, the only final and appropriate response was that it is a human activity of intrinsic value to probe structure of the physical world in which we live. The ultimate motivation for particle physics was not to increase the grc to pursue knowledge for knowledge’s sake. I did not then use as a public argument my private conviction that this latter irding. Yet if pressed, I would have had to acknowledge that, for me, scientific exploration ultimately derives its justific:isciously entertained, to learn something of the work of the Word “by whom all things were made, and without whom w:le” (John 1:3 author’s translation). Attempting to read the book of nature is an implicit act of homage to the Creator, and rewards the scientific inquirer after all the labor of doing scientific research is akin to an act of worship. These are the rgment develops.

knowledge

iversities as being the institutionalized expressions of the value and validity of the human quest for knowledge. I believe liments of the ultimate unity of that knowledge. This aspect of their academic witness is under threat today because of th / their faculty into becoming specialists who are no more than specialists, each “knowing more and more about less and / e very name itself suggests, the true university is very much more than a loose federation of monodisciplinary research inc located side by side on the same piece of land but without lively intellectual intercourse between them. A true unive ithin a common scholarly community that makes it capable of embracing and integrating the diversity of its specialties.

CHRISTIAN INTERDISCIPLINARITY

From Christianity and the Soul of the University

John C. Polkinghorne
t of the appearances of phenomena in their play. As a scientist-theologian, I am an unapologetic believer in critical realism because we certainly do not experience the naive objectivity of unproblematic encounter with reality (quarks are infinite).

The noun “realism” is necessary because the world resists our prior expectations, and its stubborn actuality molds the shape of a truly scientific cosmology, capable of giving us understanding of the whole physical universe. On the other hand, in a critical realist view, the physical world is not just the result of the appearances of phenomena in their play. As a scientist, I am critical realism is a contentious issue. Elsewhere I have tried to make my contribution to its defense, and I do not intend to dodge saber.

One could make similar comments about our ability to understand the counterintuitive discoveries exhibit the amazing powers of the human mind. It does not seem at all plausible to suggest that they are just happy, accidental happenings. Rather, they seem to be the result of fundamental law. For example, the observation by Bernard Lonergan, calling God “the unrestricted act of understanding, the eternal rapture glimpsed in every Archimedean circle’s quest for interdisciplinary truth may be properly called “Christian,” not because of some imperialist attempt at takeover by the centripetal effects of the intrinsic interconnectedness of knowledge. The new wine of increasing understanding bursts the wineskins of disciplinary narrowness. This is as true of the physical reductionist as it is true of the physical reductionist as it is true of anyone else. Such people certainly do not derive their scientific principles from an adequate interdisciplinary, that religious insights

eral tendencies induced by specialization, which threatens the unity of the university community if searchers for truth, a professional work does not appear to be shaped by broader considerations. Those who are Jews, Christians, Muslims, unbelievers, or others have purchased its very great success in its own domain at the cost of the modesty of its ambitions. We have every reason to believe that questions both meaningful and necessary to ask that cannot be framed according to the narrow protocols of science. Their chosen confines. If we are to pursue truth and understanding without reserve—a quest quite natural and congenial to the sciences. It is not a popular word in many circles today, but it nevertheless represents an indispensable concept. Everyone, uses a worldview. Whatever people may say, they can no more do without a metaphysics than they can speak a language. Indeed, it is interesting and useful to see that the shape of this further stage in the quest for the widest possible intelligibility will be of the view that one takes of the nature of reality. In other words, the search for understanding has to move on from physics to metaphysics” is not a popular word in many circles today, but it nevertheless represents an indispensable concept. Everyone, uses a worldview. Whatever people may say, they can no more do without a metaphysics than they can speak a language. Indeed, it is interesting and useful to see that the shape of this further stage in the quest for the widest possible intelligibility will be of the view that one takes of the nature of reality. In other words, the search for understanding has to move on from physics to metaphysics.”
atomic realm and learn about its mysteries. And in fact, things are stranger than that, for it is mathematics that proves to be of the universe. Time and again it has been our experience in fundamental physics that the theories persuading us of fruitful in explaining phenomena—these are also theories whose formulation is characterized by the abstract but unmathematical beauty. It was an eight-year search for a beautiful equation that led Einstein to the discovery of the fundamental forces that these laws describe do have quite precisely the intrinsic strengths that they actually possess.

The great English theoretical physicist Paul Dirac once said that it was more important to have beauty in your equations than to have a number of venial explanations. Almost certainly the equations would have been solved using some approximation if a kind of approximation had not been made. Or maybe the experiments were wrong—we have known that to happen seemed initially to be empirical problems, there might nevertheless be some hope of a way out. But if the equations were hope at all. You did not have a chance.

