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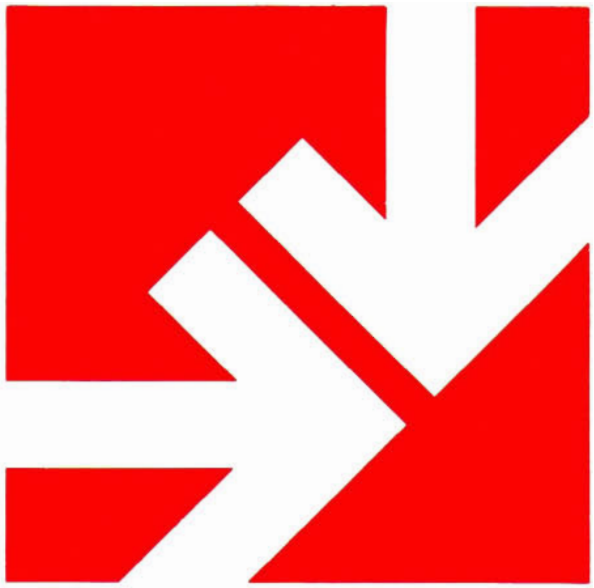

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Science vs Miracle

"The fear of the Lord is the beginning of Wisdom." Psalm 111:10

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Science, Theology and the Miraculous

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The Dilemma

From earliest Christian history—indeed, from the pages of the Bible itself—miracles have been the mainstay of Christian apologetics. Taking their cue from Jesus' own assertion that the "one sign" to His generation of the truth of His claims would be the "sign of Jonah" (Jesus' Resurrection)[1] and from Paul's catalog of witnesses to that Great Miracle apart from which Christians would be "of all men most miserable,"[2] patristic apologists such as Irenaeus, Origen, and Eusebius of Caesarea confidently argued from the historical facticity of our Lord's miracles to the veracity of His claims and the consequent moral obligation to accept them.[3] Every major apologist in Christian history from that day to the mid-18th century did likewise, whatever the particular philosophical or theological commitment he espoused. The list includes Augustine the Neo-Platonist, Aquinas the Aristotelian, Grotius the Arminian Protestant, Pascal the Catholic Jansenist, and Butler the high church Anglican.[4]

But with the onset of modern rationalism in the so-called Enlightenment of the 18th century came David Hume's attack on miracle evidence for religious truth-claims. Coupled with Immanuel Kant's critique of the Aristotelian-Thomist theistic proofs for God's existence and Gotthold Lessing's argument that historical data are never certain enough to establish eternal verities, Hume's refutation of the miraculous altered the entire course of Christian apologetics. Indeed Hume's *Enquiry* can be said without exaggeration to mark the end of the era of classical Christian apologetics.

> Hume's criticism was of course itself immediately subjected to retort and rejoinder. It was only slowly that its devastating character became clear. The end result is to be detected in . . . significant changes in apologetic emphasis and strategy. There is a movement away from presenting prophecy and miracle as external proofs, like flying buttresses, sufficient in themselves to prop up the Christian edifice.[5]

An invitational presentation at the Lee College Symposium on the Theological Implications of Science (Cleveland, Tennessee) on March 18, 1977.

A cruel dilemma thus arises for the modern Christian; far more than his predecessors living in ages of faith he needs to be able to give a reason for his Christian hope, but the chief apologetic support available from miracle evidence seems to be denied him.

Christian Response to the Dilemma and Rebuttals to the Response

The overall Christian response to Hume has been terror and flight. Apologists have generally taken their cue from 19th century Soren Kierkegaard's willingness to substitute for objective proofs of faith the believer's personal, existential experience and to claim that, in the final analysis, "truth is subjectivity." Thus miracles in the heart have replaced miracles in history in the weaponry not only of theological radicals such as Rudolph Bultmann and Neo-Orthodox advocates of the "theology of crisis," but also of evangelical pietists who sing with A. H. Ackley, "You ask me how I know He lives? He lives within my heart." Unhappily for these positions, however, the analytical philosophy of the 20th century has devastated attempts to "validate God-talk" by subjective faith experience—on the ground that all pure subjectivities are in principle untestable: their inner truth-claims, being compatible with any and every state of affairs in the external world, are epistemologically meaningless.[6] Miracles in the heart, as I have noted elsewhere, are philosophically indistinguishable from heartburn, and thus offer little in the way of a substantial apologetic to modern secularists who (by definition) have not yet experienced Jesus Christ personally.[7]

A few modern Christian apologists, recognizing the defeat inherent in a capitulation to subjectivity, have attempted to persevere along the lines of the classic appeal to prophecy and miracle. John Henry Newman in the 19th century and C. S. Lewis in the 20th are prime examples, and their positive impact should encourage the faint of heart. Lewis—and a respectable number of contemporary philosophers—have not yielded to Hume; they have offered trenchant direct attacks on the logic of his argument against the miraculous.[8] My approach has followed this same line: I have maintained (1) that when Hume assumes that there is an "unalterable experience" against miracles and concludes that miracles do not occur,[9] he is engaged in completely circular reasoning, and that only a truly inductive approach (examining without prejudice the first-hand evidence for alleged miracles) can ever answer the question as to whether they in fact occur;[10] and (2) that miracles cannot be ruled out *a priori* in our contemporary Einsteinian universe where, in the words of philosopher Max Black, the concept of cause is "a peculiar, unsystematic, and erratic notion," so that "any attempt to state a 'universal law of causation' must prove futile."[11] Indeed, the central thrust of my apologetic has been to argue for the compelling nature of Jesus' religious claims on the basis of His deity, and His deity on the basis of the miracle of His Resurrection from the dead.[12]

To this rehabilitation of the classical miracle-focused apologetic a number of objections have been raised both within and without the Christian community, and the present essay offers an opportunity to reply to them—thereby hopefully removing some misconceptions as well as strengthening a case which, I remain convinced, ultimately takes its mandate from biblical revelation itself. We shall not spend any time on the recurrent objection of theological liberals and mediating evangelicals that our case for the biblical miracles involves a naive acceptance of the historicity of the scriptural texts and a neglect of the "assured results of modern criticism." I have pointed out again and again that such "assured results" are nonexistent, that redaction criticism, documentary criticism, and historical-critical method have been weighed in the balance of secular scholarship and found wanting, and that the burden of proof remains on those who want to justify these subjectivistic methods, not on those who take historical documents at face value when their primary-source character can be established by objective determination of authorship and date.[13] We leave this historical issue—which does not really constitute an issue except for those in a modern theological backwater[14]—and proceed to those philosophical criticisms of the miracle-apologetic which seem to have the greatest force. Five such criticisms will be dealt with in the succeeding sections of this paper: (1) Miracles require law but law negates miracles; (2) the defender of miracles holds to uniform law while denying it; (3) miracles even if provable don't prove deity; (4) miracles can always be reduced to natural events; and (5) science requires us to reduce miracles to natural events.

"Miracles Require Law but Law Negates Miracles"

We are told that we cannot simply proceed to demonstrate a miraculous occurrence by marshalling historical evidence for it and then make special claims for its significance. For such an event to be significant, it must contravene natural law, so the apologist must first agree to the existence of uniform law to keep his miracle from becoming trivial; but the moment he commits himself to absolute natural law he has perforce ruled out the miracle he wants to prove! His choice (so the argument goes) is between no miracle at all or a "miracle" which contravenes no law and is therefore trivial!

In reply we must first emphasize the point made earlier: no one (believer or unbeliever) who lives in today's Einsteinian universe can benefit from the luxury of an absolute natural law. By this we do not mean to present the naive argument that the Heisenberg indeterminacy principle has "negated" Newtonian physics (quantum physics has, rather, introduced a statistical formulation of the same problems);[15] what we are saying is that "abandonment of the deterministic world-view in physics has made it more difficult to regard the existing state of science as finally legislative of what is and what is not possible in nature."[16] Though even in the days of Newton formulations of natural laws were as subject to the finite limitations of the observer as they are today, the successes of 18th century science bred overconfidence, and Hume, drinking deeply at the founts of Newton,[17] transmuted general experience of cosmic regularity (which did and does exist) into "unalterable experience" against miracles (which could not be established even in principle). Today, in the wake of the general and special theories of relativity, there is much less likelihood of scientific or philosophical claims to the "unalterability" of any physical laws.

To be sure, the absence of any meaningful concept of absolute universal law (from the human observer's standpoint) requires the redefinition of what is meant by "miracle." A miracle can no longer be understood as a "violation of natural law," for we are unable to assert that physical laws, being but the generalized product of our observations, are indeed "natural"—i.e., absolute and unalterable. R. F. Holland effectively redefines miracle as an event which is (1) empirically certain (i.e., actually having occurred), (2) conceptually impossible (i.e., inexplicable without appealing beyond our experience), and (3) religious (i.e., calling for a religious explanation).[18] Margaret Boden simplifies the definition by regarding a miracle as an event (1) inexplicable in scientific terms but (2) explicable in religious terms.[19] A miracle cannot be viewed today as a violation of cosmic or physical law; it is best regarded phenomenally as a *unique, non-analogous occurrence.* All historical events are unique, and (to paraphrase George Orwell) some events—such as Napoleon's career—are more unique than others; but all non-miraculous historical events, even the most surprising ones, are analogous to other events. The miracle is both unique and without anology (except, of course, insofar as it is analogous to a similar unexplained miraculous event, as in the case of the obvious parallel between Jesus' resurrection and Lazarus' resurrection—brought about, not so incidentally, by Jesus). When compared with non-miraculous events, the miracle offers a unique, non-analogous resistance to successful explanation by all the techniques which would readily account for it if it were other than miraculous.

To return, however, to our objector's argument. Have we not fallen into the very trap he set for us? By refusing to go along with an absolute notion of natural law, have we not rendered alleged miracles trivial, since they no longer stand out as a stark violation of cosmic regularity? Hardly, as the immediately preceding mention of historical uniqueness clearly shows. An historical event does not even need to be miraculous to be significant: significance is a function of its actual or potential impact on other events and persons (including the observer and student of the event). Thus the battle of Waterloo, though not especially dissimilar to other military engagements in certain respects, is nonetheless of great significance, at least to Englishmen and Frenchmen, because of the effect of it on their national pride and history. Napoleon's life, with the added dimension of particular historical uniqueness, has even more potential significance —not only for Frenchmen, but also for all those who are fascinated by the wonders of greatness. Ian Ramsey perceptively observed that scientific regularity tends to reduce rather than heighten significance, whereas history, with its stress on the particular and the concrete, is the stuff out of which significance is made:

> Scientific language may detail uniformities more and more comprehensively, but its very success in so doing means that its pictures are more and more outline sketches of concrete, given fact. . . . In history we are not concerned with abstract uniformities but with a *concrete* level of *personal* transactions.[20]

Whether a historical miracle will be "significant," then, will depend not on its relation to supposed natural law, but to its inherent, concrete character. If it should be an event of such a sort as to touch the wellsprings of universal human need, its significance could hardly be doubted. And even on the most minimal level, the non-analogous nature of any miracle would serve to attract attention—to raise questions and perhaps to remind the indifferent of the Socratic truth that the unexamined life is not worth living. Thus does the Scripture refer to even the least redemptive of Jesus' miracles as *semeia* ("signs")—pointers to Him and to the truth of His divine claims.

A cruel dilemma arises for the modern Christian; he needs to be able to give a reason for his Christian hope, but the chief apologetic support available from miracle evidence seems to be denied him.

"The Defender of Miracles Holds to Uniform Law While Denying It"

Recent opposition to the kind of miracle apologetic I espouse has taken the following sophisticated form in the work of philosopher Antony Flew:

> The basic propositions are: first, that the present relics of the past cannot be interpreted as historical evidence at all, unless we presume that the same fundamental regularities obtained then as still obtain today; second, that in trying as best he may to determine what actually happened the historian must employ as criteria all his present knowledge, or presumed knowledge, of what is probable or improbable, possible or impossible; and, third, that, since *miracle* has to be defined in terms of practical impossibility the application of these criteria inevitably precludes proof of a miracle.[21]

Flew's argument is really two arguments in disguise, and we shall take up each in turn. On the one hand, he seems to be saying that the proponent of miracles has no right to argue for them on the basis of a consistent underlying method of investigation (empirical method), since one cannot assume its absolute regularity and applicability and then use it to prove deviations from regularity. Once a miracle is granted, there would be no reason to consider empirical method as necessarily applicable without exception, so it could perfectly well be inapplicable to the investigation of the miracle claim in the first place!

But here a lamentable confusion is introduced between what may be termed *formal* or *heuristic* regularity and *substantive* regularity. To investigate anything of a factual nature, empirical method must be employed, and it involves such formal or heuristic assumptions as the law of non-contradiction, the inferential operations of deduction and induction, and necessary commitments to the existence of the investigator and the external world.[22] Empirical method is not "provable"; its justification is necessity—the fact that we cannot avoid it when we investigate the world. (To prove it we would have to collect and analyze data in its behalf, but we would then already be using it!) One cannot emphasize too strongly that this necessary methodology does not in any way commit one to a substantively regular universe: to a universe where events must always follow given patterns. Empirical method always investigates the world in the same way—by collecting

and analyzing data—but there is no prior commitment to what the data must turn out to be.

Thus a team of researchers could conceivably go down the rabbit hole with Alice and empirically study even Wonderland, where Alice cried, "Dear, dear! How queer everything is to-day! And yesterday things went on just as usual. I wonder if I've been changed in the night?"[23] Even a world of maximal miracle—where predictability approached zero—could be investigated by empirical method, for the consistent collection and analysis of data can occur even when the data are not themselves consistent and regular. In short, whereas irregularity in basic empirical methodology would eliminate the investigation of anything, the discovery of unique, non-analogous events by empirical method in no way vitiates its operation or renders the investigator liable to the charge of irrationality.

Flew has elsewhere expressed a more potent variation on this same argument in the following terms: the defender of the miraculous is acting arbitrarily when he claims that "it is (psychologically) impossible that these particular witnesses were lying or misinformed and hence that we must accept the fact that on this occasion the (biologically) impossible occurred."[24] The criticism here is that the advocate of miracle must commit himself to certain aspects of *substantive* regularity in order to analyze the evidence for a historical miracle. He must, for example, assume that human motivations remain the same in order to argue (as I have) that neither the Romans, the Jewish religious leaders, nor the disciples would have stolen Jesus' body in order to claim that Jesus was miraculously resurrected. But, we are told, such argumentation inconsistently uses regularity of experience where it serves a purpose and discards it at the point of the desired miracle, instead of there also insisting on a natural, ordinary explanation.

In reply we might begin by noting that this argument seems somewhat inappropriate for the rationalist to marshal. Since by definition he himself is committed to employ only "ordinary" explanations of phenomena—explanations arising from "common experience"— he is in a particularly poor position to suggest any abnormal explanations for *any* aspect of a miracle account, including the psychological motivations or responses of the persons involved. Presumably the rationalist would be the last one to appeal to a "miraculous" suspension of ordinary psychology so as to permit the Jewish religious leaders (for example) to have stolen the body of Christ when they knew it to be against their own best interests.

However, to be sure, the issue lies at a deeper level than this, and we may be able to arrive there by posing the question in the starkest terms: If we interpret or explain historical events along ordinary lines—in accord with ordinary experience—where this does not contradict the events to be interpreted, are we therefore required to conclude that unique, non-analogous events do not occur even when ordinary observational evidence exists in their behalf? Flew demands that we answer this question in the affirmative: to use common experience of regularities at all in historical interpretation, says he, precludes all possibility of discovering a miracle, even if the use of such common experience provides the very convergence of independent probabilities (as Newman would put it) for asserting that the event in question *is* a miracle.

Curiouser and curiouser, if we may again appeal to Alice! The fallacy in this reasoning arises from a lack of clear perception as to the proper interrelation of the general and the particular in historical investigation. In interpreting events, one's proper goal is to find the interpretation that best fits the facts. Ideally, then, one will set alternative explanations of an event against the facts themselves to make an intelligent choice. But which "facts" will our explanations be tested against—the immediate facts to be interpreted, or the entire, general range of human experience? Where particular experience and general experience are in accord, there is no problem; but where they conflict, the particular must be chosen over the general—for otherwise our "investigations" of historical particulars will be investigations in name only since the results will always reflect already accepted general experience. Unless we are willing to suspend "regular" explanations at the particular points where these explanations are inappropriate to the particular data, we in principle eliminate even the possibility of discovering anything new. In effect, we then limit all new (particular) knowledge to the sphere of already accepted (general) knowledge. The proper approach is just the opposite: the particular must triumph over the general, even when the general has given us immense help in understanding the particular.

In linguistics, for example, our general knowledge of how words function in cognate languages can help us immensely when we want to discover the meaning and function of a word in a new language. In the final analysis, however, only the particular usage of the word in *that* language will be decisive on the question, and where general semantics or general lexicography is in tension with particular usage, the latter must triumph over the former. But who would say that the linguist therefore has no right to use general linguistics since he ultimately is willing to subordinate it and revise it on the basis of isolated, particular usage? He would in fact be abrogating his role as linguist if he did allow the general to swallow up the particular at the point of tension between them. Likewise in the investigation of unique, non-analogous events (miracles); one has every right to employ regular experience in testing out such claims, but no right to destroy the uniqueness of the event by forcing it to conform to general regularities.

How does an historian properly determine what has occurred and interpret it? Admittedly, he takes to a study of any particular event his fund of general, "usual" experience; and he relies upon it—pragmatically, not because he has any eternal, metaphysical justification for doing so—wherever it serves a useful function. But the moment the general runs into tension with the particular, the general must yield, since (1) the historian's knowledge of the general is never complete, so he can never be sure he ought to rule out an event or an interpretation simply because it is new to him, and (2) he must always guard against obliterating the uniqueness of individual historical events by forcing them into a Procrustean bed of regular, general patterns. Only the primary-source evidence for an event can ultimately determine whether it occurred or not, and only that same evidence will establish the proper interpretation of the event.

Thus in the concrete instance of the argument for Christ's Resurrection, nothing in the primary documents forces the historian to miraculous explanations of motives or actions of the Romans, the Jewish religious leaders, or the disciples (indeed, the documents show them to have acted with exemplary normality—as typically sinful and insensitive members of a fallen race). But these same primary documents at the same time do force us to a miraculous understanding of the Resurrection, since any alternative explanation runs directly counter to all of the primary-source facts at our disposal. The documents, in short, force us to go against biological generalizations as to corpses remaining dead, but do not require us to deviate from psychological generalizations as to individual and crowd behavior. Contrary to what Flew imagines, we do not arbitrarily prefer biological miracles over psychological miracles; we accept no miracles unless the primary evidence compels us to it, and if that evidence requires psychological miracles rather than biological ones, we would go that route.[25]

French judge Jacques Batigne describes a bizzare case in which a corrupt magistrate's clerk, in the face of overwhelming scientific proof of his guilt, stubbornly maintained his innocence for almost a year, even when it was unquestionably in his best interest to come clean and he knew it. Those involved in the case were so impressed by the clerk's fine past record and sincerity that they did everything possible to believe that a "physical miracle" accounted for the evidence against him, but the facts finally brought them to the conclusion that the "miracle" was psychological: the clerk inexplicably preferred to act against his own interests.[26] The Gospel narratives give us no such situation. There a biological miracle is forced upon us, like it or not. The primary facts, and those facts alone, can arbitrate such questions—and generalizations of whatever sort must, however helpful they have been to us in reaching the point of primary investigation, bow to the facts there revealed.

"Miracles Even If Provable Don't Prove Deity"

Opponents of a miracle apologetic argue that a proven miracle—even the miracle of Christ's Resurrection—would be vacuous, for it still would not require introducing God into the picture. This viewpoint is taken not only by those opposing miracles; even a philosopher who is at pains to show their epistemological meaningfulness can assert that

> the fact that theological underpinnings are necessary to the very identification of a miracle in the first place is, of course, one reason why miracles could never be regarded as a proof of the existence of some god or God to an unbeliever who was aware of the various *different* supernatural powers which could in principle be invoked as explanations of scientifically anomalous events.[27]

Often the claim that "miracles can't prove God" is little more than a variation on Lessing's theme that "the accidental truths of history can never become the proof of necessary truths of reason." Insofar as the argument proceeds in this fashion, it can easily be disposed of, for Lessing confused what contemporary analytical philosophers term the "synthetic" (factual) and the "analytic" (purely formal) areas of assertion. Only in the analytic realm are "necessary truths" possible—truths about which one can be 100% certain; synthetic evidence, involving probabilities and plausibilities, can never rise to such a level of proof. God-statements do not fall into the analytic realm, unless by "God" we mean only a formal assertion of deductive logic or pure mathematics! If by "God" is meant an existent, factual being, then any proof of His existence or statement about Him must lie in the realm of the synthetic, i.e., it must be factual in character. In reality, then, *only* "the accidental truths" of historical experience are ever capable of becoming the proof of God's existence! Granted, the proof will never reach 100% (faith will have to jump the gap from plausibility to certainty), but such proof is the basis of all our factual decisions in life and cannot be summarily dismissed just because a vital religious question is at issue. Thus Jesus was quite willing to use His miraculous healing of the paralytic to demonstrate (not to analytic certainty but with synthetic persuasiveness) that He could forgive sins and was therefore truly divine. [28]

But how persuasive is such a miraculous demonstration, after all? If I were miraculously to grow hair on a billiard ball, would this warrant a claim on my part to deity? Hardly, and such an illustration brings us back to the point made earlier in this paper that the significance of a miracle depends in the final analysis not on the degree to which it "violates natural law" (whatever such a notion can mean, and I doubt that it can mean much in an Einsteinian age), but on the character of the miracle—specifically whether or not it speaks to universal human need.

Even an event which allows for the full range of secondary causes to explain it can have significant miraculous impact if it operates at the point of man's existential need. Holland offers the example of an express train's sudden stop just ahead of a child on the railroad track, owing to a sudden heart attack experienced by the engineer as a result of an earlier argument with a colleague. Holland perceptively comments on this "coincidence" or "contingency" miracle:

> Unlike the coincidence between the rise of the Ming dynasty and the arrival of the dynasty of Lancaster, the coincidence of the child's presence on the line with the arrival and then the stopping of the train is impressive, significant; not because it is very unusual for trains to be halted in the way this one was, but because the life of a child was imperiled and then, against expectation, preserved. The significance of some coincidences as opposed to others arises from their relation to human needs and hopes and fears, their effects for good or ill upon our lives. So we speak of our luck (fortune, fate, etc.). And the kind of thing that, outside religion, we call luck is in religious parlance the grace of God or a miracle of God. But while the reference here is the same, the meaning is different. The meaning is different in that whatever happens by God's grace or by a miracle is something for which God is thanked or thankable, something which has been or could have been prayed for, something which can be regarded with awe and be taken as a sign or made the subject of a vow (e.g., to go on a pilgrimage).[29]

When we turn to the paramount miraculous event used by Jesus and by classical Christian apologists to attest the claim that "God was in Christ, reconciling the world unto Himself"—the unique, non-analogous

event of His Resurrection—we find a maximally compelling reason to bring God into the picture, namely that this miracle deals effectively with the most fundamental area of man's universal need, the conquest of death.[30] Not just a single child is saved from a railway accident; the entire race is freed from death by Jesus' act and consequent promise that "because I live you shall live also" and "whoever lives and believes in Me shall never die."[31]

Philosopher Paul Dietl correctly observes that "to prove the existence of a being who deserves some of the predicates 'God' normally gets would be to go some ways toward proving the existence of *God*" and "when and for whom He did miracles would be evidence as to His character."[32] This is precisely why the Resurrection has led so many to affirm Jesus' deity and why His deity is the proper inferential conclusion from His Resurrection: the conquest of death for all men is the very predicate of deity that a race dead in trespasses and sins can most clearly recognize, for it meets man's most basic existential need to transcend the meaninglessness of finite existence. Not to worship One who gives you the gift of eternal life is hopelessly to misread what the gift tells you about the Giver. No more worthy candidate for deity is in principle imaginable than the One who conquers death in mankind's behalf. And it should go without saying that the Giver of such a gift has to be regarded as metaphysically positive ("God"), not negative (an archdemon) because of the positive character of His gift in relation to human need. In sum, the Resurrection does point unequivocally to the truth of Jesus' claim to Godhead, and cannot be left on the plane of an inexplicable anomaly requiring no inferential judgment.

> If someone were to acknowledge that Jesus performed all the actions attributed to him in the Gospels, but still asserted that "miracles" had not occurred since every action was explicable in terms of coincidence at the microphysical level, the implied conception of miracle would be so different from the one traditionally at issue that there would be no reason for any believer to take his objection seriously.[33]

The Gospel events, if they can in fact be shown to have occurred, require an answer to Jesus' straightforward question, "Who do you say that I am?"[34] Now, as then, only one answer will fit the facts.

