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The Historical and Recent Background

By Oscar T. Walle

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I

The general title of our discussions indicates that we are interested in the search for a unifying discipline or point of view which may bridge or fuse what Carl Henry calls "the cleavage between science and religion . . . one of the defacing characteristics of our culture."[1] This author ably states the case when he says, "Evangelical theology, if it is to make a major contribution to synthesis, must propound a Christian philosophy of science tracing the implications of the sovereignty of God for all branches of science." It is the purpose of this presentation to call attention to the fact that such attempts, conscious or subconscious, have been made by Christian thinkers of all ages, but that only recently has the problem been seriously appreciated and only recently have deliberate attempts been made to formulate such a philosophy.

It would seem reasonable at the outset of an historical survey to try to formulate into a few general statements what factors ought to be included in an evangelical philosophy of science. No claim is made that the following three statements are complete or wholly correct, but they are at least an attempt to set down some of the things which ought to be included, and they are offered as a basis for discussion.

An evangelical philosophy of science must have as its basic set of axioms the Biblical teachings concerning the past, present, and future relation of God to the universe, and particularly to man, and it must concern itself with an examination of the nature of these

[1] Carl F. Henry, ed., *Contemporary Evangelical Thought* (Great Neck: Channel Press, 1957), pp. 247, 269.

axioms. Without this a priori no philosophy deserves to be called evangelical. In any scientific philosophy the relationship of the concepts of man and nature is considered, and the concept of God may be touched upon, or more often of recent years, completely ruled out as being outside the legitimate realm of consideration. An evangelical philosophy of science must, of course, include and relate all three. Ramm[2] has clearly stated some of these axioms under the heading of "The Biblical View of Nature": creationism, teleology, the providence of God, only the Creator is to be worshipped, the equating of the regularity of nature with God's constancy and of natural laws with divine laws, nature as temporal and a realm of probation and judgment. To these must be added the concept of the fall of man and its inherent effects on nature, the plan of redemption and its historical fulfillment in the person and work of Jesus Christ, and the implications for the believer of this Gospel as far as his purpose in life is concerned.

Together with an understanding and acceptance of these principles, there must be an awareness of their nature and of the manner in which they have been derived. As Mary Rose has phrased it, "the epistemology of faith turns upon the importance of the role of God, who in relation to the believer has become a teacher."[3] These precepts are God-given and are not accepted passively, or disinterestedly, or critically in the ordinary sense; but they imply a passionate and complete involvement, which will color and interpret all other principles related to them.

Secondly, an evangelical philosophy of science, it seems to me, must explore the fundamental axioms and operating conceptions of science and incorporate those which have gained universal acceptance and which do not inherently oppose or negate the axioms stated above. The notions that time and space are real and that quantifiable matter exists in time and space, while unprovable, appear to be universally accepted axioms that can be included in an evangelical framework of thought. Of a similar nature are the concepts of consistency of the universe and, with minor limi-

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[2] Bernard Ramm, *The Christian View of Science and Scripture* (Grand Rapids: Eerdmans, 1954), pp. 80—96.

[3] Mary Carman Rose, "Fideistic and Scientific Methods," *The Christian Scholar*, XLI (September 1958), 367—374.

tations, the intelligibility of the universe to man. The scientific axiom of determinism requires more careful examination and perhaps more serious modification. If it includes a denial of all possibility of "the intervention of transcendent and supernatural influences,"[4] then this phase of the axiom will need to be rejected, since the prior assumption would thereby be negated.

Among the operating conceptions of science, those of objectivity, caution, theory construction and utilization, parsimony, and reductionism (in the sense of ever more inclusive generalizations),[5] all appear to be capable of being incorporated into an evangelical thought system and to be useful and necessary to attain a carefully integrated world view. Sinclair has earlier pointed out that the last two, parsimony and reductionism, are desirable ideals for theology.[6] The concepts of amorality and skepticism are inherently in contradiction to the Biblical tenets and will need to be rejected except as applied to very limited areas.

Finally, an evangelical philosophy of science must apply these two sets of axioms and their corollaries, interrelate them, and develop them into a consistent pattern of thought and procedure which is frankly aware of the limitations of the second group and which not only tests the conclusions derived from them against the first set of axioms and its derived corollaries but also uses these conclusions to give the first axioms relevance to the physical environment and to the present culture.

For the attainment of the first part of this desideratum one might conceive of an application of the principle of reductionism on a grand scale. As Lachman describes the principle, its purpose is to "develop concise generalizations based on its data and to reduce continually the data to a minimum number of generalizations."[7] One might, then, conceive of the data of revelation as one principle and the data of empirical science as another. The generalization of a higher degree, of greatest inclusiveness, would be the successful and consistent amalgamation of the two. How-

[4] Sheldon J. Lachman, *The Foundations of Science* (Detroit: The Hamilton Press, 1956), p. 37.