One might with equal interest ask: Why is the universe so special? The universe started extremely simple. Immediately after the big bang, the universe was an almost uniform expanding ball of energy, and we cannot have a physical explanation of an anomaly in the magnetic behavior of electrons that was already known but had been an unresolved problem to be empirical. This kind of uncovenanted fruitfulness is very persuasive in showing that one is in touch with true mathematical beauty in this way as a heuristic tool, something quite strange is happening. Mathematics is an abstract beautiful patterns do not have any obviously necessary relationship to the physical world around us. In other words, the connection between the mental world of mathematical entities and the physical world of objects, a quite astonishing connection. Eugene Wigner, Dirac’s brother-in-law and himself a Nobel Laureate for physics, once described this as “the mathematics.” He said that it was a gift that we neither deserved nor understood.

Whether we deserve it, but I would certainly like to understand it. I would like to know why the internal reason of our world is so perfectly related to each other. Here is a metaquestion that arises from science, but goes beyond itself just takes advantage of this unreasonable effectiveness and, as Wigner acknowledged, it does not pretend to explain the horizon of science in a theistic direction opens up the possibility of saying more. Deep metaquestions of this kind are answers of a sort that it would be stupid not to accept immediately. This does not mean that answers cannot be given by appeal to economy, elegance, and comprehensive adequacy, as is the case with all metaphysical claims. The universe are integrated because they have a common origin in the Creator, whose mind and will is the ground of all physical world is indeed a reflection of the mind of God. The mathematical physicist is privileged to catch a faint glimpse of all things were made. Within the wider horizon of theological understanding, the success of science is no longer an inc hat success becomes intelligible to us.
ant a part in the processes of life.

Anthropic insights have generated much discussion concerning what we are to make of their surprising specificity. The initial route to the possibility that there might be a wider significance. The scientific community has an instinctive horror of the universe arising from within science itself, that there was something very particular indeed about our universe. We could no longer be certain that a cosmic specimen, of no especially interesting character.

en be enough to treat anthropic fine-tuning as a mere brute fact, simply the way things happen to be? The universe must as observers within it, but the fact that this imposes such tight constraints upon its physical fabric is surely extremely surprising. It seems incredibly intellectually lazy just to say “We’re here because we’re here” and to leave it at that. There must

ent strategies have been proposed by way of response. One suggests that there are actually many different universes, each with its own set of natural laws and circumstances, and that our observed universe is but one component in this vast and hypothetical multiverse. Our particular universe for life just by chance; it is simply the universe that happened to draw the winning ticket in the cosmic lottery of carbon property of our cosmos is thereby defused by making it just one among an almost infinite range of other universes. This is the naturalism, and although scientists have sometimes tried to trick out this proposal in speculative scientific dress, its character is its jecture. We have no adequate reason for an honest science to support so prodigal an array of many worlds with such a nature, all but one inaccessible to our investigation.

A answer to a metaquestion taking us beyond the narrow horizon of science will have to be metaphysical in its character, which supposes that there is only one universe, but it is not just “any old world,” for it is a creation that has been endowed from the very beginning with its finely tuned laws and circumstances that have enabled it to evolve conscious beings.

ese proposals have metaphysical status, how shall we choose between them? Considerations of economy and explanation of the position of many worlds only seems to do one piece of explanatory work: to assuage scientific embarrassment at the ap priori to defuse the threat of theism. Belief in God, on the other hand, does a number of pieces of explanatory work in addition to theanthropic particularity. We have already seen how belief in God can cast light on the deep intelligibility of the physical world; for understanding the widespread claims of experiences of encountering the sacred, which in one form or another have ontological foundation, modern Western atheism being notably exceptional in this regard.

metaquestions being considered here have been the basis for an interdisciplinary engagement that amounts to a revival of the scientific community has an instinctive horror of the unique, and here scientiﬁc science in trying to explain the happenings of the world, but rather with complementing science by making more implicit for granted: the form of the laws of nature. The new natural theology does not pretend to answer scientiﬁc questions; it questions that take us beyond science. I think this development represents real interdisciplinary progress in developing a new science and theology. It is a limited exercise from the point of view of religious belief. It can be welcomed by all the more as consistent with the God of Deism as it is with the Christian God, active providentially in history, whose steadfastness and earthliness is made known supremely through the life, death, and resurrection of Jesus Christ. I shall return to the issue of
corresponds to this latter judgment, so that embryo research of this kind can be licensed on a strictly assessed and case-by-case basis. What right conclusion? We shall not all be able to agree, despite the fact that we are all seeking to behave ethically in the matter. Going into the detail of the arguments, I point out that we cannot settle this matter simply by gaining more exact embryological knowledge, as such knowledge is an important input into the discussion, nor by the deliberation of focus groups, nor by the clash of views, or even by having religious people seeing if it can shout louder than the others. Many factors have to be weighed and many insights taken into account. The argument must involve all kinds of participants, including both medical scientists and religious thinkers. In a word, it must be interdisciplinarily in the search for truth and right conduct is something that universities are particularly well equipped to sponsor.