And it should be noted with care that once the facticity of Christ's Resurrection has been granted, all explanations for it reduce to two: Christ's own (He rose because He was God) and any and every interpretation of the event in contradiction to this explanation. Surely it is not difficult to make a choice here, for Jesus (unlike any one else offering an explanation of the Resurrection) actually arose from the dead! His explanation has *prima facie* value as opposed to those in contradiction to it, presented as they are by persons who have not managed resurrections themselves. The very fact that a miracle is a non-analogous event offers even greater reason than ordinarily to let it interpret itself, to seek its interpretation within itself. What other event or interpreter, after all, could help us understand it? But when we do go to the One who personally experienced the Resurrection, all gratuituous interpretations of the chariot-of-the-gods, creature-from-outer-space variety evaporate in the light of His own clear affirmation of His divine character, to which the sign of Jonah unequivocally points.

"Miracles Can Always Be Reduced to Natural Events"

What of the argument that one is never required to appeal to the miraculous as a category of interpretation—that all events, however strange, can be considered as falling within natural boundaries? We have already provided a partial answer to this objection in the immediately preceding discussion, in showing (1) that even some "coincidental" events, to say nothing of unique, non-analogous events of overwhelming existential import (in particular Christ's Resurrection), cry out for interpretation as genuine miracles, and (2) that the most satisfactory interpretation of an event such as the Resurrection will be the construction placed on it by the person who himself brings the event about, even if that construction involves the category of miracle.

To be sure, we are not advocating a metaphysical program of maximum miraculization; those events lacking the credentials of miracle must rigorously be subjected to natural explanation. We agree with the Rev. Charles Kingsley who said of Newman's endorsement of the miracle story of St. Sturme and his donkey (they both fainted at "the intolerable scent" arising from the "vices and uncleansed hearts" of a band of unconverted Germans bathing in a river) that the story proved only that "St. Sturme had a nose"![35]

The question before us is really not whether it is theoretically *possible* to reduce all alleged miracles to natural events (anything is possible, it has been said, with the conceivable exception of squeezing toothpaste back into the tube!), but what one loses by forcing unique, non-analogous events into established patterns. Any apparent gain in achieving trouble-free regularity in one's universe may be more than counterbalanced by the loss of rationality in one's interpretive technique ("coincidence" enters as a magic formula to explain all). The point can perhaps be seen best by example, and several effective illustrations have been offered by recent philosophical defenders of the epistemological meaningfulness of the miracle-idea. Holland writes:

> Suppose that a horse, which has been normally born and reared, and is now deprived of all nourishment (we could be completely certain of this)—suppose that, instead of dying, this horse goes on thriving (which again is something we could be completely certain about). A series of thorough examinations reveals no abnormality in the horse's condition: its digestive system is always found to be working and to be at every moment in more or less the state it would have been in if the horse had eaten a meal an hour or two before. This is utterly inconsistent with our whole conception of the needs and capacities of horses; and because it is an impossibility in the light of our prevailing conception, my objector, in the event of its happening, would expect us to abandon the conception—as though we had to have consistency at any price. Whereas the position I advocate is that the price is too high and it would be better to be left with the inconsistency.[36]

Turning from this purely hypothetical example, Holland cites the wedding miracle at Cana[37] as another instance of an event which, if established by firsthand empirical

observation, could not be reduced to a natural phenomenon without paying "too high a price" for consistency.

> A number of people could have been quite sure, could have had the fullest empirical certainty, that a vessel contained water at one moment and wine a moment later —good wine, as St. John says—without any device having been applied to it in the intervening time. Not that this last really needs to be added; for that any device should have existed *then* at least is inconceivable, even if it might just be argued to be a conceptual possibility now. I have in mind the very remote possibility of a liquid chemically indistinguishable from say mature claret being produced by means of atomic and molecular transformations. The device would have to be conceived as something enormously complicated, requiring a large supply of power. Anything less thorough-going would hardly meet the case, for those who are alleged to have drunk the wine were practiced wine-bibbers, capable of detecting at once the difference between a true wine and a concocted variety in the "British Wine, Ruby Type" category. However, that water could conceivably have been turned into wine in the first century A.D. by means of a device is ruled out of court at once by common understanding; and though the verdict is supported by scientific knowledge, common understanding has no need of this support. . . . At one moment, let us suppose, there was water and at another moment wine, in the same vessel, although nobody had emptied out the water and poured in the wine. This is something that could conceivably have been established with certainty. What is not conceivable is that it could have been done by a device. Nor is it conceivable that there could have been a natural cause of it. For this would have had to be the natural cause of the water's becoming wine.[38]

Boden employs the parallel illustration of a genuine healing of lepers—"not merely that a man is reported to have had an ulcerous rash which disappeared virtually overnight, but to have lost all his fingers in the gradual onset of the disease over the past years and to have them fully restored."

> Could we reasonably suggest, with all our knowledge—imperfect though it may be—of the nature of tissue-growth and cell-differentiation, and of the ravages of the leprosy bacillus within the human body, that such an "anomalous" event might one day be scientifically explained? I think not: such a suggestion would be at least as blatant an act of faith as the wildest claim ever made in the name of religion. . . . It is the biochemical *facts,* which might have been different (in particular in their temporal parameters), which exclude such a phenomenon from the class of unexplained events which we may hope to explain one day. To regard such a phenomenon as in principle scientifically explicable on the basis of general remarks about falsifiability and revolution in scientific knowledge would be as perverse as to insist that we should seriously regard the circulation of the blood as a matter of mere hypotheses, one which not only *could logically* be falsified, but which *might as a matter of fact* be falsified in the future.[39]

After a close analysis of miraculous healings, Jean Lhermitte of the French Academy of Medicine declared in a similar vein: "To suppose that all extraordinary, inexplicable, or apparently supernatural healings can be adequately explained by the chance operation of psychosomatic factors is to attempt to cross an unbridgeable chasm."[40]

Speaking generally of the miraculous aspects of Jesus' ministry, philosopher Tan Tai Wei of Singapore argues:

> Assume, say, that Jesus had really predicted his own death and resurrection, claimed his miraculous feats to be deliberate so as to demonstrate his 'Sonship' to the 'Father', and that we have empirical certainty that there were a few occasions at least where such exceptional phenomena occurred in strict coincidence with such demonstrations of his divinity. Now, one such occurrence, although enough to generate wonder, might be reasonably presumed after deliberation to be an accidentally coinciding natural phenomenon. Such a conclusion, though, would already seem unduly sceptical if, say, the raising of Lazarus was the only miracle of Jesus. For Jesus had confidently ordered the removal of the grave stone, prayed aloud that God should there prove his power, and then cried 'Lazarus, come forth!' And he did. And if such feats had indeed been so frequent as to be common in the life of such a person, then even if it be conceded that the exceptions, though unrepeatable or rarely repeatable, are nevertheless merely natural phenomena, the question still left unanswerd is why the repeated coincidence of such rarity within the intentions and performances of this one man obtains. . . . At some point, abandoning scepticism would be more rational, because here some of our ordinary criteria (which are independent of religious considerations), governing the rational acceptability of purported coincidences as merely ordinary natural ones, would not be met.[41]

The more willing we are as Christians to employ the biblical and classic miracle apologetic, the more effectively we can give a reason to our dark age of secularism for the hope that is within us.

What the several thinkers we have just quoted are maintaining is that there is a point of diminishing returns when one insists on regarding all events, however empirically established as unique and non-analogous, as ordinary events. Eventually one acquires so flexible and all-inclusive a notion of "coincidence" that the concept loses all significance and functions as a kind of asylum of ignorance. At such a juncture, a new kind of faith is introduced to avoid the pressing claims of religious faith, namely the blind faith (credulity would be a better word for it) that maintains against all the evidence that a unique, non-analogous event is somehow really a regular, ordinary event after all. But when this naturalistic faith is set against supernatural faith (and they must be so opposed, since both cannot be true), former must rationally yield to the latter, since naturalistic faith flies in the face of the data, while supernatural faith is willing to go wherever the empirical evidence leads.

"Science Requires Us to Reduce Miracles to Natural Events"

Finally, we shall speak to a stronger statement of the objection just discussed. Here the critic does not merely claim that one *can* always regard alleged miracles as part of a "natural" context, but that the very character of the scientific operation *demands* that we do so. Alastair McKinnon well expresses this viewpoint in his philosophical defense of "the scientist's resolve to treat all events as subject to natural law":

> This does not mean that he insists that events should conform to some conception he already has. Nor does it

> mean that he disregards those which he has not yet been able to fit within such a conception. Rather, it means that he has resolved to view all events in this light. For him, *law* is a slogan; it is the way in which he proposes to look at the world. His acceptance of all events as expressions of natural law is the way in which he guides himself in his attempt to discover the real content of this conception. It is therefore essential that he refuse to treat any event as discrepant. This is not to say that certain scientists have not so treated events upon convenient occasion. It is only to say that when they have done so they have ceased to be scientists.[42]

McKinnon is here describing a philosophy of science which reminds one strongly of the theological presuppositionalism of such thinkers as Herman Dooyeweerd and Cornelius Van Til; science (or theology) begins with its *a priori* as to the nature of things and no factual data can ultimately upset it because the presuppositional starting point becomes the criterion for the evaluation of all the data. Elsewhere[43] I have argued that such an approach is self-defeating for theology, since it goes against the inductive character of Christian faith which must always begin with the facts purporting to constitute revelation, not with a presupposition as to their existence or as to the nature of theology. Such aprioristic "invincible ignorance" leaves Christian faith with no positive means of establishing its truth-claim over against competing religious options that contradict it and vie for men's souls.

Scientifically, even less (if possible) can be said for this viewpoint, for the object of science, is after all, to comprehend facts of the world, not to create—much less presuppose—a system into which all facts must fit willy-nilly. To look for regularities in the behavior of data is entirely legitimate, and pragmatically to expect such regularities is the quintessence of wisdom; but to insist that all data conform to ordinary expectations and fit a non-miraculous model is the antithesis of the scientific spirit. Models must arise as constructs to fit data, not serve as beds of Procrustes to force data into alien categories.

I have illustrated this truth in another context with reference to modern studies of the nature of light: today's physicist, finding empirically that light tests out in a contradictory fashion as both undulatory and corpuscular (wave-like and particle-like), is even willing at that point of necessity to shelve his standard of rational consistency for the sake of the facts and conceptualize the unit of light as a "wave-particle" (the photon).[44] If the true scientist is willing—as he should —to subordinate interpretation/explanation to the facts even if rational consistency suffers in the process, surely he cannot insist on forcing facts into the mold of substantive regularity! Regularity (like consistency) is properly employed up to the point where the data are no longer hospitable to its operation as an interpretive category: in the face of recalcitrant non-analogous uniqueness, regularity—not the facts—must yield.

We conclude with another, and no less striking illustration. One of the great scientific advances in the 19th century occurred with the development of the so-called Periodic Table of the Elements through the efforts of Mendeleev and others. The Table successfully arranged the known chemical elements by their properties —first according to atomic weights, later by atomic numbers—and its general utility was confirmed by the successful prediction that unknown elements would be found to fill in the gaps remaining in the Table. The modern Periodic Table elegantly arranges the elements in columns according to valences (combining properties based on the hypothesized structure of the element's outer electron shell). One of the Table's columns turns out to represent zero valence, or zero combining power, embracing the so-called "inert gases": helium, neon, argon, krypton, xenon, and radon. These elements offer no combining opportunities, since their outer electron rings are already complete (comprising stable electronic octets).

Early in the 1960's, however, against the force of this powerful conceptualization, inert gases were in fact combined chemically with other elements! At the Argonne National Laboratory, chemists (including representation from evangelical Wheaton College in Illinois) successfully produced xenon tetrafluoride,[45] and since that time other chemical combinations of "inert" gases have followed.[46] How was this achieved? By sophisticated atomic techniques unavailable until the 1960's? Not at all. "The tetrafluoride, which was the first to be reported, is made by heating five parts, by volume, of fluorine with one part xenon, to 400°, followed by quenching in cold water"; the resulting compound is a "white solid at room temperature."[47]

But why, then, was this insight not arrived at a half century earlier?[48]

> Since the discovery of the noble gases, at the turn of the century, the majority of chemists accepted the view that these elements were incapable of forming normal chemical compounds. Undoubtedly the early electronic theories of valence strengthened this attitude by emphasizing the significance of the stable electronic octet. Although first ionization potentials of the heavier noble gases, xenon, 12.2 e.v., and radon, 10.8 e.v., are lower than for oxidizable elements such as chlorine, 13.0 e.v., and nitrogen, 14.1 e.v., and despite the apparent small influence of the electronic octet on the valence of the heavier elements, few serious attempts to prepare true compounds of the inert gases were made.[49]

In point of fact, the neatness of the Periodic Table—the elegance of a generalization—so mesmerized investigators that they did not attempt with any real seriousness to combine the "inert" elements. Generalized explanation and regular pattern, as represented by the Periodic Table, were so comfortable that the empirical investigation of factual particulars was neglected. The particular was subordinated to the general, the irregular to the regular, the fact to the theory—and truth suffered. I should like to think (though it may not be the case) that the evangelical Christian who was a member of the team responsible for the xenon tetrafluoride breakthrough was motivated, at least in part, by his conviction that the general must always yield to the particular, even as the graves of humanity had to open up in the face of the sheer non-analogous uniqueness of Good Friday and Easter morning.

Conclusion

The conclusion of the whole matter is, then, that the more willing we are to allow empirical evidence of the unique and non-analogous to stand, modifying our general conceptions of regularity accordingly, the better scientists and philosophers we become. And the

more willing we are as Christians to employ the biblical and classic miracle apologetic, the more effectively we can give a reason to our dark age of secularism for the hope that is within us. In this matter as in all others, clear thinking does not reduce the value of Gospel proclamation; it serves rather as its handmaid.

NOTES

[1]Mt. 12:39-40; 16:4; Luke 11:29.

[2]1 Cor. 15.

[3]Joseph H. Crehan, "Apologetics," in *A Catholic Dictionary of Theology*, I (London: Thomas Nelson, 1962), 113-15; René Aigrain, "Histoire de l'apologétique," in Brilliant and Nédoncelle (eds.), *Apologétique* (Paris: Bloud and Gay, 1937), pp. 950 ff.; G. W. H. Lampe, "Miracles and Early Christian Apologetic," in C. F. D. Moule (ed.), *Miracles: Cambridge Studies in Their Philosophy and History* (London: Mowbray, 1965), pp. 203-18 (Lampe is one of the group known as "Cambridge radicals" and a contributor to Vidler's *Soundings;* his essay must be read in this light).

[4]Cf. Avery Dulles, *A History of Apologetics* (New York: Corpus; Philadelphia: Westminster Press, 1971), and Bernard Ramm, *Varieties of Christian Apologetics* (rev. ed., Grand Rapids, Mich.: Baker Book House, 1961).

[5]J. K. S. Reid, *Christian Apologetics* (London: Hodder & Stoughton, 1969), p. 156.

[6]See especially Kai Nielsen, "Can Faith Validate God-Talk?" in Marty and Peerman (eds.), *New Theology No. 1* (New York: Macmillan Paperbacks, 1964); Frederick Ferré, *Language, Logic and God* (New York: Harper, 1961), chap. viii ("The Logic of Encounter"), pp. 94-104; and C. B. Martin, "A Religious Way of Knowing," in Flew and Macintyre (eds.), *New Essays in Philosophical Theology* (London: SCM Press, 1955).

[7]Montgomery, *The Suicide of Christian Theology* (Minneapolis: Bethany, 1970), pp. 99, 149, 325 ff.

[8]C. S. Lewis, *Miracles* (New York: Macmillan, 1947); Bruce Langtry, "Hume on Testimony to the Miraculous," *Sophia* [Australia], XI/1 (April, 1972), 20-25; Paul Dietl, "On Miracles," *American Philosophical Quarterly*, V/2 (April, 1968), 130-34; etc.

[9]David Hume, *An Enquiry concerning Human Understanding*, Sect. X, Pt. 1.

[10]Montgomery, *The Shape of the Past* (2nd ed., Minneapolis: Bethany, 1975), pp. 288-93.

[11]Max Black, *Models and Metaphors* (Ithaca, N.Y.: Cornell University Press, 1962), p. 169. See Montgomery, *Where Is History Going?* (reprint ed.; Minneapolis: Bethany, 1972), p. 70-73.

[12]*Ibid.*, pp. 35ff.; *The Shape of the Past*, pp. 138-45; *Christianity for the Toughminded* (Minneapolis: Bethany, 1973), pp. 29-32.

[13]Montgomery, *Crisis in Lutheran Theology* (2nd ed.; Minneapolis:Bethany, 1973), 2 vols.; *God's Inerrant Word* (Minneapolis: Bethany, 1974).

[14]Contrast Gerhard Maier, *The End of the Historical-Critical Method*, trans. Leverenz and Norden (St. Louis: Concordia, 1977); C. S. Lewis, "Modern Theology and Biblical Criticism," in his *Christian Reflections*, ed. Walter Hooper (Grand Rapids, Mich.: Eerdmans, 1967); A. N. Sherwin-White, *Roman Society and Roman Law in the New Testament* (Oxford: Clarendon Press, 1963), especially p. 187.

[15]Cf. Ernst and Marie-Luise Keller, *Miracles in Dispute*, trans. Kohl (Philadelphia: Fortress Press, 1969), pp. 163-76.

[16]Mary Hesse, "Miracles and the Laws of Nature," in Moule (ed.), *Miracles*, p. 38. See also Werner Schaaffs, *Theology, Physics, and Miracles*, trans. Renfield (Washington, D.C.: Canon Press, 1974).

[17]See R. H. Hurlbutt III, "David Hume and Scientific Theism," *Journal of the History of Ideas*, XVII/4 (October, 1956), 486-97.

[18]R. F. Holland, "The Miraculous," *American Philosophical Quarterly*, II/1 (January, 1965), 49.

[19]Margaret A. Boden, "Miracles and Scientific Explanation," *Ratio*, XI/2 (December, 1969), 138.

[20]Ian Ramsey, "Miracles: An Exercise in Logical Mapwork," in Ian Ramsey, *et al.*, *The Miracles and the Resurrection* ("Theological Collections," 3; London: S. P. C. K., 1964), pp. 7, 13. For my (many) agreements and (some) disagreements with Ramsey's apologetic approach, see Montgomery, *The Suicide of Christian Theology*, pp. 258-60, 278-313.

[21]Antony Flew, *God & Philosophy* (London: Hutchinson, 1966), sec. 7.10, p. 146.

[22]See my *Shape of the Past*, pp. 141, 265-67, and my essay, "Clark's Philosophy of History," in Ronald H. Nash (ed.), *The Philosophy of Gordon H. Clark: A Festschrift* (Philadelphia: Presbyterian and Reformed Publishing Co., 1968), p. 388.

[23]Cf. Peter Heath (ed.), *The Philosopher's Alice* (New York: St. Martin's Press, 1974).

[24]Antony Flew, "Miracles," in Paul Edwards (ed.), *The Encyclopedia of Philosophy*, V (New York: Macmillan & The Free Press, 1967), 352.

[25]See Montgomery, *Principalities and Powers: The World of The Occult* (2d ed.; Minneapolis: Bethany, 1975).

[26]Jacques Batigne, *Assignment in Marseilles* (New York: Hart, 1974), pp. 56-70.

[27]Boden, *Ratio*, XI, 143-44.

[28]Mark 2:1-12 and parallels.

[29]Holland, *American Philosophical Quarterly*, II, 44.

[30]For an outline of the relevant evidence in support of this contention, see Montgomery, *Christianity for the Toughminded*, p. 32. Note that in appealing to man's personal need of a conquest of death we are not falling into the error of the existentialists who claim that "truth is subjectivity": we do not base our argument for the Resurrection on man's subjective need of it or on an interior experience with Christ (the facticity of the Resurrection is established solely by the historical evidence for it); rather we argue that *given* the fact of the Resurrection, man's fundamental existential need of it goes far toward establishing its significance and the necessity of attributing it to no less than divine action.

[31]John 14:19; 11:26.

[32]Dietl, *American Philosophical Quarterly*, V, 133-34.

[33]Hugo Meynell, *God and the World: The Coherence of Christian Theism* (London: S. P. C. K., 1971), p. 97.

[34]Matthew 16:15.

[35]See John Henry Newman, *Apologia pro Vita sua* (Garden City, N.Y.: Doubleday Image Books, 1956), pp. 75-77.

[36]Holland, *American Philosophical Quarterly*, II, 48.

[37]John 2:1-11.

[38]Holland, *American Philosophical Quarterly*, II, 49-50.

[39]Boden, *Ratio*, XI, 140-41.

[40]Jean Lhermitte, *Le problème des miracles* (2d ed., Paris: Gallimard, 1956), p. 120.

[41]Tan Tai Wei, "Recent Discussions on Miracles," *Sophia* [Australia], XI/3 (October, 1972), 24. Some of the author's views in the realm of comparative religions are not satisfactory, but the general philosophical thrust of his article is most helpful.

[42]Alastair McKinnon, "'Miracle' and 'Paradox,'" *American Philosophical Quarterly*, IV/4 (October, 1967), 314. Cf. also Richard Swinburne's statement (and refutation) of this viewpoint in his monograph, *The Concept of Miracle* (London: Macmillan, 1970), especially pp. 19-20.

[43]See, for example, Montgomery, "Once upon an A Priori," in E. R. Geehan (ed.), *Jerusalem and Athens: Critical Discussions on the Theology and Apologetics of Cornelius Van Til* (Philadelphia: Presbyterian and Reformed Publishing Co., 1971), pp. 380-92.

[44]Montgomery, *The Suicide of Christian Theology*, pp. 297-99. The entire essay of which this illustration forms a part ("The Theologian's Craft: A Discussion of Theory Formation and Theory Testing in Theology," pp. 267-313) is directly relevant to our present discussion.

[45]See H. H. Claassen, H. Selig, and J. G. Malm, *Journal of the American Chemical Society*, LXXXIV (1962), 3593.

[46]E.g., xenon hexafluoroplatinate: Neil Bartlett, *Proceedings of the Chemical Society* (1962), p. 218.

[47]Neil Bartlett, "New Compounds of Noble Gases: The Fluorides of Xenon and Radon," *American Scientist* (1963), p. 115.

[48]Xenon was isolated as early as 1898 (by Sir William Ramsay and Morris William Travers).

[49]Bartlett, *American Scientist* (1963), p. 114.

The Problem of Miracle in the Apologetic from History

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From at least the seventeenth century until the twentieth, a cornerstone of Christian apologetics has been what can be called "the apologetic from history." Its strategy was to argue, first, that there is sufficient historical evidence to warrant belief that certain historical events—crucially the resurrection of Jesus—have occurred; and then, that the "miraculousness" of these events supplies rational justification for believing the religious teachings of the person through whom the events took place, namely Jesus.[1] Robert Boyle, John Locke, Joseph Priestley, William Paley, Joseph Butler, and many others endorsed this as the strongest bulwark for the claim that God, through Jesus, has made available to man "revealed truth" about Himself.[2]

This mode of argument has, of course, become theologically unfashionable in the twentieth century. Karl Barth proposes that "Belief cannot argue with unbelief; it can only preach to it"; H. Richard Niebuhr urges that Revelation is "confessional" and that Protestant theology is essentially "subjective"; Bultmann and Tillich reinterpret the Christian proclamation as "existential": virtually all of the distinctively twentieth-century theological traditions converge in an antipathy toward giving arguments, especially historical arguments, for the claims or commitments of the Christian venture. Thus, in his Easter sermon for the *New York Times*, we find Martin Marty advising "otherbelievers, nonbelievers, or antibelievers":

> Yawn, please, whenever a preacher tries to "prove" the resurrection. Your boredom will help us face the issue of faith. Silly putty proofs and reasonings insult you and thoughtful Christians. They convince only the convinced. Nervous apologists have to use logic and history to prove that a tomb was empty. But Easter rises from the experience of faith—then and now.[3]

Marty's advice, one hardly needs to document, reflects the reigning theological consensus: objective historical enquiry is irrelevant to the question of the "validity" of Christianity.