[5] Ibid., pp. 58—59.

[6] John S. Sinclair, "The Scientific Method and Faith," *Journal of the American Scientific Affiliation*, IX (December 1957), 12—13.

[7] Lachman, pp. 58—59.

ever, for the Christian there will be no doubt as to which of the two sets of data will yield the most in the combination process. Even as the law of conservation of matter gracefully yielded to the more encompassing principle of the conservation of energy, so the generalizations drawn from empirical methods will also find their place among the principles which are God-given, once all of the evidence is in.

In the process of being fitted into this basic scheme, however, the empirical conclusions may well wear away encrustrations which obscure the true framework of revealed axioms much as a bolt when inserted into a painted frame bites away the paint which may have leaked into the prethreaded hole. The hole may even have been completely painted over, and this fact may originally well have confused the assembler as to the whole pattern of the machine. But if, at long last, one bolt has gone home, the presence of a second one, unsecured, may well suggest a search in the general area which leads to the discovery of the proper fitting of the parts.

This possible mutual gain and also the difficulties in attaining it are suggested by the following statement in a recent symposium of theology, psychology, and psychiatry:

> We simply take for granted the truth of revelation found in Scripture. . . . We also take for granted the essential correctness of what is held, on experimental or clinical grounds, by students of physiology, psychology, and psychiatry. If these two belief systems are both true, we ask what possibilities are conceptually available for accommodating them to one another.
>
> Many modern teachers believe that the message of Christ can be conveyed most effectively by borrowing some of the methods and terminology of modern science.
>
> To present the Christian faith in the terms of a particular cultural climate is both necessary and risky. It is necessary if the Gospel is to be understood, because the church must meet people where they are. . . . It is risky, according to the history of the Christian Church, because the process of translating the Gospel into the terms of any particular culture is so delicate that most attempts have been partial or total failures.[8]

[8] *What, Then, Is Man?* Graduate Study Number III, a Symposium of Theology, Psychology, and Psychiatry (St. Louis: Concordia, 1958), pp. 6, 13.

If this is correct, we are in our quest walking a delicate line between calculated risks and the compelling necessity placed upon us by the Gospel. To what degree historically the church has kept this desired balance is the question which we wish to explore in the remaining time.

II

Among primitive peoples such science as they knew and such religion as they practiced were one. Whether capricious or unchangeable, whether personal or impersonal, the supernatural power which they considered responsible for the operation of the universe was the power or powers whom they worshiped, tried to appease, and called their gods.[9] The mistaking of random sequences of events for cause and effect led to the practice of magic and to the development of the prestige of the witch-doctor who in a sense assumed the place of a professional man in his culture. Thorndike has demonstrated that magic and primitive science grew up side by side.[10]

Whatever the errors and evils residing in this peculiar combination of primitive science and primitive religion, it had the desirable feature of a single belief and outlook on life. Now to what degree was a similar integration accomplished in the primitive New Testament church? Raven contends that an integrated view of the universe was but poorly developed by the early Christian fathers.[11]

Clement of Alexandria, who taught clearly the all-penetrating power of God in creation and in a continuing providence, "does not develop a fuller exposition of the order of nature." If one equates critical judgment with the scientific method, he apparently did reject current fables of nature[12] and thus might be adjudged as using one facet of the scientific method. Origen developed his thinking a little farther, considering the knowledge of God as integrating all phenomena. Often he offers scientific arguments for his views. He argues, for instance, against a crassly literalistic

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[9] Edward Leroy Long, Jr., *Science and Christian Faith* (New York: Association Press [Haddam House], 1950), pp. 15—16.

[10] Lynn Thorndike, *History of Magic and Experimental Science* (London: Hutchinson, 1953), I, 1—32.

[11] Charles E. Raven, *Natural Religion and Christian Theology* (First Series: Science and Religion; London: Cambridge University Press, 1953), p. 26.

[12] Ibid., pp. 44—45.

understanding of the Genesis account of creation and refers to Adam as the representative of the whole fallen human race.[13] Here a definite tension is developed rather than that an integrated view is accomplished. Augustine, writing in the fifth century, already began to reflect the change of view which tended to reject the world of nature as being corrupt and something from which the Christian should withdraw, rather than something to study as a complementary revelation of God's creation. This is partly reflected in his *Enchiridion.* (III, IX)

> Nor should we be dismayed if Christians are ignorant about the properties and the number of the basic elements of nature, or about the motion, order and deviations of the stars, the map of the heavens . . . and about the myriad of other things which these "physicists" have come to understand, or think they have. . . . For the Christian, it is enough to believe that the cause of all created things, whether in heaven or on earth, whether visible or invisible, is nothing other than the goodness of the Creator, who is the one and true God.[14]