**Interdisciplinary Community of Scholars**

An interdisciplinary community of scholars that enables universities to succeed often, in my estimation, fails to include an essential department of theology. Here I refer to “theology” and not just “religious studies.” The latter, it seems to me, often tends to a logical view of what religion is about. “Muslims do it on Fridays, Jews on Saturdays, Christians on Sundays.” I do not deny that, but by itself it seems to me to be an inadequate approach to the issues raised by the widespread human encounter within religious studies brackets out the question of truth, an issue that is absolutely vital to religious believers. They are not a particular culturally formed way of life, but they also embrace that way of life because they believe it to conform to the case of the Abrahamic faiths, to the nature and will of the God made known within their traditions.

It is true that the question of theological truth is made extremely complex by the diversity of the world’s faith traditions and the claims that they make. These disagreements do not refer only to differences on rather specific matters (such as the status of the Qur’an), but also to general worldviews: Is time a linear path to be trodden or a samsaric wheel from which to seek release? Is the human heart of univer- 
ess a created thing, or recycled through a process of reincarnation, or ultimately an illusion from which there is no escape? These are certainly not just culturally diverse ways of saying the same thing. The commitment to honest inquiry that characterizes the dialogue of the sciences, and the desire to make the divine will and nature known to creatures. Above all, belief in God is the single integrating idea in human life. The fact that scientists, philosophers, and theologians can make a particularly vital contribution to the interdisciplinary life of a true university is by no means unproblematic. In the case of Christian theology, the department of theology must play a crucial role in shaping the character of the university. This is a point on which I have tried to stress the importance of the interaction between the natural sciences and theology.

Thus, the task of theological study is to discern the nature and purposes of God, and to make those insights taken into account. Temperate discussion and interfaith encounter has to take place in a setting in which all participants seek to speak humbly but firmly and respectfully to each other. In the sphere of the faiths, in my opinion, nothing is gained by attempting to construct a kind of lowest common denominator discipline seeking to respect the insights of all the first three faiths. Instead, their character, as it is in the case of the Abrahamic faiths, to the nature and will of the God made known within their traditions.

Moreover, the interdisciplinary community of scholars that enables universities to succeed often, in my estimation, fails to include an essential voice in the debate. How can we understand the relationship between theology and science without an adequate understanding of each discipline’s role in the broader context of human knowledge? This is not a question of one side supplanting the other, but of complementing each other in ways that are appropriate to the nature of their respective disciplines.

In this, the interdisciplinary community of scholars that enables universities to succeed often, in my estimation, fails to include an essential voice in the debate. How can we understand the relationship between theology and science without an adequate understanding of each discipline’s role in the broader context of human knowledge? This is not a question of one side supplanting the other, but of complementing each other in ways that are appropriate to the nature of their respective disciplines.

Therefore, by way of conclusion, try to summarize what I believe can be the Christian contribution to the soul of any true university by indicating two roles that a department of theology can play and that make its presence indispensable to the character
interdisciplinary thinking. Yet theological metaphysics has much more to offer. For instance, human beings also have access to moral knowledge of a kind that seems to me to be as certain as any sort of knowledge that we might have. The conviction that torturing children is wrong is not some strategy for successful genetic propagation, nor is it a tacitly chosen convention of society. Rather, it is a fact about the reality within which we live. What is the foundation of this fact? Where does moral knowledge come from? Or to take another example, what is the basis on which we know We must, that we owe our respect to nature, and that it is not just there to be raped of its resources, with scant attention to its integrity or to the needs of future generations? While nonbelievers may follow these kinds of moral imperatives at least as responsibly as a lain why they should do so. In The Selfish Gene—in the course of which Richard Dawkins puts forth the bleak view that gene propagation is the explanatory principle telling us what life is really all about—suddenly in the last lines of the book, he says, “We, alone on earth, can rebel against the tyranny of the selfish replicators.” He clearly and sincerely believes that we should do so, but I do not see where this commitment could find an anchorage in the worldview that has been the subject of his book. For the Christian, our moral intuitions derive their validity from being intimations of the good and perfect will of our Creator.

Is human aesthetic experience. I am sure that our encounters with beauty are not a kind of epiphenomenal froth; instead a significant dimension of reality. What is the source of the authenticity of art? It is certainly not to be explained in terms of evolutionary argument. What is the survival value of the music of J. S. Bach? None, I think, but our lives would be greatly impoverished without it. The experience of beauty as a sharing in the Creator’s joy in creation.

man encounter with the reality of the sacred. For me, no metaphysical view could begin to be adequate that did not take—I certainly wish to say—resurrection of Jesus Christ. God is the ground of all reality, the integrating factor that ties the richness of human experience. A true theory of Everything is not superstring theory, but Christian theology. Bearing with the assertion that Christian interdisciplinarity can make to the soul of the university.