There are, however, two exceptions to this rule. Among evangelical intellectuals, there is a strong remnant still maintaining that objective historical evidence does provide strong reasons for believing the theological claims of Christianity. The late C. S. Lewis endorsed this defense; and especially under the auspices of the Inter-Varsity Christian Fellowship, proponents of this position exert considerable influence on Christian college students.[4]

Second, in recent years some distinguished analytic philosophers have brought the issues concerning the relations between "faith" and "history" under critical scrutiny. They have argued that the twentieth-century attempts to insulate Christian commitment from the results of historical enquiry are, philosophically, highly objectionable. But while thus arguing that historical evidence is *revelant* to assessing Christian belief, they have gone on to claim that this relevance is negative in import: it provides reasons only for rejecting Christianity.[5]

These two exceptions to the current theological consensus supply the rationale for this paper. For it is my distinct impression that virtually all the debate among those under the evangelical umbrella has concerned itself with the *theological* challenges to the apologetic from history—with, that is, questions about whether this apologetic is *theologically* appropriate. Consequently, those apologists who argue that it *is* appropriate have ignored, or dealt most superficially with, the very different challenges posed by analytic counter-apologists.

My aim in this paper is to bring to a focus one of the spotlights of contemporary analytic criticism, and, having done this, to use it to highlight some problems in the historical argument of a leading contemporary evangelical apologist, John Warwick Montgomery. I do this, not with the intention of debunking the historical approach Montgomery employs, but rather in the hope that, by promoting further discussion, whatever is of value in this approach might prove its mettle.

Historicity and Miracle

There are two basic first-order questions at stake in the apologetic from history. The first is whether spe-

cific alleged events, such as the resurrection of Jesus, actually occurred. The second is whether such an event, *if* it occurred, would constitute a "miracle."

Each of these questions elicits a "prior question" of a methodological sort. Before we can properly ask the first question, we must answer the prior question: How should we go about determining whether such-and-such an alleged event actually occurred as alleged? That is: By what *criteria* are we to assess reports alleging that this event occurred?

And before we can properly ask the second question, we must ask the corresponding prior question: How can we defensibly determine the "miraculousness" of an event? That is: By what criteria, if any, can we defensibly determine whether an event is a "miracle"?

I shall be concerned primarily with this second "prior question."

The term "miracle" is, however, a "multiguous" one:[6] in different contexts it receives very different meanings. For our purposes here, we can sufficiently reduce this multiguity by reminding ourselves that the term must be given a particularly strong definition when it is employed in an apologetic from history. For the apologist from history, having purportedly established the *occurrence* of certain events, needs then to argue that the "*miraculous*" character of these same events gives us justification for believing that the miracle-doer is a trustworthy teacher of religious truths. The "miracle," that is, must function as "Divine attestation," a stamp of approval from God upon the teacher through whom the miracle occurs. Accordingly, apologists from history have sensibly tried to define "miracle" as—minimally—an event which is "*contra natura*," or "beyond the powers of created things." After the rise of science in the seventeenth century, this was further articulated in terms of "the laws of nature": a "miracle" was usually defined—again minimally—as "a transgression of the laws of nature."[7]

This is the definition David Hume invokes in his infamous critique of the apologetic from history.[8] It should be noted that this definition does not—countless critics of Hume notwithstanding—rule out the attempt to theologically explicate "nature's laws" as themselves the result of the continuous activity of God in nature. The bite of the definition is simply that a "miracle" is an event which rationally compels a man to admit (if he is rational): "Only God could do this thing; nature alone could not!" If the order of "nature alone" is itself explicated in terms of the continuous activity of God, of His "general concourse" with Creation, then a miracle must be defined as an event which could occur only by a special voluntary act of extraordinary power. For only so can it bear the weight of the apologetic from history. As Antony Flew puts it:

> It is only and precisely in so far as it [miracle] must involve an overriding from outside and above—an event which, so to speak, Nature by herself must be unable to contrive—that such an event would force the conclusion that a transcendent Power is revealing itself.
>
> This being so, it will get the apologist nowhere fast to urge that such a notion of the miraculous [as Hume invokes] is somehow quite unsound. He is the one who needs it, if, that is, the occurrence of a miracle is to serve as the credentials of his candidate revelation.[9]

Granting, then, the apologetic necessity[10] of defining

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"miracle" in this way, the crucial question is: By what criteria are we to judge whether or not an event is a miracle, in this full-blooded revelation-certifying sense of the term? Events do not, after all, come with attached tags telling us whether or not they are produced by special acts of Divine agency.

It seems to be rarely recognized, especially by those who still espouse the apologetic from history, that developments in science and in the philosophy of science have greatly increased both the necessity and the difficulty of answering this question.

The *necessity*: because the last few centuries of science have repeatedly turned up events which were strikingly contrary to what the theories of the time implied nature is capable of contriving. At the time they are first observed, such "anomalies" may be unique, and practically speaking unrepeatable. One thinks, to cite one instance of many, of the startling observation of a supernova in the sixteenth century. No one had seen such a thing before, no one knew whether it would be seen again, and it was contrary to the then-established theory that the celestial region is "incorruptible"—comprising entities which, by their nature, can suffer neither generation nor destruction.[11]

At least by the wisdom of hindsight, we know that it would be apologetically and scientifically disastrous to deem such anomalies as "miracles." It would be apologetically undesirable, both because it would lead to a baffling proliferation of "miracles," and because such "miracles" would be uncomfortably ephemeral—as those less prudent prophets who deemed the sixteenth-century nova a "miracle" died too soon to learn. For like this nova, the most startling anomalies have regularly led to the development of new scientific theories which adequately explain the supposed "miracle" in terms of strictly natural processes. This historical reality also shows why it would be scientifically disastrous to regard such anomalies as miracles: for it is only by so much as they are treated as the effects of not-yet-understood *natural* processes, that they prod the search for new and more adequate scientific theories.

These same historical realities which make it *necessary* for the apologist to supply the criteria in question also make it *difficult* for him to do this—more difficult now than it was, say, for Robert Boyle in the seventeenth century or William Paley in the eighteenth. In these earlier centuries, especially after the astounding successes of Newtonian dynamics, it could be maintained with some plausibility that Newton's "inductive method" yields *knowably* true and complete theories of natural processes—theories which would never have to be revised or abandoned in their proper domains. This confidence in the "absolute truth" of inductively-certified scientific theories may well be why the apologetic from history thrived as it did: for by so much as one

scientifically "knows" (or thinks one knows) what natural processes are capable of contriving, one knows also what they are incapable of. That is, an event which is contrary to what is entailed by an "infallibly known" scientific theory could cogently be argued to be a "miracle."[12]

But this epistemological confidence in "inductive method" was, we have since learned, much too optimistic. The revolutionary overthrow of Newtonian dynamical theory in the twentieth century brought forcibly home what the more perceptive methodologists had long suspected: even our *best* scientific theories are fallible, and may have to be radically revised in the light of new experimental findings. One can thus no longer appeal to "inductively established" scientific theories as providers of criteria for demarcating that of which nature is capable, from that which, because it cannot possibly be produced by natural processes, is necessarily miraculous.

In short: the apologist from history must provide anew some set of defensible criteria for determining which "anomalies" are properly to be regarded as "miracles," and which are to be regarded instead as indices of the inadequacy of our current theories of natural processes. And it is clear that the onus of providing such criteria is on the apologist, not upon his opponent: for it is the apologist who must show that it would be *unreasonable* to regard his putative miracles merely as persistent-but-temporary *natural* anomalies, akin to the nova in the sixteenth century. Indeed, the onus is even more stringent than this. The apologist must show that it would be unreasonable, in certain cases, to remain "agnostic" about the matter, i.e. to leave it as an open question.[13]

The apologist from history need not, of course, provide *infallible* criteria for determining "miraculousness"; but he at least needs to supply criteria that enable us to judge when it is *more* reasonable to regard an event as a miracle than to regard it as a persistent natural anomaly. He may choose to attempt this by speaking of the "degree of probability" that such-and-such an event is a miracle. But to *justify* this way of speaking he must do more than wave his arms in the direction of Butler's aphorism:[14] he must supply defensible quantitative (degree-yielding) criteria by which we can assign such "probabilities" to events. Unless such criteria are provided, Flew can rightly contend that the apologist is being subjective and arbitrary in his selection of certain anomalies, and not others, as instances of the miraculous. To my knowledge no such criteria have yet been provided.[15]

Natural Law and Miracle

In light of what has been argued, I do not see how one could sustain the very different moral that John Montgomery tries to extract from the history of science. Montgomery writes:

> But can modern man accept a "miracle" such as the resurrection? The answer is a surprising one: The resurrection has to be accepted [given the historical evidence] just because we are modern men, men living in the Einstein relativistic age. For us, unlike people of the Newtonian epoch, the universe is no longer a tight, safe, predictable playing field in which we know all the rules. Since Einstein no modern has had the right to rule out the possibility of events because of a prior knowledge of "natural law."[16]

Contrary to the historical generalization here implied, there simply was no "Newtonian epoch" which confidently "ruled out" miraculous events. A great many flags were flown under the Newtonian banner in the eighteenth and nineteenth centuries, and it would be foolhardy to try to summarize here the diverse and often conflicting ways that "Newtonians" have viewed natural laws and miracles.[17] But this much can be said without qualification: it is clear that for Newton himself, and for the circle of disciples who first defined what it was to be a "Newtonian," Newton's scientific proposals led to a great stress on the extent to which the "laws of nature" themselves are necessarily sustained by—rather than autonomous from—the continuous active power of God.[18] Furthermore, the confidence of these Newtonians that we could empirically *know* the true laws of nature *never* led them to skepticism about whether miracles occur. Their confidence was simply that, *insofar as* God is working by his ordinary "laws," certain sorts of events (miracles) cannot occur. This did not at all "rule out" miracles, except of course for those who made the further Deistic assumption that God must *always* act in accordance with these regular, inductively discoverable "rules," which are thus deemed irrecusable even for the Ruler. For two centuries, Newtonians consistently could—and persistently did—reject this Deistic assumption. Twentieth-century "Einsteinians" can, and do, continue to accept it—as did Einstein himself.[19]

The shift from Newtonian to Einsteinian physics has, in fact, very little philosophical relevance to the question of whether we have the right to rule out the possibility of miraculous events. This question hinges primarily upon whether one chooses to believe that the natural order is "closed" or "open," and Einstein's revolution is philosophically irrelevant to this question. It is relevant, not to the question of whether it is possible that miraculous events can *occur,* but rather to the question of whether, if they occur, we could ever *know* them to be "miraculous." And its relevance here derives not from the physical content of Einstein's theories, but simply because by overturning Newtonian dynamics, these theories brought home the epistemological fact that the best of theories are fallible, and can be asserted only provisionally, "until further notice."

The correct epistemological moral to draw from the Einsteinian revolution is thus not: "Aha, now we see that miracles are possible after all!"; rather it is: "If we can no longer claim to *know* what natural processes in themselves are capable of producing, how then can we know whether any startling anomaly is a 'miracle'?" The crucial question is thus underscored: If miracles do occur, by what criteria can we distinguish them, *qua miracles,* from those natural events that are startling only because our theories of nature (and the expectations these theories give us) are defective?

Suppose, as a "*Gedanken* experiment" to make the issue vivid, that it were established that Uri Geller *does* bend metal bars across a room, by some extraordinary power. Would this be something producible only by God's special agency, and thus count as a "miracle"? If not, by what criteria are we entitled to claim that walking on water, for example, *would* fall in the category of the miraculous, though Geller's telekinesis would not?

Montgomery, it seems, is caught by his own argument. If we do not have "the right," by "prior knowledge of natural law," to say that certain sorts of events are beyond the capabilities of natural processes, then by what right can we say, when confronted with a resurrection, that this is an event that could be produced only by a special act of Divine power?

A Circular Argument and Existential Escape

One needs only to read a bit between the lines to see how Montgomery disposes of this problem. Writing of the resurrection, which in his view provided "the final proof of the truth of Jesus' claim to deity," Montgomery says:

> . . . we must go to the One who rose to find the explanation [of his rising], and His explanation, though we may not like it, is that only God Himself, the Lord of life, could conquer the powers of death.[20]

This tactic reveals how much the logic of the apologetic from history can get twisted under the (implicit) pressure of the need for criteria for determining miraculousness. If Montgomery intends to be offering the traditional argument—and he gives no hint of an alternative to it—he has rendered it completely circular. Originally, the apologist argued that we are justified in believing Jesus' teachings *because* his authority has received Divine attestation via miracles—events which clearly could only come from God. But now, the reason offered for believing that the crucial event *is* indeed a miracle is that Jesus teaches that it is, i.e. that "only God himself" could produce it. The circle is closed.

The crucial question is thus sidestepped. For the fact that a person *has* a certain extraordinary power neither entails that he knows, nor, if he knows, that he is truthful about, the true explanation for this power. If it *were* factually established that Jeanne Dixon could prophesy, or that Uri Geller could bend spoons across a room, would we be rationally obliged to accept any explanation of their powers they proffer, simply because other humans cannot do what they can do? By the only criterion Montgomery provides, Uri would have to be accepted as an Agent of Revelation if he explains to us: "Only by the special power of God Himself, the Omnipresent One, can I bend spoons across an empty room." Once this is rejected as a specious criterion, one need only add that the fact that "we may not like" Jesus' explanation is, even for the most Calvinistic of us, not a good reason for believing the explanation to be true.

But an extensive caveat is in order here. It might be felt that my criticism of this passage is unfair, because Montgomery does not intend it as a detailed solution to the problem of miraculousness. My reply to this is twofold. First and simplest, the passage under scrutiny is the only argument Montgomery provides in *History and Christianity* for what is surely its most crucial premise: that establishing the truth of a historical claim (about Jesus' resurrection) enables one to infer the truth of a theological claim (about Jesus' divinity). For this reason alone, any circularity introduced into the argument by this passage is, I think, fair game.

The second and more disturbing reason is that the chasm thus created in the argument of *History and Christianity* is, to my knowledge, not bridged anywhere in Montgomery's writings. The caveat, of course, is that my knowledge of the Montgomery corpus is not exhaustive: since I have not read everything he has written, it is possible that in some essay I've overlooked, my misgivings have already been remedied. I do, however, know of several places where he touches on the problem I have raised. That these are not remedies is the burden of what follows.

Consider, first, a passage in his essay on "Biblical Inspiration" in which he argues that the apologetic from the resurrection has as its model Jesus' own mode of arguing from an empirically verifiable claim (that he has the power to heal the man with palsy) to a theological claim (that he has the power to forgive sins) which Montgomery admits is not, *per se,* empirically verifiable. Commenting on the Marcan account, Montgomery writes:

> Does He [our Lord] leave his forgiveness claim in the realm of the unverifiable, as have numerous religious leaders through the ages? By no means; he connects the theological claim with an empirical claim whose verifiability is not only possible but inevitable. The argument thus runs: "You do not believe that I can forgive sins. Very well; I cannot show you that directly. But if I show you that I can, by my Divine power, remedy the empirical sickness that connects with the sin problem, will you have any reason left for denying my power to work in the theological sphere?" The empirical, objective healing of the palsied man was performed that men might "know that the Son of man hath power on earth to forgive sins"—a fact that, had our Lord not coupled it with an objective test, could have been dismissed as meaningless and irrelevant to those who had doubtless heard such claims many times before. In precisely the same way does the New Testament present Christ's resurrection as the objective ground of belief in the theological significance of his death on the cross.[21]

For the sake of argument, let us grant the exegetical part of Montgomery's thesis here, and assume that Jesus and the New Testament writers did argue in this way. The critical apologetic question then is: if this mode of argument is cogent, what makes it cogent?

The crux is that if Jesus' theological claim does receive attestation from the healing of the palsied man, it does so not simply because the healing-claim is an empirically verifiable claim about an observable event. The attestation requires also that the healing-event be, knowably, a very special sort of observable event: that it have a special and peculiar property by virtue of which, if one can heal palsy, one's theological claims ought to be believed. Like the man in John 9 whose blindness He healed, one must argue that Jesus' healing deeds could be done only by a man "of God," invested with the special power of God. This, of course, is what the classical apologists from history meant by arguing that attestational events are knowably miraculous.

Obvious as this seems, it also seems that Montgomery overlooks it; for he sheds no light on how this could be plausibly argued. True, he does take the premise of Jesus' argument to assert that Jesus "can, *by [His] divine power,* remedy the empirical sickness that connects with the sin problem" (italics mine), but this is to assert precisely what has not been shown: for though the healing is an observable fact, that it is done by virtue of Divine power is not. One could "observe" whether the event occurred, but one could not observe whether it was a *miraculous* occurrence. (Nor, given this,

are we helped much by Montgomery's invocation of the idea that empirical sickness is in some way connected with the "sin problem": I should hate to think that a medical degree is any index of one's authority to forgive sins!) So apologetically, we are left quite as much in the dark about the nature of the biblical "inference" from the healing-claim to the forgiveness-claim, as we are about how Montgomery gets from the truth of a historical claim about the resurrection to the truth of a theological claim about Jesus' deity.[22]

About the only thing I can find in print that sheds any light on Montgomery's views on this, is a comment made by Montgomery's colleague Paul Feinberg, in his defense of Montgomery's philosophy of history against a critique written by Ronald Nash. Nash took Montgomery to task for claiming that historical events "carry their interpretation with them," citing as an illustration Montgomery's statement that "when the historical facts of Christ's life, death, and resurrection are allowed to speak for themselves, they lead to belief in his Deity and acceptance of his account [of the supernatural character of the resurrection]." Feinberg's reply—submitted with Montgomery's endorsement—gives a plausible defense of the view that historical facts generally provide the means for assessing rival interpretations of the events. But one wants to know how this can work when peculiarly "miraculous" interpretations are in question: how is it that "the facts themselves" justify interpreting a resurrection as a revelation-certifying miracle that rationally warrants belief in Jesus' claim to deity? On this Feinberg simply says, "significance arises from the nature of the event. Death, for instance, is significant because it is an ultimate human existential concern." He then adds in a footnote: "This is significant in light of Nash's discussion of Montgomery and the resurrection."[23]

If the footnote has any relevance to Nash's discussion at all, it must, I think, be read as suggesting the following: It is because death is "an ultimate human existential concern" that Jesus' death and resurrection, "when allowed to speak for themselves, lead to belief in his deity and acceptance of his account." Now, as a possible psychoanalytic *description* of the processes by which Christians come to hold their beliefs I will not quibble with this, since I am not a psychoanalyst. But Feinberg clearly also intends to be *endorsing* this process as exemplifying a *reasonable kind of inference*: for Nash was—as I am—asking not for a genetic explanation, but rather for a normative rationale. And as an answer to the normative question, I find Feinberg's proposal not a little odd: for the claim is then that we are somehow *justified* in our belief that the resurrection is a revelation-certifying miracle, *because* of the fact that we humans have a basic existential need to transcend death. I confess that the logic of this escapes me. But it surely will not do to argue that the process is one in which we "allow the facts to speak for themselves": to the contrary, Feinberg's proposal implies that what leads us from the historical facts to our theological interpretation are not the facts themselves, but rather the existential hang-ups (to put it with less epistemic charity) that we bring to the facts.

Fails to Grasp Ontological Basis for Problem

The biblical message is full of references to the mighty acts of God in history, and Christian apologetics has often sought to advance good reasons for believing in them. Wykstra has brought to our attention some aspects of the Humean critique of this apologetic effort, and urged on us the need to improve its cogency. It is irresponsible to go on repeating worn out arguments which seem to have been refuted without at least attempting to deal with the criticisms. His paper is somewhat limited in that it focusses narrowly on the work of one historical apologist, John W. Montgomery, leaving the impression that everyone argues exactly as he does. Had he referred to Norman L. Geisler's *Christian Apologetics* (Chapter 14) as well, he would have found, I believe, a more convincing answer to at least some of Flew's points.

In the historical apologetic based on the bodily resurrection of Jesus, it is important to observe the full *context* of the putative event. If the occurrence be wrenched from its setting like a severed toe and held up to view, of course the Christian significance of it cannot be registered. It must be an anomaly, evidence of the greater versatility of nature, or more likely a fraudulent claim. If the apologist permits this to happen, all is lost. In fact no one ever comes to believe the sign of the resurrection of Jesus in this way, as an isolated and unrelated marvel. The resurrection event is part and parcel of a much longer narrative and belongs to the broader context of man's search for meaning and for God. It occurs at the end of an extended period of Israel's experience of God at work in her life and history. Its subject is Jesus of Nazareth who announced the coming of the kingdom of God and God's future vindication of him. It stands at the beginning of a history that still goes on in which Jesus is a living reality to millions. And furthermore it has to be seen in the wider context of the issues of life and death which confront us as humans. In his allusion to the death problem, Montgomery is no doubt referring to this existential setting. The historical apologist should not allow himself to be lured into the position of defending the resurrection as a naked event. Unbelief cannot be overcome by the production of a single fact, any fact. He must be prepared to argue for the resurrection on a wider front, such that the evidence for it is part of the evidential picture, not the whole of it. Neither Flew nor Jesus' first century sceptics are going to be converted by the resurrection as a bare event, barring some rare Damascus road illumination. Several of Wykstra's points are eased by this perspective. The obvious question is not, did God or nature do it, but rather did this happen or not, are the reports true or not? It helps to explain the validity of referring to the death problem and makes the Uri Geller parallel a little less interesting or relevant.

The most serious challenge which Flew makes to the possibility of developing a historical apologetic on behalf of a miraculous event is methodological and epistemological. It is not dogmatic prejudice which excludes rational belief in miracles, he holds, but simply the principles of historical knowledge. Our knowledge of the past, Flew claims, is governed by the assumption of the complete regularity of nature we

Besides his general endorsement of Feinberg's article, I know of only one other place where Montgomery has publicly expressed this existential element in his apologetic. In a dialogue first published in *Christianity Today*, Montgomery asserts that historical enquiry can tell us that the resurrection occurred, but that it cannot tell us what the explanation of its occurrence is. When asked what good the historical information then is, Montgomery replies, "Plenty, if you have a death problem—because you are obviously going to wonder why in thunderation this happened."[24]

Like Feinberg's comments, this still leaves us pretty unclear about what Montgomery thinks the *epistemic* relevance of our "death problem" is. Though it is risky to read too much between the lines, his other comments indicate that Montgomery is offering us something like the following: "Though historical enquiry, in itself, cannot tells us what the true explanation of the resurrection is, it can tell us what Jesus *taught* its true explanation to be. And given the relevance of the event to our existential needs, we are being most reasonable when we go to the resurrected one for our explanation of it."

Its relevance to our "death problem" thus seems to have become the apologetic surrogate for the traditional claim that the resurrection is knowably miraculous, in an objective, revelation-certifying sense. In view of Montgomery's avowed empiricism, this existential turn is both surprising and—to me—dubious: for since when have our human needs—however existentially fundamental—become a defensible substitute for empirical evidence? That such needs guide the questions we find it important to ask, is reasonable. That they genetically *explain* why Christians come to hold the beliefs they hold, is not entirely implausible. But that they provide reasonable warrant for those beliefs seems, from an empiricist's point of view, indefensible.

The apologetic from history must provide anew defensible criteria for determining which "anomalies" are properly to be regarded as "miracles."

Not Simply a Theoretical Problem

Some might be tempted to dismiss the problem of supplying the criteria in question as "purely academic," even "pedantic." "After all," it might be claimed, "on a practical level there are surely few people who would, if convinced on historical grounds that the resurrection did *occur*, just shrug it off as another anomaly to be put on the scientific agenda of outstanding research problems. Even Antony Flew (it might be ventured), if convinced of the *historicity* of the resurrection, would irresistibly respond as did a centurion to a lesser wonder: 'Surely this was the Son of God!' So the problem of formulating criteria is purely 'theoretical.'"

For those who take the apologetic from history seriously, there are two reasons why this had better be

have experienced. However this is worded, the impression is unmistakable that however strong the evidence for miracles may be, it cannot be sufficiently strong to overthrow Flew's invincible naturalism. He would sooner cast doubt on the integrity of the testimony, however credible, than believe in a miracle. Surely this is an odd variety of empiricism. A miracle is an event that *can* occur, but not one that can be *known* to have occurred! Indeed, any evidence for it can be dismissed without being examined. One wonders what could *falsify* Flew's conviction about nature. Evidently nothing factual could. Surely this is invincible naturalism, fideism without faith. Is it possible that Flew's belief in the ultimacy of nature is an unfalsifiable assertion?

Let us suppose a person was eyewitness to a genuine nature-overriding miracle. On the basis of empiricism, the person would be justified, would he not, in believing the evidence of his senses even though the event lacked analogy with his ordinary experience? But if a person is justified in believing that a miracle occurred on the basis of his own experience, could he not tell it to others, and would they not be justified in believing it too, provided they judged his testimony veridical?

Flew's naturalism is so strong that he is prepared even to sacrifice his empiricism for it. I fault Wykstra for not seeing through Flew's pretension to the real nature of his hesitation which is ontological as well as epistemological.