According to Raven, this view can be seen most clearly in Augustine's *De civitate Dei,* which eventually, in Raven's words, "reduced the meaning of Providence to the protection and guidance of the church." [15]

What are the possible reasons for this meager development of anything approaching a true, Biblical philosophy of nature by the early church fathers? No doubt the four which Raven offers have some validity. They are:

1. The church was in a world which would be attracted by the miraculous element. Hence it emphasized the supernatural rather than the natural.
2. The pagan world was so corrupt that a revulsion to nature was inevitable.
3. The persecutions tended to cause them to emphasize the eschatological rather than the temporal.

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[13] Origen, *Against Celsus,* Book IV, Ch. XL, p. 516; Origen, *De principiis,* Book IV, Ch. I, Par. 16, p. 365. Both in *The Ante-Nicene Fathers,* authorized ed. (Buffalo: The Christian Literature Publishing Co., 1885), vol. IV.

[14] Albert C. Outler, ed. *Augustine: Confessions and Enchiridion* (Philadelphia: Westminster Press, 1955), pp. 341—342.

[15] Raven, pp. 51—52.

4. The tendency to allegorize and to count nature as being only symbolical.[16]

To these might be added the great influence of Neoplatonic dualistic thought, and the fact that Platonic-Aristotelian *scientia* stressed the immanence of God exclusively, rather than His transcendence, and that this view was regarded as antithetic to the Judeo-Christian faith.[17] Whatever the reasons, it appears to be clear that in the early church the problem of relating Biblical truth to observed nature and developing a unified world picture was not considered an important one and was never seriously attacked. Rather there was a gradual tendency to proceed from an ignoring of nature to an abhorring of it and a complete withdrawal.

III

This attitude increased and gradually merged into the typical view of the Dark Ages and the medieval period. This situation has been explored so many times that a passing mention should suffice. Seeing through the eyes, first of Platonic and later of Aristotelian philosophy, the church claimed to possess a final and complete interpretation of the world. There was indeed a unified picture, but only because the possibility of conflict was neatly eliminated by the assumption that revealed truth was considered the final interpretation of natural phenomena. Experimentation and discovery were interpreted within this framework. The tendency was to restrict them to description and practical improvements rather than to develop any explanation of the universe other than the traditional one.

IV

From the fresh point of view of Reformation theology one might expect a new approach to the problem of the relationship of scientific investigation and evangelical belief, but the general verdict of historians seems to bear a negative witness. Thus James Harvey Robinson takes rather an extreme view. He says:

> In any attempt to determine the relative importance of Protestant and Catholic countries in promoting modern progress it must not be forgotten that religion is naturally conservative, and that its

[16] Ibid., pp. 48—49.

[17] Ibid., p. 26.

> avowed business has never been to forward scientific research or political reform.[18]

So also Raven, who states that under Luther's influence "there was no room for science or natural philosophy."[19] Very often cited as supporting this judgment is Luther's statement, taken from the Table Talk, that he adjudged Copernicus a fool because he was trying to turn astronomy upside down with his claim that the earth revolved rather than the sun. Bornkamm calls attention to the fact that the statement was made before any publication by Copernicus, that Reinhold, an avowed Copernican disciple, taught side by side with Luther at Wittenberg, and that Luther also readily grasped the fact that the Copernican view merely assumed a new reference frame from which to interpret the movements within the solar system.[20] This does not at all mean that Luther considered the new theory plausible. He was as much a product of his age as any man, as much so as the scientists of his day, who also opposed Copernicus, but a judgment as severe as Robinson's does not seem warranted.

Bornkamm describes and documents Luther's views on nature at some length.[21] In nature Luther heard God's voice, saw His grace and goodness. From nature he drew many illustrations and much imagery, not in the exaggerated manner of an earlier day, but with a deep gratitude and wonder at the power and wisdom of God as revealed in it. For the pseudosciences, astrology and alchemy, he had a great scorn, and in his criticism of them he defined true science as a discipline involving evidence from experience. Bornkamm judges that the new approach which Luther assumed involved two things — a respect for reality as revealed in both the major and the minor things in nature, and a "profound understanding of the infiniteness of the world . . . embedded in the boundless and all-pervading presence of God who is so distant

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[18] *The Encyclopaedia Britannica*, 11th ed. (Cambridge University Press, 1911), XXIII, 22.

[19] Raven, p. 84.

[20] Heinrich Bornkamm, *Luther's World of Thought*, trans. Martin H. Bertram (St. Louis: Concordia, 1958), p. 178.

[21] Ibid., 176—194.

and at the same time so near." It is Bornkamm's view that Melanchthon's influence caused the Lutheran Reformation to revert to a reconciliation of the Aristotelian system with the Biblical concept of the world. In his words: "His [Luther's] rich bequest to posterity had been dissipated. And when the modern view of nature insistently rapped at the church's and at theology's door for admittance, there was no one who ventured to reach for the treasure that lay at hand in Luther's views for a true approach to the modern concept." [22]

That scientific advances did grow out of the work of men who embraced the Reformation theology is not so well known because the history of science in this era is usually restricted to the area of the physical sciences. It is Raven's judgment that in these centuries, the sixteenth and seventeenth, "the scientific revolution owed more to the botanists and zoologists and to the doctors and explorers than to the astronomers" whose names always are prominent in the historical surveys.[23] He calls attention to the contributions in the form of herbals made by three Lutherans — Otto Brunfels, Jerome Bock, and Leonart Fuchs, and also to the often neglected work of Conrad Gesner, who came from the circle of the Swiss reformers at Zurich.

However significant the contributions of Protestant scientists in the Reformation and early post-Reformation era may have been, the fact remains that little progress was made toward an evangelical philosophy of science. Again there were reasons which account for this. Modern science had not truly been born. Galileo, who died in 1642, was sowing the seeds by his insistence that people believe the evidence observed by their instrumentally extended senses. Furthermore, the great intellects of the Reformation were preoccupied with other important matters. There were churches to organize, schools to supervise, catechisms to write, sermons to preach, and the development of a philosophy of science would have been a luxury even if the need for such a discipline had been recognized, which definitely was not the case.

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[22] Ibid., p. 194.

[23] Raven, pp. 80—98.

V

As one moves past the time immediately following the Reformation, one finds oneself in the middle of the scientific revolution, that movement which Butterfield judges the greatest landmark in history since the rise of Christianity.[24] Though, as in the case of all historic movements, the roots of this movement also can be traced to considerably earlier dates, it is nevertheless true that experimentation as an essential part of the scientific method, the development of many significant and necessary instruments, and above all, the direction of attention to the whole method itself, are concentrated in the 17th century.[25] This was the century of Hooke and the other microscopists, of Robert Boyle, of the last days of Galileo, of William Harvey, and of the productive years of Isaac Newton. What views leading to a satisfactory synthesis of revealed truth and scientific conclusions do we find in this highly productive era?

On the surface it would seem that at last a satisfactory synthesis had been achieved in the minds of these prominent men, who for the most part were Englishmen. Westphal remarks that the one thing that the virtuosi, who formed what was later to become the Royal Society, had in common was their Christianity; the atheist Thomas Hobbes neither applied, nor was suggested, for membership.[26] Furthermore, their works are replete with statements which make it clear that they considered the world a testimony to the intelligence, grandeur, and glory of God. Whether it was Hooke describing a flea seen under the microscope as "beautiful," or Flamsteed dedicating an astronomical calculation to the praise and glory of God, or Boyle computing the volume of the earth, all agreed that every phenomenon bore witness to God's wisdom and omnipotence. The pursuit of natural philosophy, as they called it, was an essential religious duty, a spiritual exercise, a re-

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[24] H. Butterfield, *The Origins of Modern Science 1300—1800* (London: G. Bell and Sons, Ltd., 1957), p. 190.

[25] Ibid., pp. 91—97.

[26] Richard S. Westphal, *Science and Religion in Seventeenth-Century England* (New Haven: Yale U. Press, 1958), p. 20.

ligious experience. "All truth is one, they were saying; natural philosophy does not and cannot contradict Christianity." [27]

Born and reared in a Christian society, these men had their outlook toward nature and science shaped by their Christian beliefs. Even their conviction of the rationality of nature came perhaps more from their Christian assumptions than from the results of their observations and experiments. Despite all of these assumptions and good intentions, these originally pious Christian natural philosophers were inevitably moving farther and farther from the faith of the fathers and its basic assumptions. While miracles in Biblical times were not denied, it was tacitly assumed that they ceased with the end of the apostolic era. The Protestant reaction to the Roman Church's emphasis on modern miracles and superstitions was no doubt also a reason for this view. In Westphal's judgment, "the Calvinist God in His remote majesty resembles the watchmaker God of the mechanical universe, suggesting that the Calvinist tenor of English theology helped to make the mechanical hypothesis congenial to English scientists." [28] Eventually, the mechanical idea of nature which emerged contradicted miracles and the reality of divine providence. In other words, as their Christian background and belief had partly shaped their scientific philosophy, so, without their realizing it, their scientific procedures were shaping their Christianity, subtly changing it into a completely rational religion. Apparently they were for the most part unaware of the occurrence of this change. They refused to believe that mechanism would challenge Christianity because they assumed that the machine had to have a designer.