Unlike Wykstra, I believe Hume and Flew have been answered. The principles of historical research do not require that we be imprisoned in a naturalistic framework that excludes any reference to transcendence. Just because we make use of analogy in evaluating phenomena strange to us, we are not committed to accepting Flew's *omnipotence of analogy* which postulates the unchanging homogeneity of all reality and makes our ordinary experience the final norm for understanding everything. History is the realm of the unique, and the dogma of omnipotent analogy unduly restricts historical novelty within a frozen homogeneity and represents a closed minded attitude which ill-befits the historical observer. Flew has tied himself to the familiar, and refuses to allow God's intervention in history to burst through his analogies and open up for him the new creation.

As for the objection to a selective use of the principle of analogy in assessing the probability of Jesus' rising or the Roman soldiers bungling their job, Wykstra is right to notice an improper use of probability calculus. Again, it is a matter of the entire complex of happenings which constitute the event. Christians claim that what this complex points to is a resurrection reality which bursts through the expected and the ordinary, and their perspective on the whole is as plausible as any other, and I believe much more so. A more rationally convincing account of the origin of the church and her faith without the assumption of the resurrection event has not yet been provided, and it is the subtlety of Flew's logical move that he is able to avoid having to provide one. Behind Flew's methodological hesitation there lurks dogmatic naturalism, and the apologist's task is to get beyond admiring the gracefulness of his logical footwork and expose unbelief in its lair.

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avoided. First, because by it apologetics degenerates from a concern with what is rationally believable, into a policy based on practical psychology—and by biblical standards, dubious practical psychology at that.[25] It might be true that even Antony Flew's psychological makeup is such that, if actually confronted with a resurrection, he could not help but believe it to be a revelation-certifying miracle. This would be an interesting fact about Antony Flew. But would it at all justify the claim that Flew has gotten closer to the *truth*? For the "could not help but" is in itself only a *psychological* necessity; and if it is not guided by *reasons*, it is irrational (even if Antony Flew himself couldn't resist his psyche in the crunch).

There is, secondly, an even more far-reaching issue at stake. Flew has argued, to my mind formidably, that the question of whether we are justified in asserting that the resurrection occurred, *depends upon* whether we can justify asserting that this event, *if* it occurred, would be genuinely miraculous. He builds a case that if we have no defensible criteria by which to identify such events as *miraculous*, then on the available evidence we cannot even justify claiming that our putative miracle *occurred*.[26] If Flew is correct, the apologist who allows "psychological makeup" to replace rationality on the issue of miraculousness is not even going to be able to establish the historicity of his alleged miracle. It is beyond the scope of this paper to give Flew's position an analysis as extended as it deserves. The crux of it, however, shall be unpacked by critically considering one more assertion from Montgomery.

Determining Improbabilities

Montgomery writes,

> Of course, attempts have been made to "explain" the resurrection accounts naturalistically. The German rationalist Venturini suggested that Jesus only fainted on the cross, and subsequently revived in the cool tomb. This "swoon theory" is typical of all such arguments: they are infinitely more improbable than the resurrection itself, and they fly squarely in the face of the documentary evidence. Jesus surely died on the cross, for the Roman crucifixion teams knew their business (they had enough practice). He could not possibly have rolled the heavy boulder from the door of the tomb after the crucifixion experience.[27]

What Flew's discussions force one to probe here is Montgomery's confident assertion that certain possibilities, like that envisioned by the swoon hypothesis, are "infinitely more improbable than the resurrection itself." If one reflects a bit on the empirical procedures by which we normally estimate "improbabilities," this confidence seems, at the least, to need some explanation. For surely the basis of our judgment that it is improbable that a Roman crucifixion team could err in their grisly business is this: in all other cases of which we have knowledge, they did not err. If the amount of "practice" they had is invoked, the inferential procedure remains the same: the probability that for a crucifixion team "practice makes perfect" can be estimated only on the basis of how often, in other cases of this kind, practice does indeed make perfect.

But what is the outcome when, using the same procedure, we compare this with the probability of a resurrection? One need not even resort here to the pertinent observation that trained medical doctors have, on documented occasions, mistakenly pronounced a person in a deep "swoon" to be officially dead. For setting such instances to the side, the following consideration alone is decisive: our experience concerning what happens to physical bodies following death is *much* more extensive—one might even venture "infinitely more extensive"—than is our experience of what happens when Roman soldiers attempt to do their job. Bracketing the instance in question (lest the question be begged) the normal procedure therefore yields the following verdict: granting that it is to some degree improbable that a crucifixion team would mistake a man in a swoon to be dead, it is yet more improbable, "infinitely more improbable," that a dead man would not stay dead.[28] The verdict is parallel if one examines, in the light of our normal procedures for estimating what is and is not "possible," Montgomery's categorical assertion that "Jesus could not possibly have rolled the heavy boulder from the door of the tomb after a crucifixion experience."

There is a parenthetical point whose outcome should be noted here. In an oft-quoted chapter on Hume, C. S. Lewis argues[29] (and his argument seems to have gained universal currency among evangelical apologists) that such estimates of "antecedent probabilities" are relevant only to predictive judgments about whether a future event *will* occur under specified conditions: that when the event in question is in the past and we are appraising testimony alleging to have witnessed it, this kind of probability is totally irrelevant. This "reply to Hume," which seems to have originated with Joseph Butler, should have been laid to rest long ago. It rests on a knot of confusions that were adequately untangled and criticized by John Venn over a century ago, in his classic *The Logic of Chance*.[30]

Sensitized by Flew's analysis, we thus face the following dilemma. It is only by employing normal probability-estimating procedures that the apologist can assert that certain possibilities (such as that entertained by Venturini) are to some degree improbable. But if we consistently apply these same procedures to the possibility envisioned by the resurrection hypothesis, it is rendered yet more—staggeringly more—improbable than the others. This is, I believe, packed into Flew's concise summary of the Humean critique:

> The heart of the matter is that the criteria by which we must assess historical testimony, and the general presumptions which alone make it possible for us to construe the detritus of the past as historical evidence, must inevitably rule out any possibility of establishing, upon purely historical grounds, that some genuinely miraculous event has indeed occurred.[31]

The Verifiability Principle

The contemporary philosophical challenge concerning the *historicity* of Christian miracles is thus not the old naturalistic *ontological* prejudice to the effect that "the resurrection didn't happen because such an event would violate the laws of nature, and the laws of nature, we moderns know, are inviolable:" in his frequent attacks on this, Montgomery is beating a horse that has, for analytic counter-apologists, long been buried. The Flewian challenge is rather a methodological-epistemological one to the effect that "given the

presuppositions that alone make possible the historical method (*and* given our lack of criteria for determining 'miraculousness'), one of the limitations of the method is that it is, by its nature, impotent to tell us whether alleged miracles have occurred—even if in fact they have."

Now, Montgomery has tried to rebut a position very similar to this (allegedly developed by Karl Barth), again by invoking the Verifiability Criterion. His argument is that the Verifiability Principle shows clearly that if historical method cannot provide access to the resurrection, then it is *meaningless* to say that the resurrection occurred in space-time history (i.e. as an observable event, in the past; in *Historie,* as distinct from *Geschichte*). He writes, "If Christ's resurrection really occurred in history, then historical investigation will [in principle be able to] indicate it . . ."—for to deny this is to make meaningless the sentence that the resurrection occurred.[32]

This argument rests on a misapplication of the Verifiability Principle: even if one grants the Principle (which I do not), the conclusion does not follow. For the application overlooks the relevance of a distinction that is crucial to responsible application of the principle, which its exponents always insisted on. In the verifiability literature, the distinction is usually referred to as the difference between "verifiability in principle" and "verifiability in practice." Properly understood, the Verifiability Criterion stipulates that for a sentence to be meaningful it need only be verifiable *in principle;* whether or not it is verifiable *in practice* is totally irrelevant to its meaningfulness (though it is, of course, very relevant to whether we could claim it to be knowably *true*). It is only by virtue of this crucial distinction that, for example, it was meaningful to say in 1800 that "there are craters on the other side of the moon," even though there was not then (and might never have been) any method actually available for testing the statement. For all that is required is that some method of testing the statement (e.g. space travel) be *imaginable,* regardless of how unlikely it may be that we shall ever be able, in practice, to actually carry out the method.[33]

Once this elementary distinction is understood, it is quite obvious that the assertion "the resurrection occurred in history" can be meaningful *even if* historical method is by its nature impotent to verify this claim. All that is required is that some method other than the one historians use be imaginable, that could in principle verify the statement. And it takes only a little imagination to conceive of such a method. It is surely *conceivable,* for example, that someday a time-machine will be invented that would enable us to go back to Jerusalem and check things out first hand. This *conceivability* is all that the Verifiability Criterion requires: that time-travel is not (and might never be) actually available to us is as irrelevant to the *meaningfulness* of saying "the resurrection occurred in history (though present "historical method" cannot show it)," as the fact that in 1800 space travel was not (and might never be) available to men was irrelevant to the meaningfulness of them saying "the other side of the moon has craters (though present methods cannot show it)."

Montgomery's appeal to the Verifiability Criterion is thus misguided. Even granting the Principle as our criterion of meaningfulness, Barth could consistently both deny that historical method has access to the resurrection, and yet assert that it is meaningful to say that the resurrection occurred as a real space-time event in the past. (Indeed, the verifiability criterion, properly applied, shows us precisely why this is consistent!) By the same token, Flew's willingness to say (and, *ipso facto,* think that it is meaningful to say) that the resurrection *might* have actually occurred in history, is entirely consistent with his argument that historical method, by its nature, could never give us sufficient reason to rationally believe that it has in fact occurred. The Verifiability Criterion, *contra* Montgomery, provides no escape from the Flewian dilemma stated above.

Evangelical apologists from history have not yet awakened to the contemporary analytic challenge.

The Challenge of the Contemporary Analytical Approach

The only readily apparent way for the apologist from history to avoid the horns of this dilemma, then, is to adopt a policy of systematic inconsistency with respect to the probability-estimating procedures he employs. He must employ the normal procedures when appraising the possibilities envisioned by naturalistic alternatives to the resurrection hypothesis, and abstain from these procedures when gauging the probability of the resurrection. Such a policy might not be as indefensible as it at first blush appears to be. After all, if and when God does intervene in the normal course of events, one would not expect the normal probability-estimating procedures to be appropriate.

But to actually make such a policy defensible, one would have to be able to specify in advance when it is appropriate to abstain from applying the normal procedures. To pull this off, one would have to have some means of determining what sorts of events are genuinely miraculous, and one would have to have ways of "retrodicting" those conditions under which such miracles could reasonably be expected to occur.

This, of course, brings us back to the need for criteria for determining "miraculousness" that I began with. To surrender such criteria into the hands of "practical psychology" (perhaps baptizing our own psychological responses as "recognitions of what is self-evident") would not merely make the issue of whether an event is a miracle a matter of subjectivity—although this alone should drive any serious apologist from history to existential despair. It would also threaten to preclude the possibility of establishing on tough-minded historical grounds that our putative miracle even occurred. This threat, which we are obligated to Flew for presenting so lucidly, might be dissolved by a more searching analysis: I am not claiming that Flew's arguments are irrefragable. The purpose of this paper is fulfilled if by probing Montgomery's position with some Flewian questions, I have to some extent vindicated my suggestion that evangelical apologists from

history have not yet awakened to the contemporary analytic challenge.

NOTES

[1]Here and elsewhere I intend "rational" to mean "reasonable": it is not to be identified with "logically provable" as the so-called "rationalists" (who might more perspicuously be labeled "logicalists") in their poorer moments thought. To ask whether a belief is rational is to ask whether, all things considered, there are good reasons for holding it: but "good reasons" need not, and generally do not, purport to provide demonstrative proof. Cf. S. E. Toulmin, *The Uses of Argument* (Cambridge: Cambridge University Press, 1958).

[2]I do not know to what extent this apologetic was employed before the seventeenth century. Augustine seems to invoke it ("Freedom of the Will," ch. 2, sec. 5), and the clearest prototype in the New Testament seems to be John 9:30-34. On the dangers of anachronistically reading the modern apologetic intent into the various ways the biblical writers appealed to "history," see D. Ivan Dykstra, "Historicity," re-run with corrections in *The Reformed Review* 27 (Autumn, 1974): 60-68. But Dykstra's argument suggests that the apologetic from history is a "modern phenomenon" in the sense of being peculiar to mid-twentieth-century evangelicals. If this is his intent, it is mistaken: at most this apologetic strategy is modern in the sense in which science is modern—like "modern science," it may not have taken hold until the seventeenth century.

[3]*The New York Times Magazine,* March 30, 1975, p. 87.

[4]See for example C. S. Lewis, *Miracles, A Preliminary Study* (New York: Macmillan, 1947), esp. p. 113. Other evangelical proponents include John Montgomery, Clark Pinnock, John Gerstner, Michael Green, F. F. Bruce, John Stott, R. C. Sproul, and Daniel Fuller.

[5]See especially Antony Flew's discussions in *Hume's Philosophy of Belief* (New York: Humanities Press, 1961), ch. 8; *God and Philosophy* (New York: Dell, 1967), ch. 7; and "Miracles," in P. Edwards, ed., *The Encyclopedia of Philosophy* (New York: Macmillan, 1967). See also R. Hepburn, *Christianity and Paradox* (Suffolk: C. A. Watts, 1958), ch. 6 and 7. Flew's most recent discussion is "Parapsychology Revisited: Laws, Miracles and Repeatability," in *The Humanist* XXXVI (May/June, 1976), pp. 27-30.

[6]I borrow this useful word from F. R. Tennant who coined it in his *Miracle and Its Philosophical Presuppositions* (Cambridge: Cambridge University Press, 1925).

[7]The argument assumes, of course, that God would not give such miraculous attestation to a teacher teaching theological falsehoods; to justify this assumption would require a particularly strong "natural theology" which few contemporary apologists from history (unlike their predecessors in earlier centuries) even attempt to provide.

Two important early-modern discussions of the meaning of "miracle" are found in H. G. Alexander, ed., *The Leibniz-Clarke Correspondence* (New York: Barnes and Noble, 1965), from Clarke's fourth reply on, *passim;* and in John Locke *The Reasonableness of Christianity, with a Discourse on Miracle . . .*, ed. I. T. Ramsey (Stanford: Stanford University Press, 1958).

[8]David Hume, *An Enquiry Concerning Human Understanding* (New York: Bobbs-Merrill, 1955), p. 122. Specious characterizations of Hume's epochal critique of the apologetic from history are multitudinous: the outstanding corrective is Flew's *Hume's Philosophy of Belief,* ch. 8. Flew effectively criticizes the popular reply to Hume that C. S. Lewis gives in *Miracles,* ch. 13.

[9]Flew, *God and Philosophy,* p. 148.

[10]This is a "conditional necessity": if one employs the apologetic from history, one must invoke this definition (or a closely similar one) to sustain the argument.

[11]See T. S. Kuhn, *The Copernican Revolution* (Cambridge: Harvard University Press, 1957), pp. 206-207.

[12]For a discussion of this image of Newtonian inductivism, as it was propagated by the Scottish common-sense realists, especially Thomas Reid, see Laurens L. Laudan, "Thomas Reid and the Newtonian Turn of British Methodological Thought," in R. E. Butts and J. W. Davis, eds., *The Methodological Heritage of Newton* (Oxford: Blackwell and Toronto University Press, 1969). I believe, but cannot argue here, that conservative theological seminaries continued to use Reid's texts as authoritative on "scientific method" long after virtually everyone else recognized their superficialty; and that the Princeton apologists—Charles Hodge and B. B. Warfield—presuppose Reid's image of scientific method. For a clear illustration of the way Reid's inductivism earmarked popular evangelical apologetics in the nineteenth century see G. P. M'Ilvaine, *The Evidences of Christianity* (Philadelphia: Smith, English and Company, 1861), pp. 375-391. For a pithy discussion of the development of the rival "fallibilist" trend in scientific methodology —which contrary to Montgomery's suggestions began long before the twentieth century—see L. L. Laudan, "Peirce and the Trivialization of the Self-Correcting Thesis" in R. Westfall and R. Giere, eds., *Foundations of Scientific Method: The Nineteenth Century* (Bloomington: Indiana University Press, 1973). The unexcelled analysis of the impact of images of scientific method on the history of thaumatology is Tennant's *Miracle and Its Philosophical Presuppositions.*

[13]Adolf Grünbaum has posed this challenge very succinctly in "Science and Ideology," *The Scientific Monthly* 79 (July 1954): 15-16.

[14]That "Probability is the very guide of life," from the *Analogy . . .* I have the disconcerting feeling that twentieth-century evangelical apologists are often as unreflective about invoking the concept of "probability" as their predecessors were in invoking the formulas of "demonstrative inductions" and "self-evident truths" that Reid told them were the core of empirical method. The last thirty years of epistemological research have led epistemologists to an increasingly widespread apprehension that very little light is thrown on the nature of most empirical inferences by the theory of probability; and many philosophers of science (for example Karl Popper and his followers) urge that it is indefensible to speak of scientific theories, for example, as having some estimable "probability" of being true.

[15]To my knowledge, the only sustained attempt to supply such criteria is R. G. Swinburne's *The Concept of Miracle* (New York: Macmillan, 1970). Swinburne's approach, taking a major cue from Ninian Smart's *Philosophers and Religious Truth* (SCM Press, 1962), is in my judgment inadequate; but this will have to be saved for another paper.

[16]John Montgomery, *History and Christianity,* available in either reprint or book form from, respectively, *His* reprints or Intervarsity Press(Downers Grove, Illinois, 1964, 1965). (Also reprinted with minor changes in Montgomery's *Where Is History Going?* [Grand Rapids: Zondervan, 1969].) Page references are to book form. P. 75.

[17]An appropriate entrance into contemporary historiography of "the Newtonian epoch," for those who want to move past Montgomery's simplification, is provided by P. M. Heimann, "Newtonian Natural Philosophy and the Scientific Revolution," *History of Science* 11, pp. 1-7. See also M. C. Jacob, "Early Newtonianism," *History of Science* 12, p. 142-146.

[18]The definitive work remains Helene Metzger's *Attraction universelle et religion naturelle chez quelques commentateurs anglais de Newton* (Paris: Hermann, 1938). See also E. A. Burtt, *The Metaphysical Foundations of Modern Science* (New York: Doubleday, 1925), ch. 7; and Alexandre Koyré, *Newtonian Studies* (Chicago: University of Chicago Press, 1965), ch. 1. In the primary literature, two very revealing sources are *Unpublished Scientific Papers of Isaac Newton,* eds. A. R. Hall and M. B. Hall (Cambridge: Cambridge University Press, 1962), pp. 139 ff.; and Newton's letters to Bentley, in *Isaac Newton's Letters and Papers on Natural Philosophy,* ed. I. B. Cohen (Cambridge: Harvard University Press), especially the famous third letter. As antidotes to the widespread misinterpretation of this third letter, which has it that Newton did not really believe in action-at-a-distance, this should be read in conjunction with Richard Bentley's "A Confutation of Atheism," in Newton's *Papers and Letters,* esp. pp. 240-241; E. Meyerson, *Identity and Reality* (New York: Dover, 1930), pp. 452-456; and L. Laudan, "Comments on Buchdahl," in R. Steuwer, ed., *Minnesota Studies in the Philosophy of Science,* vol. 5, pp. 230-238.

[19]Einstein expressed his conviction: "I believe in Spinoza's God who reveals Himself in the orderly harmony of what exists, not in a God who concerns himself with the fates and

actions of human beings." Schilpp, ed., *Albert Einstein: Philosopher-Scientist* (La Salle: Open Court Publishing Company, 1970), pp. 659-660. The "deistic" connotation of this passage, however, is misleading: in other contexts Einstein made clear that he did not believe in a God "behind" this orderly harmony of what exists; rather, for him (as for Spinoza) God *is* this orderly harmony.

[20]Montgomery, *History and Christianity*, p. 76.

[21]"Inspiration and Infallibility: A New Departure," in *The Suicide of Christian Theology* (Bethany Fellowship, 1971), pp. 344-345.

[22]Montgomery's more general thesis in this passage is that the Verifiability Criterion of Meaning shows how the theological statement is rendered cognitively meaningful by virtue of Jesus' connection of it with the verifiable healing-claim. At least as it stands, this thesis involves an error that the exponents of the Verifiability Principle were careful to avoid. The problem is that if any statement A has verifiable consequences, and thus is meaningful, then the logical conjunction of A-and-B will also have verifiable consequences—and thus ostensibly be meaningful—even if statement B is a blatant piece of metaphysical nonsense. For this reason, in applying the Verifiability Principle one must stipulate that statement B is *not* made meaningful by virtue of the verifiable consequences entailed by A-and-B, *unless* those consequences are in some respect different from the consequences entailed by A alone. This crucial requirement seems to me to completely undermine Montgomery's thesis that the meaningfulness of Jesus' healing-claim somehow spills over to make his forgiveness-claim meaningful: for the verifiable consequences entailed by the conjunction of these two claims are not, it seems to me, different from the verifiable consquences entailed by the healing-claim alone.

[23]Both articles are in *Christian Scholar's Review*: see Feinberg, "History: Public or Private?" (Summer, 1971), p. 329; and Nash, "The Use and Abuse of History in Christian Apologetics" (Spring, 1971), p. 221.

[24]"Faith, History, and the Resurrection," *Christianity Today* 9 (March 26, 1965): 4, reprinted as an Appendix to *History and Christianity*, p. 91. This existential appeal strongly resembles one strand of Wolfhart Pannenberg's position, which is summarized and criticized by Herbert Burhenn in "Pannenberg's Argument for the Historicity of the Resurrection," *Journal for the American Academy of Religion* 40 (1972): 377.

[25]Cf. Luke 16:19-31. The implication of this passage is that "psychologically" men may well find a resurrection quite "religiously unconvincing." The apologist from history must claim that they would in this case be suppressing the rationally recognizable truth; but this claim is arguable only if the apologist *first* produces the criteria that make genuine miracles "rationally recognizable" as such. One "critic" of Flew (Erwin Lutzer, in "Putting Christian Faith on the Line," *His* magazine [April, 1974], pp. 24-25) seems to think that, even without being able to provide such criteria, he is entitled to charge that Flew "has cut himself off from the possibility of discovering a revelation from God" by having "decided [in his "heart"] to live without confronting whatever god or gods there may be." Transparently, as an attempt to bypass the need for criteria, this is nothing but an *ad hominem* reply.

[26]Cf. Flew, *God and Philosophy*, ch. 7; and "Miracles."

[27]*History and Christianity*, pp. 76-77.

[28]The justification with which we are entitled to assign a certain degree of improbability to the occurrence of event X under specified conditions depends upon (among other things) the size of our "sample," i.e. upon the number of times we have had occasion to observe whether events like X do or do not occur under these conditions.

[29]Lewis, *Miracles*, p. 104.

[30]These confusions often give rise to the assumption that the historian can properly criticize "non-veridical" historical hypotheses (i.e. those which "explain away" historical testimony as the product of delusion, fraud, or mistake) by pointing out the antecedent improbability of the events posited by the hypotheses, but that "veridical" hypotheses (i.e. those taking the testimony at face value) are immune to this kind of criticism. This assumption, for example, seems to underlie Daniel Fuller's argument in "Historical Method and the Resurrection," *The Journal of Bible and Religion* 34 (1966): 18-24. But John Venn shows—I believe conclusively—that the value of testimony of generally reliable witnesses is tremendously depreciated, when such witnesses testify to having observed an event with a low antecedent improbability. I must here simply refer the reader to *The Logic of Chance* (New York: Chelsea, 1962), ch. 12, 16, and 17.

[31]*God and Philosophy*, p. 145.

[32]"Inspiration . . . ," p. 330.

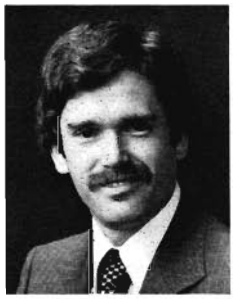
[33]This distinction is discussed at length by Arthur Pap in his *An Introduction to Philosophy of Science* (New York: Macmillan, 1962), pp. 18-22.

It seems to be a popular view among some evangelicals that because the revelation of Scripture *(rather than* the creation*) is the source of our knowledge of God, therefore such knowledge is on a radically different epistemic footing: in some way,* as knowledge, *it is "more absolute" than the knowledge we can have of creation. A second belief which is usually coupled with this one is that the* truth *about God could be fully enclosed and frozen in a deductive set of propositions (presumably created by God Himself* as *propositions and embedded in Scripture). It seems to me that this is a mistake of a medieval rationalist sort, because (a) it confuses* truth *with my* knowledge, *and (b) it assumes that some system of rational knowledge—which involves my personal participation—could limit and contain the divine truth Himself. I believe that true knowledge about God can and should be expressed in propositions. . . . But I cannot engage in the folly of medieval rationalism, which supposes that I myself in my knowledge* possess *the absolute truth coextensive with a rational closed system. My relation to truth is always* to know in faith, *just as I know the given order of creation. Truth itself remains always what it is, in God Himself, or in the given created order He has made; it is no creature of my making, as my knowledge must always be.*

Walter R. Thorson

"The Spiritual Dimensions of Science," in *Horizons of Science*, C. F. H. Henry, ed., Harper and and Row (1978), p. 252.

Science and the Concept of Miracle



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Does there exist an unavoidable conflict between empirical science and religious faith in relation to the concept of miracle? Historically, such a conflict was perceived as very real and the issues often contested bitterly. To a certain extent this is still true. It is the intent of this discussion to elucidate the exact nature of this purported conflict and, thereby, hopefully motivate theists (and nontheists) to rethink in a more rigorous manner (1) exactly what it means to say that an observable phenomenon is a "miracle" and (2) exactly how such "miraculous events" function within the theistic belief system.

One of the basic assumptions of empirical science is that all observable phenomena can, in principle, be explained in terms of natural laws. Yet one of the basic tenets in most religious systems is that some observable events occur for which no totally adequate natural explanation is possible (i.e., that miracles occur). Does there not then exist an unavoidable conflict between empirical science and religious faith in relation to the concept of miracle?

Historically, such a conflict was perceived as very real and the issues often contested bitterly. To a certain extent this is still true. It is the intent of this discussion to elucidate the exact nature of this purported conflict and, thereby, hopefully to motivate theists (and nontheists) to rethink in a more rigorous manner (1) exactly what it means to say that an observable phenomenon is a "miracle" and (2) exactly how such "miraculous events" function within the theistic worldview (i.e., exactly what their purpose and value is).

Meaning of Natural Law

Prior to the Renaissance, natural laws were generally considered prescriptive. That is, it was generally held that, just as God had prescribed certain moral laws (principles) to promote proper personal interaction among humans, he had also established (prescribed) certain binding cause/effect patterns (natural laws) to insure proper (uniform) interaction among the physical elements in his universe. Man was considered capable of "discovering" and utilizing some of these "laws" for his own benefit. But man was in no sense considered responsible for the nature of such "laws" or the fact that they existed.[1] Accordingly, it seemed quite reasonable to define a miracle as "a violation of a natural law by God." Since God was thought to have established the natural laws in question, it did not seem problematic to hold that he could "violate" (bypass or modify) these normally binding interactive patterns to display his power, verify his identity or bring about a desired state-of-affairs.

This concept of natural law, however, became increasingly less acceptable during the Renaissance. First, as it became increasingly popular for the humanist to *openly* challenge the existence of God (at least as he had been traditionally conceived), the concept of a lawgiver (prescriber) who had established certain cause/effect patterns could no longer simply be accepted as fact. Second, dependence upon "supernatural"

explanations for observable phenomena greatly lessened as the scientific method (based on observation and experimentation) became an increasingly successful means of relating to the physical environment. For these and other reasons, it became philosophically fashionable to simply set aside the whole question of divine causation and contend that the only significant statements concerning the physical universe with which man ought to concern himself were those based on (concerned with) sense experience.[2] Not surprisingly, this necessitated a new conceptualization of "natural law." No longer were natural laws conceived of in ontological terms as divinely prescribed causal patterns or forces which men discover. Rather, natural laws (scientific laws) came to be viewed as linguistic conventions. That is, natural laws came to be understood as general descriptive statements which summarize (are formulated to explain) our knowledge concerning observed regularities in the physical universe.[3] No longer was it claimed, for example, that fire "produced" heat[4] because God had so decreed that such a causal pattern would be binding. Rather, it was argued (in philosophical terms) that, since fire had "produced" heat in all observed occasions in the past, it was justifiable to affirm as a generalization (hypothesis) that "fire always produces heat" and on the basis of this confirmed "lawlike statement" to predict that fire would "produce" heat in each relevant instance in the future.[5]

Given this reading of "natural law," to define a miracle as "a violation of a natural law" became (and has remained) extremely problematic. Strictly speaking, it makes sense to claim that an event is a violation of a natural law only if (1) there exist identifiable, consistently binding, cause/effect patterns which are objective (exist and function whether perceived or not) and (2) we know (have good reasons for believing) that these patterns were not operative in relation to the occurrence under consideration. Thus, it did make sense to talk about divine violations of (suspensions or modifications of) prescriptive natural laws which God had created and man discovered. But such is not the case when discussing descriptive natural laws. Such "laws" we have seen, do not denote objective cause/effect patterns which operate apart from man's experience and must be discovered; they are descriptive statements which purport only to summarize (purport only to be hypothetical generalizations set forth to explain) man's past experience with various sorts of phenomenal regularities. There is no attached claim that such descriptions *necessarily* tell us anything about the ultimate nature of reality (i.e., there is no claim that such "laws" inform us about the nature of possible states-of-affairs—including causal states-of-affairs—which may exist apart from man's experience). Accordingly, even if an event occurs which can be proven to be a valid counterinstance to a present descriptive law, what *necessarily* follows is only that we presently possess no descriptive generalization (working hypothesis) to "explain" the occurrence. It would make no sense to claim that the occurrence was a violation of the relevant natural laws as such "laws" are not viewed as describing (do not purport to denote) the sort of objective (discoverable) cause/effect patterns which can be violated.

What does it mean to say that an observable phenomenon is a "miracle"? Exactly how do such "miraculous events" function within the theistic worldview?

Redefinition of Miracle

To avoid such semantical confusion, many philosophers of religion and philosophical theologians have begun to characterize the miraculous, not as a violation of a natural law, but as a permanently inexplicable event. That is, the claim has become, not that a miracle is a circumvention or modification of a law of nature, but that it is an observable occurrence in relation to which empirical science will never be able to generate descriptive covering laws (i.e., an occurrence permanently unexplainable by the empirical scientist).[6]

This move certainly does circumvent the semantical problem related to the "violation model." But the characterization of the miraculous as a permanently inexplicable event has also come under attack. Anthony Flew states the basic objection quite clearly:

> 1. Scientific laws are like a geographer's map. Just as the geographer uses his map to describe the actual landscape, the scientist uses scientific laws to describe what actually occurs in our experience.
> 2. Hence, just as a discrepancy between the actual landscape and a map necessitates a change in the map, an unusual event which is not presently subsumable under a scientific law demonstrates only that the relevant laws are inadequate and in need of revision or extension.
> 3. This is not to say that all such revisions will be immediately forthcoming. Some observable occurrences might remain in "explanatory limbo" for lengthy periods of time.
> 4. However, due to the descriptive nature of the scientific enterprise, even the most recalcitrant of events must be seen as, in principle, subsumable under scientific laws.
> 5. This in turn means that every event—no matter how unusual or bizzare—must be seen as, in principle, explicable scientifically.[7]

But philosophers such as Margaret Boden and R. G. Swinburne disagree. Boden grants that observable phenomena cannot normally be dismissed as lying forever outside the range of science but is not convinced this would always be the case. For example, she argues, let us take the logically possible case of a leper whose missing fingers reappear instantly under the most stringent fraud-detecting conditions (e.g., in the presence of doctors, T.V. cameras, etc.). Such an event, we are told, would conflict with so many well established scientific facts that any attempt at revising our present scientific laws in such a way as to accommodate it would so weaken the predictive power of such laws that they would no longer be of practical value. Accordingly, she concludes, if such an event were actually to occur, the scientist, of necessity, would be forced to identify it as a permanently inexplicable phenomenon.[8]

Swinburne uses a somewhat more sophisticated line of reasoning to arrive at the same conclusion:

1. Counterinstances to scientific laws are of two types: repeatable and nonrepeatable.
2. The occurrence of a repeatable counterinstance demonstrates that the relevant law is inadequate and must be revised. But the occurrence of a nonrepeatable counterinstance does not affect the explanatory adequacy of the relevant law. It only demonstrates that the event in question is a circumvention or suspension of it.
3. The test for deciding whether a counterinstance is repeatable or not is the following:
   a. An event E is a repeatable counterinstance if a new law L′ accommodating E can be devised which is simple, coherent and yields new and more correct predictions than the current law L to which E is a counterinstance.
   b. But an event E is a nonrepeatable counterinstance if there can be no new law L′ devised which accommodates E and is simpler, coherent and better able to yield successful predictions than the current law L to which E is a counterinstance.[9]
4. It is true that, based on such a test, the labeling of any given counterinstance as "repeatable" is a corrigible matter. Hence, it might be doubted that we could ever decide with certainty that a counterinstance actually was nonrepeatable. But all claims to knowledge about matters of fact are corrigible, and we must reach provisional conclusions about them on the evidence available to us.
5. We have to some extent good evidence about what are the "laws of nature," and some of them are so well established and account for so many data that *any* modification of them which we would suggest to account for the odd counterinstance would be so clumsy and ad hoc that they would upset the whole structure of science. For example, let us imagine we experience the "resurrection from the dead . . . a man whose heart has not been beating for twenty-four hours and who was dead by other currently used criteria" or "water turning into wine without the assistance of chemical apparatus or catalysts." In such cases, it would be most reasonable for the scientist to label such phenomena "permanently inexplicable events."[10]

Such reasoning is confused. First, it sets up a false dilemma for the scientist. Boden and Swinburne would have us believe that, when faced with an extremely unusual occurrence which is not presently subsumable under known scientific laws, the scientsist must either immediately accommodate such an event within a new law or consider it "permanently inexplicable." In reality, many other options are open. The scientist could, as Flew seems to be suggesting, continue indefinitely to conduct tests, hoping thereby to gain new information which would allow him to subsume the occurrence in question under a new or present law of some sort. Or if the occurrence were singular, the scientist could simply label it as a "freak" event and await the occurrence of similar phenomena before seriously investigating further. In other words, it is simply not the case that the scientist must make a present, conclusive decision concerning the explicability status of each unusual occurrence he encounters.

Moreover, even if the scientist were forced to make an immediate judgment on the "explicability status" of a given event, he could never justifiably decide to label an event "permanently inexplicable." Since it is logically possible that even the most bizarre event E *could* have necessary and sufficient empirical antecedent causal conditions, it is possible with respect to any such event that the scientist could identify such causal factors and thereby place "E-type" events under a scientific covering law of some sort. Or stated differently, since the empirical scientist could not know a priori that regularity patterns between any given event-type E and a given set of empirical causal conditions will never be found, he could never justifiably claim—as Boden and Swinburne would have us believe—that E *could* never be subsumed under a scientific law of some sort. It may be that some occurrences will, as a matter of fact, never be explained. But this in no way entails that the scientist can justifiably attempt to identify such events.

Our criticism of the Boden-Swinburne position, however, does not mean that we are in total agreement with Flew's line of reasoning. Flew's contention is not only that the empirical scientist could never justifiably claim that an observable event is permanently inexplicable. Flew (and others) also hold that, since a valid counterinstance to an existing scientific law (set of laws) demonstrates only that the relevant law is inadequate and, accordingly, in need of revision or extention, there could be, in principle, no permanently inexplicable event. That is, they claim that the idea of a permanently inexplicable event is unintelligible (i.e., conceptual nonsense).[11] This is surely too strong a contention. The claim that all observable phenomena can, in principle, be subsumed under true scientific laws is plausible only if it is implicitly assumed that all observable phenomena actually do have a set of necessary and sufficient empirical antecedent causal conditions (even if science has not or will not discover them). But such an assumption cannot be granted, as it is logically possible that some observable occurrences have no sufficient set of empirical antecedent causal conditions or no empirical antecedent causal conditions at all (i.e., it is logically possible that some observable occurrences have solely—or at least some—nonempirical antecedent causal conditions).

For example, imagine the following presently inexplicable occurrence: a leper who has lost his fingers suddenly discovers that they have regrown. One possible explanation would be that this occurrence is solely the result of some rare, hitherto undetected, natural chemical process. If such were the case, it would be within the power of empirical science, in principle at least, to discover the set of empirical antecedent causal factors involved and place such an occurrence under a scientific law of some sort. But to claim, a' la Flew, that such an occurrence would have to be, in principle, subsumable under some scientific law is unwarranted, for it would also be logically possible that the regrown fingers were totally (or partially) the result of a set of essential, nonempirical antecedent causal conditions (e.g., the action of a god). Accordingly, it would be possible that empirical science could never formulate even a small scale, true scientific law under which the occurrence (i.e., event-type) in question could be subsumed.

This fact, however, does not lessen the genuine tension that exists between empirical science and the concept of miracle if the latter is defined as a permanently inexplicable event. True, it is logically possible that miracles in this sense do (could) occur. But it is impossible under this reading for the Christian (or any theist) to contend justifiably that any given occurrence is in fact miraculous, as it is always possible that rele-

vant scientific laws will be developed sometime in the future.[12]

Significance for Apologetics

Some theists will surely argue that this conclusion is relatively unimportant, since as they see it, the true significance of the miraculous is related not to its explicability status as an observable event but to the fact that it is a "sign" from God. In other words, some theists will be quite willing to drop "permanently inexplicable" as a defining characteristic of the miraculous, and argue rather that the identifiability of a miraculous occurrence must be based upon the fact that it is an awe-producing (unique) 'act of God' which is brought about to demonstrate his presence, goodness or approval.

This stance obviously does circumvent the identification problem posed above and, therefore, may appear appealing. But there is an "apologetical price" to pay. When the miraculous is defined as a permanently inexplicable event, the explicability status of such an occurrence becomes an objective identification criterion open to both the theist and nontheist (i.e., the explicability status becomes a "common ground" for interworldview discussions concerning the identification of purportedly miraculous events). Accordingly, if an event could be identified as "permanently inexplicable," it would tend to make belief in God's existence (i.e., belief in the existence of a supernatural being who intervenes in earthly affairs) more plausible as it would demonstrate that empirical causation alone is not sufficient to explain all types of observable phenomena. Or, stated in even weaker terms, if the miraculous is conceived of as a "permanently inexplicable" event, the more convincingly it can be argued that science cannot (will not) be able to explain an observable occurrence (e.g., a resurrection), the more plausible it becomes to affirm a nonnatural (supernatural) explanation. In short, if miracle is defined as a "permanently inexplicable" event, the concept possesses interworldview *apologetical* value.

But once it is acknowledged that a miraculous event need not be permanently inexplicable (i.e., once it is acknowledged that empirical science can, in principle, explain (or recreate) any "miraculous" occurrence), the explicability status of an occurrence can, of course, no longer function as an objective "common ground" for interworldview identification purposes. Rather, the miraculous becomes a solely religious concept identifiable only by those already possessing a theistic perspective (i.e., identifiable only by those who already affirm the possibility of divine intervention). Under this reading, the miraculous loses its inter-worldview apologetical value as the fact that an event is miraculous now becomes a consequent of, not support for, the fact that it is an "act of God."

Some theists may find this apologetical implication distasteful, but others will not as within some theological perspectives it has long been held that miracles are "open only to the eyes of faith" (i.e., that the miraculous is a religious concept which has its meaning and value solely from within a religious perspective). But the theist's feelings on the matter are irrelevant. If a miracle is, in principle, a scientifically explicable event, its traditional interworldview apologetical function disappears.

The most viable alternative is to define "miracle" as a religious concept (an act of God) which derives its uniqueness not from its explicability status, but from the fact that it is part of an unusual event sequence.

Distinguishing A Miracle

Moreover, once the miraculous becomes a solely intratheistic concept, a new identification issue arises: How is the theist to identify an awe-producing "act of God" (a miracle)? Or, stated differently, since from a theistic perspective all events are in some sense "acts of God," the question becomes: How is the theist to distinguish awe-producing "acts of God" (miracles) from their nonawe-producing counterparts?

This is a complex question, but one obvious point must be reemphasized. Theists who conceive of the miraculous as an intratheistic concept cannot define "awesomeness" in terms of scientific explicability since (for whatever reason—e.g., to avoid the identification problem posed above) they have already acknowledged that a miraculous event need not be a scientifically inexplicable occurrence. Given this fact, it seems most reasonable to assume that for such theists "awesomeness" is in some sense tied to the timing or sequencing of a given occurrence. That is, it seems most reasonable to assume that for such theists the identifiability of an "awesome" act of God (a miracle) is in some sense tied to the fact that it is an observable event which most rational individuals would not normally have expected to occur within the given event sequence of which it is a part. Consider, for example, the following situation.

June, a Bible College student, will soon be dismissed from school if she fails to pay a $500 debt. She feels very strongly, however, that God wishes her to remain in school and, therefore, asks God to verify her "call" by providing her with the necessary funds. A few days later, June receives a letter from a distant aunt with whom she has not corresponded in years. The aunt writes that, while praying a few days earlier, she had suddenly received the feeling that June might be in need of financial assistance. Moreover, the letter continues, she feels led to send June exactly $500.

The event sequence described includes no observable event-token for which the scientist could not offer an empirical (natural) explanation. It is quite normal for college students to have financial needs and for relatives to offer assistance (even unsolicited assistance). But the fact that June's aunt sent exactly the right amount of money at exactly the right time, even though she had no empirical information that June needed help, makes the event sequence quite awe-producing as we would not normally expect June's need to be met in a manner such as this. In fact, this event sequencing seems so extraordinary that, when coupled with the fact that there appears to have been divine intervention, it is easy to imagine some theists labeling June's procurement of funds "miraculous."

But whether an event sequence is awe-producing is a

relative issue—relative to the psychological perspective of each individual or group of individuals making the judgment. In other words, once the timing or sequencing of events becomes the intratheistic criterion for the identification of a miraculous event, it seems that the theist no longer has even an *objective* intratheistic basis upon which such an identification can be made. He seems rather to have only a subjective, psychological criterion which allows him to affirm only that a given event is "miraculous" to him.

The Theist's Dilemma

We have been discussing the relationship between science and the concept of miracle. What has emerged is that the theist seems to be in somewhat of a dilemma. It seems that, all things being equal, it would be most appealing for the theist to define the miraculous as a permanently inexplicable event, as he would then possess an objective interworldview criterion which would allow the miraculous to function as a useful apologetical tool. However, we have seen that a miraculous event, if defined in this matter, is not identifiable. The most viable alternative, it seems, is to define "miracle" as a religious concept (an act of God) which derives its uniqueness not from its explicability status, but from the fact that it is part of an unusual event sequence. But we have seen that under this reading the identifiability of a miraculous event becomes a subjective issue which destroys its interworldview apologetical value and greatly weakens its objective status from an intratheistic perspective.

Some theists will gladly accept (have accepted) this "weaker" concept of miracle. For those theists who are uncomfortable with it, the challenge is clear: they must generate an objective identification criterion that is built neither on the explicability status nor the timing or sequencing of the event in question. We personally are very doubtful such a criterion can be formulated. Nor do we believe such a criterion is necessary as we feel that the "weaker" concept of miracle is sufficient for an intellectually defensible and experientially satisfying theistic belief system.

NOTES

[1]See, for example, Augustine, *City of God*, XXII and Aquinas, *Summa Contra Gentiles*, XCVIII-CIII.

[2]See, for example, David Hume, *Enquiries Concerning the Human Understanding*, Section X.

[3]We are not talking here about simple "induction by enumeration," in relation to it would be said that "laws" are simply generalizations from past experiences (past instances). We are basically talking about the "hypothetico-deductive method" of scientific reasoning, in relation to which particular predictive "lawlike" statements are hypothesized as accurate generalizations about some aspect of the physical universe and then confirmed or disconfirmed by observation and experimentation.

[4]David Hume, and others, have argued that experience gives us no knowledge concerning true causality; that we can at best speak of the "constant conjunction" of various phenomena in our experience. For these philosophers, the claim that any "*X*" produces (is the cause of) any "*Y*" must always remain a philosophically unverifiable (but psychologically unavoidable) hypothesis.

[5]To affirm a descriptive understanding of natural law, one need not deny that prescriptive laws "exist," but only deny (or doubt) that such laws can be identified (or discovered).

[6]See, for example, R. G. Swinburne, *The Concept of Miracle* (New York: MacMillian and Company, 1970), and Margaret Boden, "Miracles and Scientific Explanation," *Ratio* (December, 1969), pp. 137-41.

[7]Anthony Flew, *God and Philosophy* (New York: Dell Publishing Co., 1966), p. 150.

[8]Boden, pp. 137-41.

[9]It is of course true that every event-token is nonrepeatable (i.e., each event happens, and will only happen, at only one specific time.) Scientific laws, accordingly, describing regular (repeatability) patterns between certain *types* of phenomena and sets of antecedent causal conditions.

[10]Swinburne, pp. 29-32.

[11]See for example, Alistair McKinnon, " 'Miracle' and 'Paradox' ", *American Philosophical Quarterly* (October, 1967), pp. 305-312.

[12]We are talking here about the identification of a miraculous event on the basis of experience (on the basis of observable characteristics related to the event). Thus, the contention that biblical miracles can be known to have occurred because they were identified as such in the biblical record and the biblical record is a trustworthy source, is not, strictly speaking, subject to this epistemological qualifier. But the fact that the Bible identifies certain occurrences as miraculous is helpful in the present context only if it can be demonstrated that the Bible characterizes the miraculous as a permanently inexplicable event. It is not at all clear that this is the case (e.g., it is not at all clear that the parting of the Red Sea by a great wind is an inexplicable state-of-affairs).

There is another relatively small class or population in the scientific community who are deeply committed to traditional religion and who are even more insistent in not allowing a scientific theology because it threatens what is to them the sacredness of their fully and deeply believed religious faith. Such persons may be found in a society called the American Scientific Affiliation, where there are many "fundamentalist" religious believers who laudably are concerned to defend their faith against corruption by the sciences.

Ralph Wendell Burhoe

"What Does Determine Human Destiny? Science Applied to Interpret Religion," *Zygon* 12, No. 4, 336-389 (1977); quote is from p. 341. For a review of Dr. Burhoe's "scientific theology" see *Journal ASA*, September 1977, p. 124.

Science and Religion: Is Compatibility Possible?

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Compatibility Systems

To raise the question of the possible compatibility of science and religion must, in the light of the historical relations of the scientific and religious communities, seem utterly naive. Since the days of Galileo and Urban VIII, it can be argued, the image of conflict has appropriately dominated all discussion of the relation of religion to science. The dominant picture, as Andrew White's famous *History of the Warfare Between Science and Theology* (1896) illustrates (although somewhat onesidedly), has been one of the religious faithful fighting the progress of the sciences, particularly when new discoveries threatened the security of cherished dogmas. And today the image of conflict is reinforced, despite the fact that contemporary scientific beliefs are more congenial to religious (and especially Christian) doctrines than those of a few generations ago,[1] for the conflict, it is maintained, is basically methodological. Both science and religion, that is, seem to be playing the "cognition game" and yet religion, so it is claimed, seems to follow an entirely different set of rules in its achievement of "knowledge" than does science.[2] The point of the modern view of the conflict image, then, is that science provides us with a clear and straightforward paradigm for knowing—a "morality of knowledge"[3]—which religious thinking obviously contravenes. Despite such claims, however, there is a reluctance on the part of many to accept the image of conflict as an appropriate category in discussion of the relations of science and religion, for both science and religion have made valued contributions to our lives and neither is likely to wither away in the very near future. That reluctance to deny the value of either community has inspired alternative interpretations of the meanings of science and religion that "entail" compatibility. And it is the variety and significance of these various "compatibility systems" that I wish to look at in this paper.

A "compatibility system" is essentially a justification of accepting two apparently conflicting systems of thought.[4] If no *prima facie* conflict existed there would be no impetus to construct such a system. The growth of science in the West, however, with the gradual "disenchantment" of the universe attendant upon that growth (i.e. the increasing superfluity of religious hypotheses in the attempts to account for or describe the world) suggests a radical discontinuity between science and religion—it suggests, in fact, that to do proper science one must give up religion. Such a "conflict interpretation" of the relation of religion to science rests on two assumptions: first, that science alone provides us with the paradigm of *all* knowledge-gaining procedures and, second, that religion is correctly or appropriately characterized, at least in part, as a system of beliefs. Compatibility proposals, consequently, rest on challenges to either one or both of these assumptions.

I shall look briefly at four kinds of compatibility proposals here:[5] (1) science and religion are wholly incommensurable; (2) science and religion are complementary but provide us with radically different kinds of knowledge; (3) science and religion are complementary because science itself reveals elements of ultimacy and, consequently, exhibits a religious character; and (4) science and religion are complementary because archaic systems contain genuine cognitive insights although they need to be re-expressed in terms of contemporary scientific thought.