One can trace this gradual relegation of God to a more remote and less active role in the daily operation of the universe and the affairs of men through the statements of the less important figures to the final synthesis of Newton in his laws of universal gravitation and to the much greater concessions in orthodox Christian doctrine to which he considered himself forced.[29]

While we may not agree with the very final conclusion reached

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[27] Ibid., p. 48.

[28] Ibid., p. 5.

[29] W. T. Stace, *Religion and the Modern Mind* (New York: Lippincott, 1952), pp. 86—87.

by Westphal, his description of what had happened in the 17th-century attempt to harmonize science and religion seems otherwise quite accurate:

> The virtuosi nourished the atheists within their own minds. Atheism was the vague feeling of uncertainty which their studies had raised, not uncertainty of their own convictions as much as uncertainty of the ultimate conclusions that might lie hidden in the principles of natural science. With wonderful certainty and assurance each virtuoso proved the existence of God from the creation; yet repeated too often, the assurance acquired an odor of insecurity. With Newton the insecurity was growing toward open fright. The creation pointed infallibly to the First Cause, but was Christianity itself entirely rational? Could it stand the test of reason? Did it not need to be purged before it could be safe? Newton wrote a paper to prove to himself that every doctrine of the true Christianity was rational and reasonable. Somehow it was not quite right. He revised it, wrote it again, wrote it a fourth time, and then a fifth. Still it was not quite right. Perhaps if he tried once more, he could reach the perfect statement, the exact definition which could reconcile Christianity with reason forever and restore certainty to religion. That picture of Newton in his old age writing and revising his statement on religion is the symbol of the insecurity that goaded the virtuosi as they sought a foundation for certainty. But certainty there was not to be. Following the birth of modern science the age of unshaken faith was lost to western man.[30]

If one looks for the reason for this loss of certainty, it would seem to lie in the fact that these men had not carefully examined the basic philosophic grounds from which they were proceeding. There had been the quiet assumption that whatever they found would have to glorify God, but mainly overlooked was the fact that often these findings would result in extended implications, and that once committed to accept unquestioningly the results of the scientific method, a man was really committed to a criterion of truth which implied doubt as to the authority of faith and revealed truth. Had these men examined the philosophy of the method with as careful a scrutiny as they had the objects of the method, perhaps some of them would not have gone so far afield.

[30] Westphal, pp. 219—220.

VI

But these basic examinations were not made, and as science moved through the 18th and 19th centuries, it not only continued to go farther afield but actually took over the entire field. Some of the results of the Reformation, nationalism, the rationalizing tendency within the church itself, all tended to weaken the influence and effectiveness of the church on the thinking of men, and science aggressively took over more and more of the role which heretofore the church had played. "Scientists were no longer pleading for a right to state the truth as it was gathered from observation; they were asserting a new interpretation and picture of the world." [31]

In a way this culminated in the great evolutionary controversy of the last century. This illustrated beyond a question the fact that religion and science were separated on the matter of a basic interpretation of life. The loss of the field is put into these words by Carl Henry: "Religious life no longer supplies the strategic center of our cultural pattern. In fact, today the life of religion is not regarded as an indispensable element of cultural completeness and integration. The achievements of religious faith, consequently, are dismissed as irrelevant by scientifically enlightened men." [32] The steady movement toward this view continued throughout these centuries and into our own. It resulted in the publication of the works of White [33] and Draper,[34] which picture science and theology as being inevitable and unreconcilable opponents, giving the impression that this had ever been so and that any synthesis was not only improbable but inconceivable. It appeared that the two disciplines were without means or hope of communicating with each other. For a time this problem appears not to have been too disturbing to some people until it was made real for them by the invasion of the new philosophy and methodology into the realm of psychology and the social sciences. Then the issues became

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[31] Long, p. 25.

[32] Henry, p. 248.

[33] Andrew D. White, *A History of the Warfare of Science with Theology in Christendom*, 2 vols. (New York: D. Appleton and Co., 1910).

[34] John William Draper, *History of the Conflict Between Religion and Science*, original text edited and abridged by Charles T. Sprading (New York: Vanguard Press, 1926).

reasonably clear to all thinking individuals. Raven summarizes the situation thus: "By the first decade of the present century the frontier between science and religion had become almost an iron curtain: it was hard for an honest and intelligent youngster to keep a footing in both worlds." [35]

This fundamental difference in point of view led to a clear cleavage, as Henry calls it, and for a long time it was more or less tacitly assumed in evangelical circles that it was inevitable. The rationalistic, modernistic approach which developed among the Christian thinkers did not help matters any. It gave the appearance that science had indeed clearly taken over the entire field and that Christianity for intelligent people could continue to exist only if it adopted scientific principles en masse, thereby giving up almost the entire body of uniquely Christian doctrine. Those who still felt that there was some room for faith, relegated it to the rapidly decreasing minor area where science did not as yet definitely claim knowledge, but the feeling was strong that, given a few years, these stubborn pockets of ignorance would soon be mopped up, the occupation army could be disbanded, and a peaceful and truly progressive peacetime reign of the savior science would follow.