The classic "compatibility system"—namely, that science and religion are complementary because they are logically similar "enterprises"—however, challenges neither of the major assumptions of the conflict interpretation. Accepting both assumptions it nevertheless differs drastically upon their interpretation: science, it agrees, provides us with a "morality of knowing" but it hotly disputes the nature or significance of that morality. Extending the metaphor, one might say that the compatibility argument here does not involve the denial of an ethic of belief but rather suggests that the ethic is a contextual or situational one rather than an absolutist ethic. That is to say, just as ethical judgment is more than mere "ethical calculation" so knowing is

more than mere logical or "epistemic calculation." I consider briefly the merits of this claim following the description of the above-mentioned alternatives.

Science and Religion as Wholly Incommensurable

Many philosophers reject the conflict interpretation in the discussion of science and religion because, according to them science and religion are incommensurable; they are incapable of even being compared. Thus religion cannot be either compatible or incompatible with science; nor can it complement science in the sense of providing a different or higher kind of knowledge that science cannot achieve. The assumption that religion is appropriately characterized as knowledge or as a system of beliefs, it is argued, reveals a naive understanding of religion. Religion is a "way of life" and not a source of knowledge. Religion functions in society in a different capacity altogether than science—it grounds the *meaning* of human existence. Religious language, therefore, is not the language of knowing but rather the language of commitment (Braithwaite, 1955); it is parabolic (Miles, 1959), self-involving (Evans, 1963; 1968), convictional (Zuurdeeg, 1959), symbolic (Randall, 1958), etc., but not epistemic. T. R. Miles neatly summarizes the essential point of this position in his *Religion and the Scientific Outlook* as follows:

> On the general question of a conflict between science and religion there is a central part of the problem which we can safely claim to have settled once for all. This claim is not the presumptuous one that it sounds, for the matter is one of logical necessity and it would be muddled thinking to claim anything less. Religious language is of many different kinds; there is the language of parable, the language of moral exhortation, the language of worship and so on. Only if what is offered in the name of religion is factual assertion can there be any possibility of a headon conflict. . . . To insist that such (religious) language is parable and not literal truth is to ascribe a recognizable and legitimate function to a group of basic religious assertions and the result is to supply a permanent guarantee that these assertions cannot be refuted by the findings of science. (Miles, 1959; 217, 218, 219).

Science and Religion as Providing Radically Different Kinds of Knowledge

Proponents of this kind of compatibility systems do not deny that in some respects religion and science are incommensurable. They deny that science is the *only* paradigm for all knowledge-gaining procedures and so admit that science and religion are methodologically incommensurable. By suspending belief in the first assumption of the incompatibility thesis, they insist, it can be shown that there are non-scientific ways of knowing—ways of knowing that transcend and so complement the knowledge of science. Karl Heim sets forth a persuasive argument in support of such a thesis in his *Christian Faith and Natural Science* (1953).

According to Heim existentialism has discovered a whole new world of nonobjective experience. Consequently it opens up the possibility of a knowledge of a nonobjective space that is wholly other than the knowledge of the objective space of the natural sciences. Heim calls this first nonobjective space "ego-space," for it is first discovered in the discovery of the inner Self—in the inward awareness of one's Self.

New spaces, according to Heim, are discovered when they make possible something which is undeniable in our experience, although within the space or spaces thus far discovered it appears self-contradictory. The (inner) Self which must, in the light of our experience, be part of our general picture of the universe is, for example, invisible in the objective space of the natural sciences but becomes "visible" in the non-objective ego-space.

Still others spaces, according to Heim, are revealed when questions of ethics and origins are raised. We find in these issues that what is necessary for a comprehensive picture of the universe is in the objective space of the natural sciences (as well as in the ego-space, for both these spaces are species of the genus "polar-space") problematic. For example, in the area of ethical action the ego is paralyzed by the relativism and positivism that characterises all our decision-making. Within the "polar-spaces" no goals are absolute except those chosen by the human will. Consequently action is bound either by indecision as to which goal to direct one's action toward, or it is plagued by the sense of arbitrariness in the goal chosen. What is needed, therefore, is a new space wherein both the indecision and arbitrariness can be avoided since both undermine the ethical life. Such a possibility, Heim insists, can be seen only in "supra-polar space:"

> Unlike all human ethical doctrines, which are historically and culturally conditioned and possess only limited validity, Christ, according to the conviction of the primitive church, is the Kyrios, the only one entitled to the name which is above all names, the supreme authority, above which there is no higher power and by which the final decision is taken with regard to every value that comes within our field of vision—the supreme yardstick by which all things are measured. This authority is like the lighthouse by which ships may steer their course when they have to pass by night through a dangerous channel which is full of rocks. If such a paramount authority is found to exist, then the aim of positivism too is achieved, for positivism seeks a supreme value, the antecedents of which do not require investigations. (Heim, 1953; 190, 191).

The Universe, then, consists of *spaces* rather than merely *objective* space as is assumed in the secular philosophies. *Knowledge* of the other spaces, particularly of the "supra-polar space," however, cannot come via reasoning or thinking which find their chief application in objective space—one simply becomes (or does not become) aware of such nonobjective spaces:

> . . . we are not ourselves able to force open the gate which leads to a space that has so far been closed to us. Whenever we experience the discovery of a space, the discovery always simply falls into our laps as a gift . . . (Heim, 1953; 170)

From the standpoint of the polar spaces this experience is totally incomprehensible (Heim, 1953; 192). That knowledge comes, then, by revelation—the scales must fall from one's eyes before one is able to "see" it. Consequently faith is the condition in which the person who lives completely immersed in this suprapolar space finds himself. He has the same security and confidence as does the secularist who lives wholly within the polar spaces.

This is a kind of two-level theory of knowledge (truth) and as M. Diamond points out in his *Contemporary Philosophy and Religious Thought* (1974) it "is the major strategy of religious existentialists in coping with the challenges of a scientifically oriented culture." (p. 303) Other similar compatibility proposals, as Diamond points out, can be found in Buber, Bultmann, Barth, and Tillich. The classic statement of this school of thought, perhaps, is to be found in Kierkegaard's *Concluding Unscientific Postscript* (1941), in his talk of "truth as subjectivity." Of kindred mind is Pascal's reference to the reasons of the heart that reason knows nothing of.

In all such two-level theories, as Diamond points out, a compatibility and complementarity between the lower and higher levels of truth is claimed but, at the same time, a greater importance is claimed for the higher (or religious) level of knowledge and truth.

Science and Religion as Complementary Because Science Is Very Much Like Religion

Stated somewhat crudely, compatibility systems of this order claim to show that science functions not only in a cognitive capacity but also, although in an inferior way, in a religious one; that is, science is a kind of religion surrogate. Langdon Gilkey's *Religion and the Scientific Future* (1970) is an apologetic of this kind. Although "secular man" believes one thing—namely, that he is irreligious—his existence, claims Gilkey, reveals a dependence on elements of ultimacy. Gilkey makes this point in a broad and general way in his *Naming the Whirlwind* (1969) but here points up three specific characteristics of ultimacy in Science.[6] The first, he insists, is found in the unremitting *eros* to know. Further, the assumptions of some ontological generality about the character of reality as such and of the possibility of a relationship between it and the knowing mind is a leap beyond the evidence—it is a step beyond the bounds of science to that which ultimately makes sense of the scientific enterprise in the first place. The third hint of ultimacy in science, he claims, is to be found in the structure of scientific judgment, a structure that reveals, in the final analysis, the ultimate awareness of oneself as knower. In this regard he writes:

> (The) personal affirmation of oneself as a knower is . . . the foundation of the possibility of all rational judgment and in the end it grounds all science. In turn this awareness of oneself as a knower cannot be doubted. The sceptic, in affirming his scepticism also is aware of himself and affirms himself as *understanding* the view that he now asserts; he is also aware of himself as judging that this view is in fact true. . . . No movement could take place without this element of indubitable certainty, without this unconditioned assertion of the actuality of knowing ourselves. (Gilkey, 1970; 60, 61).

According to Gilkey, then, modern man's science and trust in science results in the adoption of a new myth—a quasi-religious myth—which he calls the "myth of total awareness." The myth asserts that

> man becomes *man* and can control his life and destiny if he is educated, liberal, analyzed, scientific, an 'expert', etc. . . . that knowledge and awareness can turn whatever has been a blindly determining force on and in man and so a *fate* over man, into a new instrument *of* man. (Gilkey, 1970; 77)

Religions do make empirically significant claims and so can conflict with science.

The emergence of the myth, Gilkey claims, shows man's need for "ultimacy" and an attempt on the part of science itself to fulfil that need after having contributed to the loss of ultimacy in contributing to the decline or "demise" of religion.[7] Gilkey sees the new myth, however, as dangerous, for, according to him science and technology which are to be the source of man's salvation (according to the new myth) are in actuality the source of the threat to man's ultimate well-being. (Gilkey, 1970; 92, 95). Science, therefore, "reaches out for" ultimacy yet is unable within itself to provide it. Consequently science requires religion—religion however that goes beyond the "broken images" of past tradition. Thus Gilkey concludes:

> The dilemmas of even the most secular of cultures are ultimately intelligible only in the light of faith; the *destiny* of even a scientific world can be adequately thematized only in terms of religious symbols; and the confidence of the future even of technological man can be creatively grounded only if the coming work of the Lord in the affairs of men is known and affirmed. (Gilkey, 1970; 99)

Science and Religion as Compatible Because There Are Genuine Cognitive Insights in Archaic Religious Systems

Compatibility systems of this sort attempt to salvage the folk-wisdom of archaic cultures. Philosophers admit that there is a radical methodological incompatibility between the two—that religion has gained its insights in "unacceptable" ways—but attempts also to point out that, somehow or other, insights of importance to man were obtained. Thus religion can complement science in a cognitive way (although only heuristically so), but its insights will require the services of a "translator"—the insights, that is, require support in terms of a scientific justification. R. Burhoe's aim in his "The Concepts of God and Soul in a Scientific View of Human Purpose" (1973) contains the germ of this kind of compatibility system. He writes:

> I seek . . . in this paper to show how belief in a reality sovereign over man (a god) and a belief in the essential immortality or eternal duration of man's basic nature (a soul) not only are necessary for human motivation but are indeed credible on the very grounds of science, which confirms insights common to the higher religious traditions of the world. . . . I think in the modern sciences we have far surpassed earlier methods by which man finds knowledge. However, I have already pointed out that the scientific method does not shun looking into and taking advantage of more ancient accumulations of wisdom such as the genetic 'wisdom of the body', or the traditional wisdom of human cultures. (Burhoe, 1973; 416, 417).

Science And Religion As Logically Similar Enterprises

This, the boldest of the compatibility systems, lays claim to a complementary relationship between science and religion on the basis of a logical similarity between the two communities—on the basis of the claim, that is,

that religion, like science, has cognitive significance and that its claims to knowledge have the same "foundation" as the claims to knowledge by science. Like the proponents of the conflict thesis, the exponents of this understanding of science and religion assume both that religion is appropriately characterized, at least in part, as a system of beliefs and that science provides us with the paradigm for our knowledge-gaining procedures or activities. However, although agreeing that the "morality of knowledge" that governs activity in the sciences has full sway in theology or "reflective religion," it differs radically with the conflict theorists on the interpretation or description of that morality.

The indictment by the rationalist is that the recourse to faith by the religious believer in his "religious knowing" permits him to evade the force of the standards and canons of rational assessment which he himself recognizes to be binding in other areas of cognitive concern, such as, for example, history[8] or the natural sciences.[9] This, the rationalist insists, corrodes the "machinery" of coming to a sound judgment whereby truth might be separated from falsehood and so calls "into question the very conception of scientific thought as a responsible enterprise of reasonable men." (Scheffler, 1967; v). It is assumed, therefore, that science can *prove* its knowledge claims (i.e. *justify* them),[10] while religion cannot. Scientific method, therefore, can provide impersonal, objective and hence reliable *knowledge* while the non-scientific "disciplines," and religion in particular, can provide us with mere opinion, or, at best, illuminating visions.[11] In science there is a *convergence of belief* which one fails to obtain in religious matters, for "belief" (knowledge?) in science is a matter of evidential appraisal and logical assessment, whereas "belief" in religion depends upon persuasion and rhetoric aimed at conversion—that is, it is based upon extra-logical and non-evidential bases. The adoption of religious beliefs or a change of religious beliefs, consequently, is a matter of intuition and is, in some sense then, a mystical and subjective affair, a matter for psychological description only. But the adoption of new scientific theories, or a change of scientific belief, is a matter of proceeding according to strict logical and methodological rules.

Such a view of science and scientific rationality, it is argued, however, is naive. The dominant attitude which distinguishes scientific thinking as presenting us with objective knowledge from nonscientific thinking which is emotive or conative is fundamentally wrongheaded. It is so, however, not because religious thinking resembles scientific thinking in its logical rigor but rather because scientific thinking is a good deal less rigorous than it is generally supposed and hence that it is in some respects like religious thinking.[12] The rules of logic and/or evidence that have been suggested as characterizing scientific thought as wholly rational, it is claimed, cannot account adequately either for the existence of our knowledge or its growth. Such an account can be provided only if science itself is seen as a "fiduciary" enterprise—i.e. as involving personal judgment (*fiducia,* trust/faith) that of necessity exceeds the grounds of evidence from which it first arose. Since purely logical procedures or evidential appraisal cannot "guarantee" one's conclusions, it is "wrong" to place the responsibility for their acceptance upon a set of external rules.[13] The acceptance not only of specific scientific conclusions, therefore, but even the so-called rules of scientific procedure involve an element of "faith" in their adoption.

This kind of attempt at establishing that science and religion are compatible is extremely common. Historically, however, the claim was that religion was structurally similar to science and now the claim is that science is structurally similar to religion. The position is adequately represented today, I think, in H. K. Schilling's *Science and Religion: An Interpretation of Two Communities.* According to Schilling each of the communities constitutes a kind of enterprise concerned with (1) (an empirical or factual) description of the universe; (2) an explanation or theoretical account of the universe; and (3) a transformation of human existence in the universe (i.e. with an application of the insights achieved). After analysis of each of these concerns within each of the communities he concludes:

> . . . out of this analysis emerges the idea of a continuous spectrum of cognition and knowledge, extending from the physical sciences, through biological and social sciences, through the arts to religion. It is proposed that some characteristics of knowledge and of the cognitive process vary continuously within the spectrum from one end to the other, but that others remain constant. Thus we can speak of 'knowledge' in all these fields and assert that in an important sense the way it is attained is the same for all of them. There is therefore no discontinuous separation of science and religion as far as cognition is concerned. (Schilling, 1963).

Similar theses are maintained by C. Coulson in his *Science and Christian Beliefs* (1955; see also his 1969); by I. Ramsey in his *Religion and Science: Conflict and Synthesis* (1964); by I. Barbour in his *Issues in Science and Religion* (1966); as well as by a host of others.

The Science of Religion

The majority of the compatibility proposals of the past have been concerned largely with reducing the tension (doctrinal and methodological) between religion and the natural sciences. With the increasing attention that the social sciences have received in recent years the question of compatibility has been further complicated—particularly in respect to the science and/or sciences of religion. The social sciences in providing us with a knowledge about ourselves and the world around us, provide us also with a scientific knowledge of religion. Religion itself is an object of study and consideration by science. Consequently one has two views of religion to consider when talking of the relations of science and religion—that of the insider, the committed believer, and that of the outsider, in this case the objective scientist revealing to us the truth *about* religion. Compatibility as it has been discussed above hardly seems a possibility now, it would seem, for the scientific view of religion requires the adoption of assumptions inimical to religion. Sociologists, for example, maintain that the study of religion can be undertaken only insofar as it is a cultural system and not treated as a divine or supernatural institution.[14] As one sociologist puts it, a scientific understanding of religion presupposes a "methodological atheism."[15] And

another writes:

> Science inevitably takes a naturalistic view of religion. This is a necessary *assumption* not a demonstrated truth from which all science proceeds. Religion is in man; it is to be understood by the analysis of his needs, tendencies and potentialities. . . . For those who identify religion with supernatural views of the world it must appear that scientific analysis must weaken religion.[22] (Yinger, 1970; 531).

Yinger assumes here, as did Durkheim, that

> That which science refuses to grant to religion is not its right to exist, but its right to dogmatize upon the nature of things and the special competence which it claims for itself for knowing man and the world. As a matter of fact [Durkheim goes on to say] it does not know what it is made of, nor to what need it answers. (Durkheim, 1971; 430)

Religion *properly* (i.e. scientifically) understood, therefore, is real and is compatible with science. Religion and science, that is, are compatible since they are coexistent realities, but there is no compatibility between religion's understanding of itself and the social-scientific understanding of religion (and, consequently, none between the religious view of the world and the scientific-physical and chemical view of the world.) To quote Yinger again:

> Science disproves religious beliefs, but it does not disprove religion. There may be conflict between science and a given religion, if part of its total system is a series of propositions about the nature of the world, but there is no general conflict between science and religion defined in functional terms. (Yinger, 1970; 61. See also pp. 93, 94).

The compatibility systems discussed above seem to be undermined by the claims of the social scientists. At first it might seem that the incommensurability thesis remains "undamaged" but the judgment is mistaken, for although the two communities are indeed incommensurable there is no doubt in the mind of the social scientist that science is the superior community. The value of religion, that is, is revealed by science—a conclusion far removed from the claims of the incommensurability supporters of the religious camp (e.g. T. R. Miles). It would seem, therefore, that even though the conflict thesis is only weakly supported in the contrast between religion and the natural sciences it is thoroughly established in the contrast between religion and the social sciences.

Two important questions need to be raised with respect to the social sciences and the science of religion in particular. The first concerns the descriptive sciences and especially the phenomenology of religion. It is important to know precisely the nature and structure of the historical religious traditions. The study of the various religious traditions show them to be very much concerned with a knowledge of the world, both mundane and supermundane. In the religious traditions of Judaism, Christianity and Islam, for example, the belief element is of considerable importance and has, in good measure, accounted for the force and power those traditions hold in the world today.[16] It is a fact then (revealed by a phenomenological study of religion) that religion consciously provides, or attempts to provide, explanations of the world.[17] Moreover, they are cognizant of the possible conflict between their explanations and those provided by the sciences and have developed compatibility systems to overcome or mitigate the conflict. To simply ignore this primary cognitive interest of religion is simply not acceptable—it is to overlook one of the key elements of the major religious traditions.

The second major question that needs to be raised concerns the methodological assumptions of the social sciences—in particular the assumption of atheism as it is enunciated, for example, by P. Berger (1961; 1963; 1967; 1971). It is impossible, it seems, to distinguish Berger's "methodological atheism" from atheism *tout court*. Such an atheistic (naturalistic) assumption is really a theological assumption, although in a negative mode, that is no more acceptable than the theological bias of the religiously committed person: either assumption introduces "distortion" in the study of the data.[18] Smart brings the point out clearly when he writes:

> . . . it happens that the dominant theories in sociology have allowed at most a partial autonomy to religion itself; and this may be a justifiable conclusion. However, it is not at all clear that the whole question of autonomy has been dealt with in a proper manner. . . . It has not been easy for the human sciences outside religion to rid themselves of an explicitly theological Discipline. (Smart, 1973; 22, 23)

The conclusions about religion reached by the social scientist, therefore, have no more inherent validity than do the conclusions reached by the critical study of the religiously committed. Consequently the supposed conflict between religion's self-understanding and the social scientific understanding of religion is not automatically resolved in favour of the social sciences.

A Renewed Understanding

The proliferation of compatibility systems suggests the emergence of a renewed understanding of both the scientific and religious communities. None of the systems, I think, is without flaw. All of them are helpful in one way or another, although some only negatively so in that they force us to re-examine old assumptions and presuppositions about religion and/or science. It is obvious, for example, that the early "skirmishes" over cognitive matters between the scientific and religious communities led to a hardening of the lines of opposition in which those in the religious community seemed to forget that religion is a matter of life and not only a matter of cognition—that religion is a matter of existential decision and commitment and not *merely* a matter of knowing the nature and structure of the universe. Furthermore, science, encouraged by its early victories in such "skirmishes," came to see itself as a wholly rational enterprise which could easily be broadened to include *all* of life—to apply to every aspect of human existence. The noncognitivist systems of compatibility with their emphasis upon the moral/emotional aspect of religion function, then, to place limitations on this scientific (scientistic?) rationalization of human existence.

Insofar as religion is not logical or epistemic calculation it has something to contribute to life that science does not possess. By denying cognitive import to reli-

gion, therefore, the noncognitivist avoids debate with the sciences and reveals the enriching effect that religion can have for man and society. The claim on the part of the scientific community to have no need of such enrichment, that is, that science would eventually rationalize or make meaningful the whole of our existence, has really not undermined the noncognitivist compatibility system, as one might suspect, but rather has further weakened the conflict theory. Gilkey, it will be remembered, points out that such a claim on behalf of science is really a "mythification" of science—a substitution of the scientific "myth of total awareness" in place of the older religious myths. And in this science reveals elements of ultimacy such as characterize religion. Gilkey's attempt at reconciling the two communities is extremely important for it suggests that compatibility systems may need as much scrutiny and analysis of science as of religion, for the real nature of science has yet to be revealed. Too much has been assumed about the nature of science too soon. Gilkey's own kind of compatibility proposal is not wholly adequate, however, for his suggestion that science needs necessarily to reach out to religious myths of ultimacy hardly follows from the fact that some have made of science a quasi-religious myth.[19] Furthermore, Gilkey fails to reveal whether this completion of science in the (revitalized) religious myths is a cognitive completion. It seems to me that it is not and therefore suffers the weaknesses of all noncognitivist proposals.

The claim that religion provides us with a radically different kind of knowledge than that provided by science parallels the claim of the noncognitivist in one respect. The noncognitivist completion of religion is not subject to scientific critique because it is "beyond" cognition. Similarly the claim to "super-knowledge" is beyond scientific critique for the criteria of knowledge do not apply to the knowledge obtained in the "realization" or experience of the Ultimate. As one scholar puts it in criticism of those who assume *all* knowledge subject to the same criteria:

> What can one say of all those treatises that attempt to make the religious doctrines a subject of profane study, as if there were no knowledge that was not accessible to anyone and everybody as if it were sufficient to have been to school to be able to understand the most venerable wisdom better than the sages understood it themselves? For it is assumed by 'specialists' and 'critics' that there is nothing that is beyond their powers; such an attitude resembles that of children who, having found books, intended for adults, judge them according to their ignorance, caprice, and laziness. (Shuon, 1975; 8)

This kind of compatibility proposal, however, fails to recognize that religions make ordinary as well as extraordinary knowledge claims. Furthermore, many of the extraordinary knowledge claims seem to have implications that bear upon states of affairs in the world and so involve implicit knowledge claims about the empirical world. Such beliefs can conflict with other nonreligious claims about the world and these are not accounted for within this compatibility system. However, even though it is inadequate as a compatibility system, it is nevertheless a salutary warning against scientific arrogance. Whether or not such superknowledge exists cannot be proven by science but neither can science disprove its existence.

The claim that there are genuine cognitive insights to be found in archaic religions that are capable of being re-expressed in modern scientific terminology hardly constitutes a compatibility system. It suggests the substantial or doctrinal compatibility of science and religion—or at least the possibility of a doctrinal or cognitive supplement to science by religion. How this is possible—except by happenstance—unless there is also a methodological compatibility is left unexplained.

Cognitive Significance of Religion

A compatibility system, it seems to me, is required only if religion actually claims cognitive significance and in particular claims knowledge of the nature, structure, and meaning of this world and our existence in it. If religion makes no cognitive claims or only purely trans-empirical (i.e. supraworldly) cognitive claims then it is in a different league altogether from scientific discourse and can never conflict with it. But religions do make empirically significant claims and so can conflict with science. In the history of Christian thought, for example, there has often been a conflict of theories or views of the world or some particular aspect of the world. That such cognitive disagreement is less noticeable today than in the past (i.e. less so after the overthrow of Newtonian physics)[20] shows some possibility of a compatibility between the two. That there is not complete agreement, and never has been, does not preclude that there cannot be. Scientific theories cannot be espoused as final truths for science is progressive. Similarly religious doctrines have often been inadequately interpreted. Since there is less than omniscience in either of the two communities a complete agreement of thought between them is hardly to be expected.

Mere doctrinal agreement between science and religion is not enough, as I have already intimated above. The knowledge claimed by religion must be testable or checkable in the same (general) way as is scientific knowledge. An adequate compatibility system, therefore, must show that religion in its cognitive aspect has a similar logical structure to science. In the past such proposals have been unacceptable for they assumed the complete rationality of science and then attempted to show religion to be as rational as science. However, the recourse to faith—the lack of absolute objectivity in religion—repeatedly dashed all hopes of success in this endeavour. As I have already pointed out, however, the procedure is now reversed due to new revelations about the nature of scientific thought. Crudely put, the methodological similarity is now seen to exist in the fact that scientific thought is really as "irrational" as theological thought. Much philosophical analysis of science and recent history of science seems to reveal that science is not a strictly logical and wholly empirical affair as it was once conceived to be. The work of philosophers and historians such as M. Polanyi (1958), T. Kuhn (1962), P. Feyerabend (1970) *et.al.* reveals a fiduciary character to science.[21] As Kuhn puts it, scientific thought is characterized both by "ordinary scientific thought" and "extraordinary scientific thought" but only the former can be characterized as wholly rational: a "deductive affair." Extraordinary scientific thought does not move in a logical step-by-step fashion but rather has the character of a "cumulative argument" and is, consequently very like

theological argumentation.

No Necessary Conflict

Whether science and religion are compatible, it should now be obvious, is a question that transcends the framework of thought of both these communities. That religion can enshrine superstitious or unfounded beliefs that can come into conflict with scientific doctrine cannot be disputed. But that there is a necessary and general conflict between science and religion has nowhere been shown. Doctrinally there have often been agreements between the two communities. And shifts of doctrine that bring about such agreement have not always been made by the religious community. Further, the claim that science and religion are radically different in method has until now been *assumed* on the strength of the modern reputation of science and has never been established. The various compatibility systems outlined above reveal a variety of challenges to the claim itself, or to the significance or meaning of the claim. The claim of an inherent and all-pervasive conflict between science and religion, I suggest therefore, is an *assumption*, not wholly groundless, but not a *conclusion*. The uncritical tenacity with which it is held at times suggests, moreover, that it is a modern myth. That none of the compatibility proposals outlined all too briefly above has achieved universal agreement among philosophers or even among theologians does not make the assumption more than an assumption. The dissolution of long-standing myths is never likely to be the result of direct attack, but rather the product of a steady erosion, over a long period of time, of the uncritical foundations upon which they rest. The insights *vis a vis* science and religion gained from the various compatibility proposals discussed hint at the groundlessness of the conflict assumption and, as a result, suggests the possibility of compatibility. Indeed, a thorough analysis of the classical compatibility system to which I have referred above will show, I think, not only the possibility of compatibility but also its plausibility.

The claim of an inherent and all-pervasive conflict between science and religion is an assumption, not wholly groundless, but not a conclusion.

NOTES

[1]C.f. Mascal, (1965; 31, 32).

[2]C.f. Scheffler (1967) and Bartley (1962).

[3]The concept of a morality of knowledge is not new. It was first used in the last century by William Clifford (1970). The idea refers both to the intimate connection between belief and action as well as to the act of believing in itself. There is the suggestion, or better claim, that there is a moral demand upon us in all the claims we make to be as clear as possible about what we are or are not saying and that we hold all such claims open to testing and checking of their validity or soundness. The scientists, then, are asking the theologians to be as clear in these regards as they are themselves. cf. Chisholm (1956), Harvey (1966), Lakatos (1970), *et. al.*

[4]The concept is Smart's (1973; 82, 83).

[5]There is no suggestion here that the typology is exhaustive. There may be other different and more fruitful ways of interpreting the vast literature on the subject. I have found this particular classification helpful here.

[6]For a similar analysis c.f. Greeley (1974).

[7]C.f. Cauthen (1969; 13-15, *et. passim.*).

[8]C.f. Harvey (1966).

[9]C.f. Scheffler (1967).

[10]By "justify" I mean here "to make acceptable." In this sense I regard Popper's talk of falsification as a procedure for making some claims (tentatively) acceptable. Time does not permit an analysis of Popper's claims here. I refer the reader to, *inter alia*, Achinstein (1968), Thakur (1970), and Kneale (1967).

[11]It is assumed here that knowledge can be radically distinguished from belief—only the former having certitude. I have subjected this assumption to critical analysis elsewhere and will not repeat the argument here. Suffice it to say that I see this distinction to be philosophically unsound; belief and knowledge exist on the same continuum. cf. Wiebe (1974).

[12]C.f. Schiller (1955).

[13]This is the burden of Polanyi's argument throughout his *Personal Knowledge: Towards a Post-rational Philosophy* as well as his other writings. (Polanyi, 1958).

[14]C.f. van Baaren and Drijvers, (1973).

[15]C.f. Berger (1967).

[16]C.f. Smart (1969).

[17]I have dealt with the issue of religious explanation in my "Explanation and Theological Method" (1976).

[18]For further discussion of this issue see my "Is A Science of Religion Possible?" (1978).

[19]A thesis similar to Gilkey's is to be found in the works of J. Ellul, especially in his *The Technological Society* (1964) as well in P. Slater (1970, 1974) and A. Whellis (1971, 1973). I do not, however, find myself in full agreement with the thesis as Gilkey frames it. According to Gilkey the myth asserts that man becomes man and can control his destiny if he becomes properly educated and that knowledge can change what has been a blind determining force over man into an instrument of his. But this is not what such advocates of the "myth" in fact proclaim. Such a picture of the new "myth-makers," applied indiscriminately to all philosophers of science is extremely crude. What the "secular man" says, it seems to me, is not that man *can* control his destiny but that since there is no one else (i.e. some great magician or divinity of whom we are aware as controlling our destinies for our benefit) to look after man, man must, if he is to survive, do so himself. And the best way of proceeding in this task is to know as much as possible about the nature of the physical and social worlds we encounter. As Karl Popper has it (1962, 1957), to suggest that man cannot and must not make changes and must not attempt to "remake" the world is to offer a very poor solution, or none at all, to the problem man faces. It is because of advice like this that so many cry out against a return to theology (e.g. S. Hook, 1961; Nagel, 1961; *et.al.*) To be sure, control must be wielded over the "controllers," as Gilkey puts it, but that control also is a human control. (See here particularly the section entitled "The Principle of Leadership" in chapter seven of Popper's 1962). Thus Popper, among others, in direct contrast to Gilkey, claims on behalf of the rationalist the lofty aim of bringing about a more reasonable world—a society that aims at humaneness and reasonableness; at a reduction of war, strife, etc.; at equality and freedom; a world in which one day "men may even become the conscious creators of an open society, and thereby of a greater part of their fate." (Popper, 1962, Vol. 2; 94). Neither the intention nor the result of rationalist action then is, as Gilkey has depicted it, necessarily tyrannical. Its intention, and possibly the result as well, is to lead man from a "closed society" in which his fate is almost totally controlled by others, to the open society in which the individual comes increasingly to direct his own fate.

[20]C.f. Mascal, (1965).

[21]Similar suggestions are to be found in R. Nash (1963); J. M. Ziman (1968); and Errol Harris (1970).

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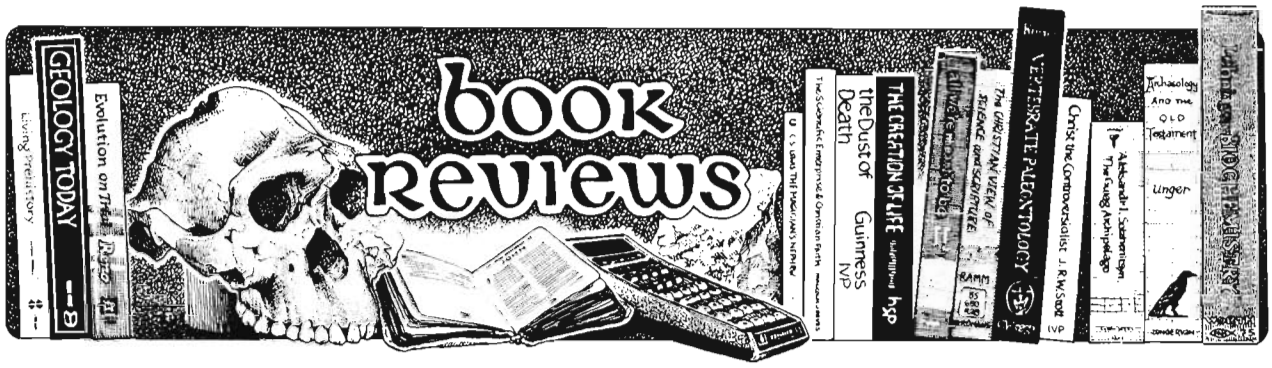
I am often tempted to ask those who argue that consciousness is beyond material explanation what they think will be proved about God or religion if it is demonstrated that there actually are phenomena of a nonmaterial order. Will not the discovery simply expand our understanding of nature's working but prove very little about God? If we base our religious convictions on the mystery of unexplained natural phenomena, our religion may suffer the fate of Newton's God-of-the-gaps; one day a Laplace may say he no longer has any need of our "God-hypothesis."

F. B. Burnham, Department of History, Wayne State University, in book review of *The Biology of God: A Scientist's Study of Man the Religious Animal*, by Sir Alister Hardy, Taplinger (1976) in *American Scientist*, March-April (1978), p. 254.



THE AGE OF VELIKOVSKY by C. H. Ransom, Kronos Press, Glassboro, N.J., 1976, 274 pp., $9.95.

VELIKOVSKY RECONSIDERED by the Editors of Pensée, Doubleday & Co. Inc., Garden City, N.Y., 1976, 260 pp., $8.95.

Immanuel Velikovsky has argued that the Earth has suffered near-collisions with Venus and Mars between 1450-687 B.C., producing global catastrophies. His books *Worlds in Collision, Ages in Chaos,* and *Earth in Upheaval* contain his evidence and arguments for these events. The resultant collision between Velikovsky and the "uniformitarian" astronomers and other scientists, has become an indelible blot on the history of science in America. In *The Age of Velikovsky,* Ransom reviews Velikovsky's theories and the associated historical reconstructions particularly of Egyptian history. He then goes on to outline evidence which has accumulated since the initial publication of *Worlds in Collision* in 1950 in support of Velikovsky's theories. He concludes the book with a discussion of the irrational reception which the scientific community gave and continues to give to these theories. For those who have been exposed only to the anti-Velikovsky side of the debate, *Age of Velikovsky* should provide a suitable antidote.

Velikovsky Reconsidered, like *Age of Velikovsky,* is unequivocally pro-Velikovsky. It consists of a collection of papers by Velikovsky and others which appeared in the periodical *Pensée* from 1972 to 1975. The papers are reprinted in this book with brief editorial introductions. Most deal with specific aspects of Velikovsky's theories, e.g. "Babylonian Observations of Venus", "Orbits of Venus", "Lunar Rocks and Velikovsky's claims", etc. The argument of both books is that Velikovsky has been badly maligned and misrepresented by his opponents and that there is sufficient evidence to make his theories a reasonable interpretation of recent events in the solar system. Undoubtedly Velikovsky has been badly maligned and misrepresented. In fact, the *American Behavioural Scientist* devoted an entire issue (7 (1): Sept. '63) to the irrational reception of his ideas, by the scientific establishment. Evidence for and against his theories will probably be debated for years to come.

The responses of Christians to Velikovsky's theories have been mixed. Velikovsky in no way gives a particularly Christian interpretation of history; he rejects ideas of supernatural interference in historic events and obviously favours an "old" earth. Hence he has suffered from the slings of some fundamentalists, as well as establishment scientists. On the other hand, some Christians have looked on his ideas with favour because he gives natural explanations for some otherwise supernatural events, e.g. plagues in Egypt, Joshua's long day at Beth-horon, etc., and in general accepts most of the Hebrew history in the Old Testament narratives as factual, providing correlations with Egyptian history. There will obviously be much ongoing debate on Veli-

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(Please contact the Book Review Editor if you would like to review one of these books.)

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kovsky's theories and it would be judicious to retain an open mind and to avoid premature judgments.

Reviewed by Steve Scadding, Department of Zoology, University of Guelph, Guelph, Ontario, Canada, N1G 2W1.

HARD QUESTIONS edited by Frank Colquhoun, Downers Grove, Illinois: InterVarsity Press, 1977, 131 pp., $2.95.

One of the greatest tragedies in Christendom is that many church members and curious outsiders are denied suitable answers to their questions about Christianity. This happens when shallow or erroneous responses are given by nescient church members or when those who can explain the Christian experience assume that church members *ipso facto* share their knowledge. Thus many people who are sincerely interested in learning the ways of God are left ignorant.

Hard Questions, a collection of 36 three-page replies to common inquiries into the Christian faith, addresses people "in the church and on the fringe." The essays are designed to direct thought and investigation on various issues, not to be comprehensive. The book's strength lies in its brief and readable chapters and its sympathetic and serious tone.

"Hell . . . fact or fiction?" is a representative chapter. The author begins by assuring readers that Jesus often spoke of hell; therefore hell exists. Those who reject Christ's redemption are punished with eternal solitariness because of their sinful nature. Moreover, redemption is a matter of choice, since God will not deny men their free wills. Lamenting over the widespread disbelief of hell, the author ends by prophesying that "we are unlikely to see any great awakening in the ranks of paganism."

Though the positions in the book are firm, readers are not led to believe that Christianity is comprised of brittle dogmatisms. Openness is evident in the chapter "Should all Christians seek to speak in 'tongues'?" The author says that all Christians are not given the gift of speaking in tongues, but does not deny the faith of Dennis and Rita Bennett who believe otherwise.

Hard Questions has its drawbacks, though. The chapters' brevity may make the answers seem trite. Also, certain passages assume biblical knowledge which many readers may lack. Baptism is posited from the Church of England's viewpoint and one contributor knows that "these are the last days." Finally, two authors offer conflicting viewpoints: One implies that biblical truth is not lost when its world-view is discarded (e.g. Christ's "ascension" was actually "a disappearance . . . out of our space and time altogether"), though another writer, denouncing the view that Satan is a personification of man's evil, adheres to a literal interpretation ("the plain teaching of the Bible").

Colquhoun's book is not to be impersonally offered to the curious. It should set an agenda for discussion, not satiate or quell the inquisitive.

Reviewed by John P. Ferré, Graduate Teaching Assistant, Department of Communication, Purdue University, West Lafayette, Indiana.

HEALTH GUIDE FOR SURVIVAL by Salem Kirban. Published by Salem-Kirban, Inc., Huntington Valley, PA, 1976. $3.95.

The problems with this book may be with the author, rather than the subject, Carey Reams, with whom I am not directly familiar. It seems possible that Salem Kirban has unknowingly done him a disservice, at least in the eyes of the scientific world, in writing this book. It is also conceivable that both Kirban and Reams may have done a great deal of good. Nonetheless, I cannot be kind to either. Further, even though I doubt if few, if any, who are directly affected will read this review, it seems that the subject is appropriate for these pages.

Carey Reams, "a biochemist and biophysicist as well as an ordained minister" (back cover) has established a clinic in the Georgia hills, where he tests the acidity of people's urine and saliva, the amount of sugars and carbohydrates in the urine, salts in the urine, number of dead cells excreted per 100 lbs. of body weight, amount of urea in the urine and examines the size of the capillaries in their eyes. He then computes a "frequency" for them, tells them what is wrong with them, and prescribes an individualized diet, usually with initial fasting, to remedy the problem.

Salem Kirban is the author of 26 books (more by now, no doubt), mainly on prophecy. He calls himself "an investigative reporter". This book, and another I have read, (*666*) are sensational pastiches of the Bible, charts, photos of newspaper clippings, and the author's ideas and experiences. Kirban's investigation of Reams not only convinced him that Reams is doing a good work, but also led him to join or copy him.

Kirban quotes Reams as saying "I am an ordained minister and a biophysicist teaching the health message as written in the Bible . . ." (page 20) Kirban describes Reams as "Minister and founder of the Interfaith Christian Church". (unpaged photo caption) The biblical basis of the health message of *Health Guide for Survival* is not clearly explained. There does seem to be a use of the Jewish dietary laws. However, tuna fish is also proscribed, (page 40) contrary to Leviticus 11:9, which would seem to allow it.

Reams is quoted on the explanation for the difference between clean and unclean meats, based on "seven years of research" (page 47):

> . . . the unclean meats digest in a period of 3 hours. The clean meats require about 18 hours. What this means is that the energy in pork and other unclean meats is released in 3 hours instead of 18. . . . It's like putting high test gasoline . . . in a motor that's not built for it! . . . We may eat these high energy meats for years and appear seemingly healthy, but this continued abuse of our body one day surfaces into a serious or terminal disease! (page 50)

Kirban, Reams, or somebody, has a highly unorthodox explanation for the source of energy in food. This is explained on a chart on page 62, which states:

> The *Anion* orbits in a counter-clockwise direction.
> The *Cation* orbits in a clockwise direction.
> The resistance between these two forces creates *energy*.
>
> *Anion*
> An alkaline substance. It contains the smallest amount of energy known to man. It is a *negative* ion. It will

contain from 1 to 499 Milhouse units of energy.

Cation
An acid substance. It contains the next smallest amount of energy. It is a *positive* ion. It will contain from 500 to 999 Milhouse units of energy.

. . . When a person gets sick, there are never enough *anionic* substances present to supply the energy he needs from the *cationic* foods eaten. In effect, we do not properly digest our food. Why? Because there is an improper balance between *anions* and *cations* necessary to produce energy.

So how do we get the missing anionic substances? From lemons.

> Lemons are ANIONIC and the liver can manufacture those molecules of anionic substances into an extremely large number of different enzymes. These anionic molecules digest these cationic molecules in our food. (p. 63)

Except that anions are negative, cations are positive, and the liver does make enzymes, as far as I can tell, the whole scheme is a fabrication. I checked the *McGraw-Hill Encyclopedia of Science and Technology* and the *CRC Handbook of Chemistry and Physics* for Milhouse unit, and found nothing.

Perhaps the most startling statement in the book (though there are other candidates) is the folowing:

> When the calciums, and there are over 1/4 million different kinds (of calcium), mixes with the oxygen, it forms a natural hydrochloric acid. (p. 134)

It seems no wonder that the medical community has not accepted Reams. The only possible way for a person with any scientific training to approach these treatments is to ignore the explanations, and look at the results. Unfortunately, Kirban's "investigative reporting" of the results has not been too thorough. The most important statistic is that

> *according to Dr. Reams,* some 10,000 of these [24,000 (1970-71)] patients were given up to die by their doctors and yet . . . only 5 people out of these 10,000 terminally ill patients failed to respond to diet! (italics mine) (p. 53)

This claim is also repeated on the front of the book. As Kirban says "No medical doctor . . . no hospital . . . can match this track record!" (p. 53) True. However, Kirban did not check it, and makes no pretense of having done so. I hope Reams *has* that good a "track record." But there is certainly room for doubt.

A goodly portion of *Health Guide for Survival* is given to downgrading the health professions and detailing expensive treatments and failures, or to instances when the truth has been suppressed. Many of these things are true. Undoubtedly the orthodox medical community *is* resistant to change because of vested interests, economic and otherwise. Kirban also states that Reams was, at least once, arrested at 2 a.m. This is harassment, and seems to have been unnecessary, especially in the case of a septuagenarian minister.

However, both the argument of vested interest and the argument of suppression have obvious faults. Even though Galileo, Newton, and many others may have been persecuted for speaking the truth, this does not prove that everyone who is harassed and rejected by the establishment is right.

As to the vested interest argument, it works both ways. Salem Kirban has a vested interest in promoting Reams. Some of it is economic. Kirban has published at least five books on health. In the back of *Health Guide for Survival* there are ten pages of advertising and/or order forms for items furnished by Kirban. Some of it is "face." Kirban has staked his character on Reams' methods, and, like you or I might in his position, argues passionately for them.

Both Carey Reams and Salem Kirban appear to be dedicated and God-fearing. They have convinced many good people, including some of my acquaintances. They have not convinced me.

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THE REBUILDING OF PSYCHOLOGY by Gary Collins. Wheaton, Ill.: Tyndale House, 1977.

In *The Rebuilding of Psychology,* Gary Collins critically analyzes psychology from its foundations to its practice. Collins defines psychology as the science of human behavior and its goal as finding solutions to human problems. He then evaluates three major approaches to psychological inquiry: experimental (behavioristic) psychology, counseling psychology, and humanistic psychology. He contends that none of these have contributed significant solutions to human problems. He therefore concludes that something is wrong at the core of Psychology.

Collins illustrates that at the foundational level beliefs (assumptions) are expressed in psychological inquiry. Empiricism, determinism, relativism, reductionism and naturalism are basic assumptions which characterize the discipline. The two sources from which assumptions can be drawn are theism or nontheistic naturalism. Collins contends that psychology's foundation ought to be theistic rather than naturalistic. Empiricism, determinism, and reductionism can be accepted in modified form. Relativism must give way to biblical absolutism, and naturalism must succumb to Christian supernaturalism.

Given the new foundation and modified working assumptions, Collins describes how the new psychology would operate. Psychology would study "natural man" and "redeemed man" under an additional set of assumptions: that man is unique in the universe, that man is of worth and has volition and responsibility, and that God has the power to intervene in individual lives. Psychologists would use empirical and non-empirical methods in this study of man. Psychology and theology would be integrated; descriptions and explanations of behavior at one level would supplement descriptions and explanations at other levels. Highly specialized research would continue, but conclusions from such research would be subject to the limitations imposed by the additional assumptions. Counseling would focus on the needs of a person who may be physically, socially, psychologically or spiritually abnormal (alienated from God). The therapist would use a variety of techniques, including proselytizing, to meet the special needs of his client. This new foundation should place

psychology in a better position to fulfil its goals.

Collin's book is easy to read and stimulating. He often illustrates important points with clever anecdotes. Collins' new psychology is, however, based on a definition of the discipline and a view of its goals which are not universally accepted. Some psychologists contend that psychology is the study of behavior wherever it occurs. Man is not the sole focus for study. The scientific goals associated with this approach may be to increase understanding and/or to systematize a large body of data into a coherent theory. These "pure" science goals provide an alternative perspective for evaluating progress in the discipline which Collins fails to consider.

Another weak point of the book is Collins' treatment of experimental psychology as synonymous with behavioristic psychology. Radical behaviorism and accompanying logical positivism are not embraced by many experimental psychologists. Collins' criticisms of behaviorism do not, therefore, apply to all experimental psychology.

While psychology undoubtedly has some foundational weaknesses, Collins fails to establish that its weaknesses are related to its non-theistic premises. He, nevertheless, suggests adopting assumptions which seem incapable of producing changes in the outcome of the science. It is the nature of science that assumptions should be kept at a minimum rather than added arbitrarily.

Christians certainly ought to be concerned about integrating their discipline and their faith. Integration however, seems to be more an attitude rather than an imposing of one discipline's methods on another discipline which employs different methods. As Collins correctly points out, difficulties arise when different methods seem to provide *different* answers to similar questions. It is precisely at this point where attitude seems to be crucial. The Christian must recognize limitations on each discipline involved, and remain open to further understanding.

Collins' most important contribution may be his exposition of presuppositional foundations of psychological inquiry. In addition, he establishes the compatibility of psychological and theological approaches to behavior, and he may stimulate discussion of how the two approaches interact. It would, however, be unfortunate if *The Rebuilding of Psychology* were viewed as an end, rather than a beginning of inquiry into the integration of Christianity and psychology.

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THE DEVELOPMENT OF CONSCIOUSNESS: A CONFLUENT THEORY OF VALUES by Brian P. Hall, New York: Paulist Press, 1976, 268 pp., $5.95.

Having worked in value theory and practice for more than ten years, Brian Hall found himself pressed by questions some of the major authors such as Rokeach, Simon and Kohlberg did not answer. The questions had to do with "perception" ("world view"), viz., why is it that people having common values (on the surface) perceive these same values so differently? In his book *Value Clarification As Learning Process* he attempted to resolve some of the dilemmas involved by pointing out that "on the surface we often confuse value as behavior with value as ideal or belief (imagination only)" (p. 234). In the present work he sets forth a four-stage developmental model of consciousness together with the core values that characterize each stage. This model is to help the educator or counselor in determining how a person perceives the world, what stage of development the person has attained, and what values and inter-personal skills need to be re-enforced to move the person into the next stage.