Evangelicals were perhaps partly to blame for this feeling of complete hopelessness so far as any reasonable communication might be concerned. Disillusioned by the modernistic defection, they made no real attempt to interpret traditional doctrines in the light of new scientific knowledge. Denouncements enough there were, and these sometimes were too general. The impression in those days was often given that scientific research itself was an evil thing and that all who engaged in it were either hopelessly deluded or deliberately searching for a more rapid means to discredit Christian belief. Meanwhile Christian people were living longer, were cured of heretofore incurable diseases, and in general were enjoying far-reaching benefits which made them seriously wonder how all these denouncements could possibly be true.

VII

Actually, what in recent years made it "possible for theologians and scientists to engage in intelligent, good-humoured, and fruitful

[35] Raven, p. 10.

conversation," [36] was taking place within the practically undisputed realm of pure science itself. Einstein's presentation of his first theory of relativity, Planck's offering of the quantum theory, Heisenberg's uncertainty principle, and other mathematical considerations challenged one of the sacrosanct assumptions and conclusions of physical science — the determinate nature of the cause and effect relationship and the assumption that when one had an exact and full knowledge of all the data, he would be able to predict the outcome of any interaction.[37]

Applied science and technology were also unwittingly contributing to the growing area of doubt in the minds of scientists that they alone held the methodological key to all knowledge. With the successful application of nuclear energy in World War II came the crawling fear that all was not right. More insistent in scientific circles became the clamor that scientifically derived ethical principles did not seem to be adequate, that technology perhaps ought to be made to mark time until moral principles might catch up, so to speak. The atmosphere had changed rather completely, and it became almost respectable for scientists to welcome suggestions and conversations with theologians, not in any tolerating manner but with the sincere hope at least that they might make a contribution. To quote Raven again, "With the change in the scientific outlook from an almost arrogant confidence to an almost despairing hesitation about the possibility of reaching real knowledge there has come an opportunity for reopening the quest and a good prospect that the problems will no longer prove unanswerable." [38]

As indicated earlier, evangelical thinkers have not been idle in this improved atmosphere. From the sources available it appears that as never before the true nature and source of misunderstandings have been grasped and that there is a humble determination to get to the very bottom of the matter if that is at all possible. Such titles as "Science and Religion, Which Way *Rapprochement?*" [39]

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[36] E. L. Mascall, *Christian Theology and Natural Science* (New York: Ronald Press, 1956), p. xxi.

[37] Raven, pp. 189—192.

[38] Ibid., p. 15.

[39] John D. Garhart, *The Christian Scholar*, XLI (June 1958), 163 to 166.

"The Difficulties Which the Scientist Experiences in Accepting Theological Statements," [40] "Biological Development and the Christian Doctrine of Man" [41] display a willingness to communicate which had not existed for centuries before.

This willingness to communicate has led Christian thinkers to devote deserved attention to fundamental aspects of the problem and to basic principles rather than to become fruitlessly involved in trying to deny specific conclusions of scientific disciplines and to build up arguments against them. This approach is also shared by Christian men of science who are concerned with the accomplishment of a satisfactory synthesis. Illustrative of this is the following:

> Science and religion are fundamentally much more alike than is commonly supposed. Neither is essentially a logical structure deriving like a geometric system from underlying assumptions by syllogistic processes, though both do require rational systems of thought for their complete development and expression. Neither demands as a first step assent to prescribed formal assumptions. Of course, both do have presuppositions, and their attitudes toward them are essentially alike. In kind, these presuppositions are surprisingly similar.[42]

This stressing of the similarities between science and religion is an oft-repeated feature of recent writings. We find Mary Hesse stressing the same point. She points out that science originated as a Christian protest against Greek notions about the world, that the two disciplines have in common an interest in the natural world, a conviction that there is an inherent rationality in nature and a respect for the facts of nature.[43] Owen also points out the Christian origin of science, the fact that Christianity with its emphasis on life in this world offers an outlook which can hope to effect a reconciliation, and finally that there is a relationship to Christian doc-

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[40] Peter Alexander, *The Christian Scholar,* XXXVIII (September 1955), 206—218.

[41] Philip N. Joranson, *The Christian Scholar,* XXXVII (December 1954), 523—530.

[42] Harold K. Schilling, *Concerning the Nature of Science and Religion: A Study on Presuppositions* (Iowa City: The School of Religion at the State University of Iowa, 1958).

[43] Mary B. Hesse, *Science and the Human Imagination* (New York: Philosophical Library, 1955), p. 162.

trines in what he calls the four basic theses of the scientific tradition — empiricism, materialism, determinism, and optimism.[44]

Owen holds that the empirical approach is in essence a fulfillment of the Biblical command in Gen. 1:26 to have dominion over all the earth and that this function of modern science must be fully recognized as such by Christians, who must also insist that there are other and even more valid avenues to ultimate truth.[45] Perhaps the following statement found in the symposium on religion and psychology cited earlier is relevant here:

> The "scientific attitude" and the "religious attitude" cannot coexist with respect to the same subject matter . . . the Christian faith amounts in its cognitive aspect to an *overbelief* (i.e., "beyond" what science can show) rather than a *contradiction* (i.e., "against" what science shows).[46]

In relating materialism to the Christian faith, Owen quotes the statement of Temple that Christianity is "the most avowedly materialist of all the great religions." In other words, the Christian doctrines of the creation, the incarnation, the sacraments, and the resurrection involve a special relationship to the material which insists on its reality and importance in the divine scheme, but at the same time also insists that this is not the only or the most important phase of reality.[47]

Determinism, Owen holds, is actually one aspect of the Biblical doctrine of sin, namely, that man is not free but in bondage to sin, to a self-centeredness which pervades every aspect of his being and thinking and which could be and was removed only by Christ's sacrifice of self. He also shows the connection with the concept of optimism in the Christian belief in the divine purposefulness of historical events eventually leading to a fulfillment of the creative and redemptive acts in the establishment of the eternal kingdom of God.[48]

Whether we agree with all of these points of similarity and

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[44] D. R. G. Owen, *Scientism, Man, and Religion* (Philadelphia: Westminster Press, 1952), pp. 186—187.

[45] Ibid.

[46] *What, Then, Is Man?*, p. 298. See n. 8 above.

[47] Owen, p. 189.

[48] Ibid., pp. 189—190.

possible congruence or not, I think that we certainly would agree that this kind of talk and thought was, and would have been, impossible a generation or two ago and that it illustrates the point that an altogether different climate prevails. This by no means implies that there are no real difficulties. Far from it. But the true nature of the difficulties is being carefully and dispassionately scrutinized, and a common ground is being sought.

There are, of course, dangers and hindrances. Coulson, for instance, warns of the dangers in the arguments which aver that there is rational or scientific evidence for the existence of God inherent in Heisenberg's uncertainty principle or in the findings of parapsychology. He summarizes his views very bluntly in this way: "If we would find God in science, we must begin again." The danger, as he points out, is that the search is really for a "God of the gaps," who on the same ground will be ruled out of the picture if and when the scientific gaps in knowledge are closed.[49] Pertinent here perhaps is the comment of Weaver that "faith must not be thought of as something that bridges the gap between the end of evidence and the unknown."[50] It would seem that recent attempts to investigate by controlled experiments the efficacy of prayer in its effect on seedling growth are not destined to contribute much to the general problem.[51]

One of the serious attempts to bring scientific and theological thinking out of a state of tension is found in the concept of complementarity, suggesting that science and religion are "both deeply rooted in life, that each has something to offer that is unique and indispensable, that each at its best enriches the other, and that therefore life and truth would be incomplete and unsatisfying without the contributions of both."[52] This view of Schilling is in turn criticized by Henry C. Torrey, who insists that the Christian religion may not be placed into a complementary position, but demands for it a transcending and synthesizing function in the

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[49] C. A. Coulson, *Science and Christian Belief* (Chapel Hill: University of North Carolina Press, 1955), pp. 22—28.

[50] Henry Weaver, Jr., "A Christian Philosophy of Science," *Journal of the American Scientific Affiliation*, VI (June 1954), 4—7.

[51] "The Power of the Brief Burst," *Time*, LXIII (April 13, 1959), 95.

[52] Harold K. Schilling, "On Relating Science and Religion," *The Christian Scholar*, XLI (September 1958), 376.

search for truth: "Science is possible because the world of nature can be partially transcended and objectified. Religion is possible because of the Grace of God, who cannot be transcended and objectified, even partially." [53] That this criticism is well taken may be illustrated by the plea of a much more liberal commentator on Schilling's paper in the same issue of the *Christian Scholar,* who suggests as an extension of Schilling's views that the word "revelation" be dropped entirely or to "so define it as to permit the attitude and methodology of science to provide the approach to the propositions once considered as 'revealed.'" [54] The danger appears to lie in yielding too much in striving to reach a common ground. Were one to accept in its entirety the concept of complementarity, one would be hard put to give a consistent, Biblical interpretation of Jesus' simple but blunt words "I am the Way, the Truth, and the Life" (John 14:6). He does not say, "I am part of the truth which is to be complemented by the scientific method."

Dangerous as these attempts at reaching agreement may be, they certainly have much to commend them in preference to the solution of compartmentalism, which Long describes in this manner: "The same individual may talk of science and of religion — even in the same breath — and not face the issues of their relationship to each other or of the historical conflicts that have occurred between them." [55] Long remarks that orthodox Protestantism is prone to compartmentalization of this kind because it finds in Scripture a full and complete system of truth, and he suggests as an alternate to compartmentalism a dialectical resolution between Biblical statement and scientific fact by adopting a revised concept of Biblical authority, one that is valid in the spiritual but not the verbal realm. This solution does not seem to be acceptable within the framework of evangelical belief, but it is at least an attempt to avoid the false solution of glossing over problems or acting as if they did not

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[53] *The Christian Scholar,* pp. 398—401. See n. 52 above. In this criticism he is joined by Arnold S. Nash, who also objects to religion, science, and art being considered at the same level (p. 404 of same issue of the *Christian Scholar*).

[54] Ibid., p. 403.

[55] Edward L. Long, *Religious Beliefs of American Scientists* (Philadelphia: Westminster Press, 1952), pp. 113—122.

exist. Such unsolved problems exist despite the progress that has been made.

In "Some Thoughts on a Christian Philosophy of Science," T. H. Leith last year remarked: "Here to my mind, lies the heart of the problem of a Christian philosophy of science. Supposing I ask not just that one get some inner satisfaction from doing what he thinks is the will of God in pursuing a scientific career, but that he makes sense when he says that he sees the design of God in nature. . . . Does he really see God as good, rational, and powerful in the human sense? Does nature have implicit in its glories the hand of God for all to see, and can they see when it is pointed out to them?" [56] Leith's final answer to his own question is that the Christian, because of his unique experience, has the advantage over the non-Christian and hence sees what to the other is invisible. However, even for the Christian there are problems. One that is still plaguing for a completely satisfactory answer is the problem of fitting into the Christian doctrine of God's care and providence the observed struggle and sufferings of organisms in nature, "red in tooth and claw." Raven [57] attempts an answer by explaining that just as an adolescent must be permitted to make his own mistakes in order to attain maturity, so in order to develop man, the evolving species must submit to a type of self-sacrifice. He tries to clinch the point with the dramatic statement that Jesus Christ Himself "chose the Cross." This solution again is a far cry from an evangelic Biblical answer to a puzzling question, but it emphasizes how incomplete our theological knowledge is. If we understood the full meaning of the second half of Romans 8, we would perhaps find the answer.

Recent Christian thinkers concerned with relating Christianity and science have also realized that in the past Christian theology had a tendency to consider God and the universe in terms of the Maker and His work or of the King and His realm and thus to picture God as essentially external to the world. It has been observed that Christians might find the interpretation of nature a simpler matter if the doctrine of God's immanence were made

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[56] *Journal of the American Scientific Affiliation*, X (June 1958), 16.

[57] Raven, *Science and the Christian Man* (London: SCM Press, 1952), pp. 37—41.

more clear and a greater emphasis were placed upon the doctrine of the Holy Spirit and the creative activity of the Son, as stated in the Fourth Gospel.[58]

VIII

Thus far we have come, and looking back, one must admit that the traveling has been arduous while the distance traversed is small compared with the journey still before us. Christian thinking, preoccupied in its earliest years with thoughts of the second coming and the evils of a pagan world, did not develop a systematic doctrine of nature and yielded to the pressures to identify divine providence with the church and to withdraw from the world. Then, shackled for centuries by earlier Greek and Aristotelian concepts, it closed its eyes, thinking the problem solved. When modern science first began to appear, it at first opposed it for the wrong reasons without a realization of the real issues involved. Distracted by the internal problems of the Reformation, it, for the most part, brushed aside the slowly growing tensions and was unaware of their real significance throughout most of the critical 17th and 18th centuries. Finally aroused, in the next two centuries it lost almost all the battles because they were fought on the wrong end of the issues. After the beginning of the 20th century, when scientific philosophy had become established in its own right and the inherent weaknesses and limitations began to emerge, Christians began to deal with the real problem. Some progress has been made. The atmosphere is one which invites conversations. False starts have been identified. While Hesse admits that "there is no satisfying synthesis of science and Christianity this side of the kingdom of God," [59] we need to keep at the task of striving toward an evangelical philosophy of science.

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[58] Raven, *Nat. Rel.*, etc., pp. 19—21.

[59] Hesse, p. 162.