Each stage of development (or "phase of consciousness") has certain basic needs which determine the characteristic values. The environment is hostile to the gratification of these needs. The person struggles to "domesticate" his environment. In this struggle a person finds meaning for his life. "At every phase of development the need for meaning is central, but at each phase it is tied to different concrete needs" (p. 83). Provided he has the necessary instrumental and inter-personal skills, the person moves to the next phase "because he has internalized the values of the primary stages and thus no longer experiences a need for them and therefore is driven to look elsewhere for meaningful experiences." (p. 108)

The first phase is generally the level of consciousness of the young child whose basic needs are food, warmth and physical affection. These needs foster the basic values of security, survival and pleasure. "An adult on this level . . . is so influenced by these egocentric impulses that he rarely resists them." (p. 60) A social dimension is added to the consciousness of a five or six year-old, as he learns that to "get along" he needs "their" approval, gained through accepted behavior, skill and competence. Thus, the basic need in the second phase is self esteem, which is achieved by becoming useful to society. So belongingness and being accepted by other are key values. "In our society . . . most people remain at an upper phase two position" (p. 57). The movement from phase two to phase three is most traumatic. In phases one and two the person sees authority as being external to the self; in phases three and four the person takes authority into himself. A person usually cannot move into the third phase until age sixteen. He "no longer needs self worth as affirmed by others since that value is now an internalized part of his system. . . . The point around which consciousness revolves at this phase is the need to be self-directed." (p. 71) The basic needs of personal authority, freedom and dignity foster independence, equity and service as values. Not only is there in phase three a relocation of the center of authority, but there is also for the first time a movement from egocentricity towards justice and rights for mankind. In the fourth phase of consciousness this movement brings a "complete transcendence of the self," in which a person no longer views himself as acting independently, but always interdependently with others for the betterment of the world. The basic need is for wholeness and ecological-personal community manifesting itself in valuing harmony, interdependence and the integration of mankind. "Inner harmony must be integrated with social harmony through technology" (p. 79). Few have attained the fourth phase. Much of what is known about the

value system of phase four is extrapolated from phase three. It is possible that there may be yet higher phases of consciousness. "Our vision stops at Phase IV as an evolutionary possibility. But that is only because that is as far as I can see. We would assume there is a beyond . . ." (p. 257).

Hall's scheme gives us useful insight into how valuing relates to world view. However, critique is needed. Whereas the literature of psychology is replete with empirical verification of what Hall calls phases one and two, the latter phases are supported less well. It is difficult for me to accept the Romantic idea that the consciousness of mankind is evolving into a universal concern for harmony in all its parts. The only actual people Hall cites as having a phase four consciousness are Socrates, Gandhi, Buddha and Jesus, all of whom I think he has misunderstood. His central dynamic involving man's search for meaning seems dialectical, and Kierkegaard's critique of Hegel is apropos. The gratification of his needs (thesis) is negated by the environment (antithesis), and so man struggles to domesticate the environment (synthesis). Hall claims that by moving through this process man finds meaning. Yet the search for meaning is not the possession of it. This process is unending. To have meaning there must be an ultimate dialectic between the ego's need for meaning and this unending search which results in a reorganization of the ego around the Divine. This is the complete transcendence of the self, *contra* Hall's phase four. Augustine put it perhaps more simply, "Thou hast made us for Thyself, and we are restless till we rest in Thee." Nevertheless, Hall has given us much food for thought in an area of increasing interest for contemporary society.

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MEN, WOMEN AND CHANGE: *A Sociology of Marriage and the Family,* by Letha Scanzoni and John Scanzoni, New York, McGraw-Hill Book Company, 1976, 504 pp.

Men, Women And Change is an introductory text to marriage and the family, but unlike many textbooks it has considerable popular appeal. Letha (professional writer) and John (sociologist) Scanzoni collaborate to produce a book that achieves their goal to "treat the subject in a way that is solidly scientific but at the same time in a way warmly human." The underlying theme of the text is change. Since our definitions of family roles and relationships are influenced by larger cultural values and norms, the authors discuss the effects on personal family relationships caused by a changing society. Topics usually discussed in marriage and family courses are covered in *Men, Women And Change,* but there is an important sociological bonus. The Scanzonis explicitly and systematically use social exchange theory to analyze changing family roles and relationships. The blend of sociological theory and research data with realistic case studies and illustrations makes the book an excellent learning tool.

Social exchange theory assumes the bartering of valued objects, services and sentiments to be a basic social process. The motivation for specific exchanges is an individual matter, although each person is influenced by larger cultural values. Thus the Scanzonis assert that life is a series of reciprocal (but not always equal) exchanges, which occur in dating, marital and sexual relationships as surely as they do in politics and economics. Political and economic changes affect the exchanges that occur in our intimate relationships. For example, prior to the industrial revolution the patriarchal family, based on the wife's subordination, was a common family structure. Reciprocal exchanges occurred: wives received economic benefits and protection from their husbands in exchange for work in the household, sexual favors and emotional support. However, these exchanges were far from equal, because women had relatively little bargaining power. The increased educational and employment opportunities available to women as a result of the industrial revolution freed them from economic dependence upon males and dramatically increased their bargaining power. Exchanges now have the potential to be more equal. Women who work and bring income to the family have the power to bargain for a better division of labor in the home and for sexual and emotional mutuality.

A marriage, then, is a relationship consisting of a continuous series of exchanges and negotiated adjustments which each partner is free at any time to renegotiate: a process occurring in both the structural and emotional aspects of the relationship. The bargaining is a form of conflict in marriage which may be healthy, leading to empathetic and rewarding relationships, or

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Having finally understood that scientific truth is a source of power, man has made the crucial decision that from now on the will to power and the uses of power should dictate the relevance and value of that truth. Because of that decision, "pure" science, the science of the past four hundred years, will begin to be altered in subtle ways and will eventually disappear . . . the real decision was made twenty years ago when that same community compromised its innocence by accepting enormous increases in financial support from the society, without any concern for why the society was giving it.

Walter R. Thorson

"The Spiritual Dimensions of Science," in *Horizons of Science*, C. F. H. Henry, ed., Harper and Row (1978), p. 221.

unhealthy, leading to family violence and/or dissolution. Some readers may not be happy with the authors' comprehensive application of exchange theory to marriage and family relationships, because we are not always rational, calculating people when involved in such intense and personal associations. But the Scanzonis do show that sociological theory and family studies are compatible.

The overall approach to marriage and family change is positive and guardedly optimistic. The book was not written specifically for use in Christian college classrooms and challenges traditional Christian thinking about the family, but its underlying values are Christian and humane. *Men, Women And Change* is a text which many Christians teaching sociology should consider seriously and one which the Christian interested in the subject will find both challenging and rewarding.

Reviewed By Jack Hazzard, Department of Sociology, Houghton College, Houghton, New York.

OUR COSMIC JOURNEY: *Christian Anthropology in Light of Current Trends in the Sciences, Philosophy and Theology* by Hans Schwarz, Minneapolis: Augsburg Publishing House, 1977, 379 pp., $12.95 cloth, $7.95 paper.

In keeping with the accepted anthropological paradign, Schwarz has attempted a holistic approach to the study of man that, to this reviewer, falls very close to the mark. Weaving into a logical pattern data from the natural and social sciences with theological insights, he has produced a book of immense scope that calls the reader to both rejoice in man, as well as to carefully assess the problems that seem attendant to humanity in its present state. On page 13 he says, "We have domesticated the world in an unprecedented way, but we have lost our souls and each other in the process."

Through various chapters he deals with the development of thought from historic times to the present, accompanied by copious literature citations (840) to help the serious student. The chapter titles include: "The Universe"; The "Phenomenon of Life"; "Humanity —A Unique Species"; "God's Own Creation"; "The Human Predicament and the Cause of Evil"; "Human Sinfulness"; "Under God's Care". It is a book filled with the history of psychological theory, anthropological theory, physics theory, and biological theory. The reader is brought up to date in these disciplines to the degree that they relate to the questions, "what does it mean to be a human being?" and "what is our position in this universe?"

For the most part, his handling of the topics is straight forward. After a historic review of the particular discipline, he injects his own interpretation and then provides a comprehensive summary of the chapter's main points.

I was personally most interested in the chapters on the origin and evolution of life and the behavioral and physical aspects of man that make him unique. Schwarz handles the material fairly and allows the reader to see the wide variety of opinions that have been put forward, especially since Darwin's publishing days. His conclusions here are somewhat open-ended. He takes us as far as the data can go and tells us that there are certain things concerning origins and evolution that we have no answers for, knowing full well how ambiguity can be disturbing to the inquisitive. To me this is a far more honest approach to these human paleontological problems than we get in a lot of the quasi-scientific material cranked out on the subject today from some Christian circles.

The remainder of the book attempts to integrate theology with the scientific data, and again, he does an admirable job. Our responsibilities as God's administrators of the earth are laid out with the hopes that ". . . we regain a sense of direction and dignity, and a point of reference" (p. 268).

As with any book of such scope, there are points where the reader will take exception to various historic or theoretic interpretations, but at least the text provides a jumping-off point for our own personal "cosmic journeys." I wish the book had been available when I was in graduate school. Many of the struggles I had with available data are dealt with here in a coherent manner. In his own way, Hans Schwarz is in the lineage of Asa Gray and Charles Lyell concerning the integration of faith and science.

Reviewed by E. Steve Cassells, Assistant Professor of Anthropology, Judson College, Elgin, Illinois 60120.

THE HUMAN BRAIN by M. C. Wittrock and others. Englewood Cliffs: Prentice-Hall, 1977. 214 pp., $3.95.

MECHANICS OF THE MIND by Colin Blakemore. Cambridge: Cambridge University Press, 1977. 208 pp., $6.95.

THE DRAGONS OF EDEN by Carl Sagan. New York: Random House, 1977. 263 pp., $8.95.

Each of these books purports to be about the brain, and yet the degree of liberty taken with the topic varies quite dramatically. The simplest way of gauging the manner of treatment is to look at the titles, from the direct—if unexciting—*The Human Brain*, to the perplexing and semi-religious, *The Dragons of Eden*. That the brain conjures up such diverse responses is to be expected. What is unexpected is the flagrant way in which concepts are manipulated to square with the authors' philosophical presuppositions. If you think that Blakemore's book will help you understand the "mind," you will be disappointed, while *Eden* simply serves Sagan's own myth-creating purposes.

But, to start with the straightforward: *The Human Brain* encompasses a number of areas within the neurosciences, and sets out to provide people such as teachers, school administrators, guidance counsellors and undergraduate students with an opportunity to learn about recent research on the human brain. To this end, it contains articles on the fundamental processes and structures of the brain, and on some of the educational implications of recent brain research.

To a large extent, this goal is achieved. The various contributors, including Harry J. Jerison, Michael S. Gazzaniga and Joseph E. Bogen, sketch some of the

present research paths in an interesting and informative fashion. Emphasis, whether deliberate or not is unclear, is placed on evolutionary aspects of brain organization, and the distinction between the right and left hemispheres. What is intriguing is that, although Jerison makes as strong a case as possible for the importance of an understanding of brain evolution for contemporary life, the applied articles on education rely rather on the results of split-brain studies.

It is becoming commonplace to distinguish between the attributes of the right and left cerebral hemispheres. Gazzaniga, one of the pioneers in this field, underscores the redundancy in the system, suggesting that all language and spatial functions may not be exclusively lateralized to the respective left and right hemispheres. One of the educational implications of a dichotomy between the abilities of the two hemispheres is that individuals may be spatially bright and verbally dull, or *vice versa*. If this is the case, tests will have to be developed to diagnose an individual with respect to his specific mental skills. The philosophical implications of a distinction between left and right hemispheres are largely overlooked by Gazzaniga, beyond the somewhat helpful generalization that there may be a doubling of consciousness. Another contributor, Robert D. Nebes, follows Ornstein's admixture of philosophy and education with his contention that our society's stress on left-hemisphere skills has led to its technological orientation, in contrast with the mysticism of the East which presumably stems from right-hemisphere attributes. It is a pity that no serious attempt is made to analyze the data behind this distinction. It would also be helpful to know whether the results obtained on split-brain studies can be directly applied to individuals and societies operating with integrated right and left hemispheres. Stephen D. Krashen's sober analysis of the left hemisphere and of cerebral asymmetry helps, in an indirect fashion, to answer this query with his demonstration of non-language processing in the left hemisphere.

Investigations into the respective functions of the right and left cerebral hemispheres have a long way to go. It is unfortunate that they have been pounced upon by advocates of various forms of mysticism. While much remains unsettled, they do force us to ask ourselves whether we in Western societies have overemphasized the values of an analytical attitude and of logical reasoning. Furthermore, has the Christian Church fallen into the same trap? However we phrase this question in terms of right and left hemisphere functions, the need for a balance between verbal and non-verbal thinking, between analysis and comprehension, remains. What we need to be emphasizing is integration between different types of approach, between right and left hemisphere functions, between understanding the tenets of the faith and their application in daily living. Perhaps research on the cerebral hemispheres does, after all, have a place in reminding us of essential biblical emphases.

Blakemore's book, *Mechanics of the Mind*, is a beautifully-illustrated, easy-to-read account of various facets of brain structure and function. Like *The Human Brain*, it is selective in its contents. It is, however, very much the product of one person and one person's interests, mirroring his own biases which are stated rather than argued through. For instance, he has no sympathy for Ornstein's conclusions emanating from right-left hemisphere differences. These are, therefore, summarily dismissed. Perhaps he should have read *The Human Brain*.

Underlying much of Blakemore's account of the brain is an implicit materialism. In order to express this, he departs from the brain for long digressions on language, physical anthropology and evolution. While much of this makes interesting reading, it lends itself to glib conclusions and gives the author ample scope for expanding on his materialistic presuppositions.

Blakemore discusses consciousness in the context of sleep, as he considers that its experimental study may throw light on the control of consciousness which, in turn, may provide more objective criteria for the definition of death. According to Blakemore, sleep ("this nightly appointment with death") is the most profound loss of consciousness we experience. But what is consciousness? Blakemore is far from sure. For him, it is "the rumour of a phenomenon" and he cannot conceive how a scientist can find methods to measure what he terms "the private deliberation of the conscious mind." But he cannot bring himself to dismiss consciousness as a mere epiphenomenon. When confronted by free will, though, he is even more perplexed and sees it as an internal explanation for the flexibility of our own behaviour.

In discussing perception, his own area of research, Blakemore is on surer ground. By an interesting admixture of scientific history, philosophy and art, we are reminded of "the deceit of the eye" and the internalization of knowledge. One feels that these concepts pose immense problems for Blakemore. He appears to be looking for something beyond the mere complexity of the brain and its neurons, but is prevented from doing so by his presuppositions. What he is left with are linguistic conundrums—fascinating but hollow. For instance, what is one to make of his statements that neurons are Cartesian souls with, what is more, intelligence?

Similar difficulties emerge during his discussion of language. As this is cast in the framework of man's uniqueness (or lack of it), great stress is placed upon the teaching of American Sign Language to chimpanzees. Blakemore sees the success achieved in this venture as destroying the myth of man's biological uniqueness, but here again he is not certain and he concedes that speech is unique to man.

Inevitably the contrast between the right and left hemispheres is featured by Blakemore and, commendably, he calls for the marriage and harmony of the two. This leads to a discussion of brain control, in which psychosurgery, electro-convulsive therapy and some aspects of psychiatry are treated somewhat harshly and glibly.

Not surprisingly, Blakemore views the brain as central to an understanding of human behaviour. This, in turn, is basic to attempts at overcoming dogma and discrimination. The complexity of the brain is daunting, but it is even more daunting to suggest, as Blakemore appears to do, that an understanding of this complexity will lead to a new ethical system "based on the needs and rights of man." Surely neurobiology does not, and never will, possess this depth of explanatory power.

One is tempted to retort that the brain has forgotten its dependence upon all else that makes a human being what he/she is, and in so doing has also overlooked the inter-relationship of humans within society and of humans to their God. The brain struggling to understand the brain is *not* society trying to explain itself, as Blakemore asserts.

Carl Sagan in *The Dragons of Eden* appears to have much the same presuppositions as Blakemore, in spite of his—at times—bewilderingly fresh ways of expressing himself. Sagan states that his fundamental premise about the brain is that its workings are a consequence of its anatomy and physiology, and nothing more. Hence, any form of mind-body dualism is excluded. By itself, this basic premise does not determine the direction of the book but, as with Blakemore, no further explanation is carried out in this area, the premise being left to stand on its own as sufficient evidence to support whatever case follows. An illustration in Sagan's instance is his apparent support for a sanctity of human life ethic on the basis of the immense number of different configurations of brain states that could exist.

Sagan's approach to the brain is an unashamed evolutionary one. As a convenient launching pad for this approach, he adopts a triune brain concept according to which the brain can be subdivided into midbrain, limbic system and neocortex. The significance of this subdivision stems from the assertion that the midbrain is the phylogenetically-oldest part of the human brain, hence the expression, "reptilian or R-complex." The limbic system is next oldest, while the neocortex is best developed in the higher mammals and primates, so much so that it is virtually diagnostic of the human condition.

On this basis, Sagan regards human behaviour in terms of these three brain components. The R-complex, for instance, has a role in aggressive behaviour, territoriality and ritual, that is, allegedly reptilian characteristics, from which he argues that much of human behaviour can be described in reptilian terms and is even controlled by this part of the brain. Nevertheless, he is unwilling to take this position to its logical conclusion and finds refuge in the plasticity of human behaviour to prevent rigid adherence to genetically-preprogrammed (reptilian) behaviour. Altruistic, emotional and religious aspects of human life are localized to a significant extent in the limbic system, while reason is a function of the neocortex. Sagan concedes that this triune brain model is a metaphor, and yet the stress he lays upon it suggests he is using it in an attempt to bestow meaning upon human behaviour without having recourse to any explanatory principle outside man himself and his possible forebears. This suggestion is borne out by his emphases upon man's evolution as well as upon his novel reinterpretation of the Genesis account of the Garden of Eden.

Like Blakemore, Sagan gives a detailed account of the linguistic abilities of chimpanzees. His account constitutes a useful summary of work done with such chimpanzees as Washoe and Lucy. He concludes that chimpanzees are capable of abstraction, and this leads him into some romantic meanderings about the quality of a chimpanzee culture incorporating some form of oral tradition. The far more important issue of asking why there are no nonhuman primates with an *existing* complex gestural language is inadequately answered in terms of competition from humans. Perhaps this is a theological rather than a biological question. If so, it is a pity that Sagan completely overlooks its significance, constrained as he is by non-theological presuppositions.

The dominance of the R-complex in Sagan's thinking emerges again in his discussion of sleep and dreaming. The characteristics of dreams (corresponding to aggressive, hierarchical and ritualistic functions) are reminiscent of reptilian characteristics, he argues, and are repressed by the limbic part of the brain during waking.

Left and right-hemisphere differences are summed up in evolutionary and fairly speculative terms, with the verbal abilities of the left hemisphere obscuring the more intuitive nature of the right hemisphere. Fortunately, he recognizes the contributions of both hemispheres for the majority of human activities, although, in order to reach this conclusion, he has to overlook his earlier conclusions extrapolated from evolutionary premises. Sagan does not seem to be aware of this conflict, and offers no hypotheses to account for the collaboration between the hemispheres. Human culture, as he says, may be the function of the *corpus callosum*, but what does this mean and how did it come to pass? Again, we are back at the limitations imposed by his presuppositions.

The major impression left by both Blakemore's and Sagan's books is that the brain of man and human intelligence constitute by themselves fundamental explanations of the meaning and rationale of human existence. There is nothing new in this, although the brain rather than intelligence is central for these authors. Sagan

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The traditional answer . . . has always been that truth pursued for its own sake is good, in and of itself, and that the decision regarding the ends to which we shall put knowledge of truth is a separate moral question. I believe this is fundamentally the correct answer—or rather, it was the correct answer. The fusion of science and technology means that, increasingly, the moral decisions as to the uses of truth will be made pre-emptively, before the truth itself is even sought; we shall seek only the truth which fits our purposes.

Walter R. Thorson

"The Spiritual Dimensions of Science," in *Horizons of Science*, C. F. H. Henry, ed., Harper and Row (1978), p. 221.

is far more explicit than Blakemore in revealing his presuppositions. For him "the aperture of a bright future lies almost certainly through the full functioning of the neocortex . . . a courageous working through of the world as it really is." By contrast, Christianity "betokens a lack of intellectual rigor, an absence of skepticism, a need to replace experiments by desires" and is, according to Sagan, a limbic and right-hemisphere doctrine. At this point, Sagan converts neurobiological pointers into philosophical dogmas. He oversteps the bounds of experimental data, by transforming what at the best are speculative interpretations of data into misleading clichés. The lack of intellectual rigour in his own position is amply demonstrated by his attempts to derive social and medical ethical principles from an understanding of the brain.

Each of these three books has much to offer. The human brain is indeed fascinating and perplexing, full of mystery and perhaps hope. However, once it is used to extrapolate to the human condition, immense caution is required because our brains are not nearly as remote from our cherished ideas as some neurobiologists would have us believe.

Reviewed by D. Gareth Jones, Associate Professor of Anatomy and Human Biology, University of Western Australia, Nedlands, West Australia.

EROS DEFILED: THE CHRISTIAN AND SEXUAL SIN: by John White, Downer's Grove, Illinois: Inter-Varsity Press, 1977, 172 pp., $3.95, paperback.

White, an Associate Professor of Psychiatry at the University of Manitoba, presents a very concerned, humane, informed discussion designed to help the reader understand and overcome various sexual deviations. He stresses that a person helping others in this area should not be judgmental, pointing out that acceptance and concern is the proper Christian and psychological stand. On the other hand, White stresses that one should not try to help a person by condoning wrong behavior. Sin is falling short of the law; and a sexual sin is indulged in because of a falling short of the mark of perfection because of personal shortcomings, ignorance, exploitation by others, or unfortunate circumstances. Victims are helped not by condemning, but by removing the ignorance, helping the person to change the situation which influences the undesirable behavior, and to gain the knowledge necessary to overcome the condition. White repeatedly stresses that evangelicals' "obsession with sexual purity is all out of proportion to our concern for other Christian virtues," (p. 49) such as honesty, concern for our brothers, and Christian priorities.

White advocates an absolute standard of morality. For example, adultery and fornication are always wrong, though circumstances might change the degree of guilt involved and the degree an act reflects negatively upon its perpetrator. The absolute standard, though, is only a goal, and we must recognize many will fall short. Our concern is with helping as many as possible reach that "ideal goal," a state which will, White stresses, facilitate our personal happiness and well being. White illustrates the variable guilt concept as follows: rape, sex for an afternoon's fun, and sexual relations as an expression of deep affection all could be examples of fornication, but clearly all are not equally serious. White opts for a balance, pointing out, for example, the hypocrisy between electing a millionaire with a touch of greed to the church board while unequivocally condemning the parishoner who goes to bed with his neighbor's wife. Both sins may be equally serious, but the first tends to be winked at while the second causes unending talk.

White seems to be somewhat unnecessarily restrictive of sexual activities between husband and wife. He bases his restriction on the obvious design of the sexual organs and therefore feels their use should be restricted to copulation. Yet physiologists have pin-pointed a number of bodily areas which are clearly erotic and designed to elicit erotic feelings. Should these areas be avoided? White acknowledges that he does not feel sex is intended primarily for begetting children, but also for the couple's enjoyment, much as food and many physical activities are enjoyable. Therefore stimulation of other erotic areas, aside from the sexual organs, would not, according to this reasoning, be wrong. Importantly, mutual feeings of the couple, the concern of physical injury, disease, and other factors must be considered, but there is no scriptural reason to limit sexual contact only to coitus as White indicates. A strong argument could be made against behavior such as mouth to mouth contact, especially from the standpoint of cleanliness. This contact has nothing to do with procreation and physiologically the lips are less erotic than a number of other body areas. Yet this form of sexual activity is rarely condemned because it is so prevalent in American culture. In other cultures, valid health arguments against kissing have resulted in this behavior being all but unknown.

White develops the view that sex is "communication" or a means to satisfy aloneness, isolation and separateness. Sex is a means of uniting, of becoming one with someone else, satisfying the deeper need of sharing. On these grounds masturbation and other solitary sexual behavior is seen as falling far short of the ideal sexual milieu.

In some sections the discussions seem rather superficial. For example, psychoanalytic theory is touched on in such a way that the reader may conclude that much psychoanalytic theory is rather naive and shortsighted. Although psychoanalysis is clearly debatable, it is a complex theory which at least attempts to account for some of the simple "objections" White briefly mentions.

A good example of his cogent insight is in the discussion of the *oedipus complex* and its influence on masturbation. White brings out an excellent point: if the *oedipus complex* is the cause of masturbation, why is guilt so commonly absent? If masturbation is linked in the minds of young people with incestuous desires, and presumably the incestuous desires are still with us today (and are still the cause of guilt) why is there, according to White, commonly little guilt over masturbation? The *oedipus* theory is probably not a sufficient explanation, and a number of factors are important. White convincingly demonstrates that the behavioristic explanation is probably more valid.

In discussing the subconscious White implies that only "frightening and shameful memories" are stored, when it is more likely that *all* non-conscious memories are stored in the sub-conscious. It is just the frightening and shameful memories that give us problems. Memories used daily are not in the sub-conscious not because they are less fearful, but because they are more useful. Experiences which cause a great amount of guilt can remain in the conscious mind for some time, but eventually, as with most memories, they are stored away in the sub-conscious. In time one recalls them less and less, time being the "healer of all sorrows."

Unfortunately White has a tendency to resort to the cliche: if a problem seems difficult to solve, in essence, "let God do it." He often implies that God has the answers, God is able to solve the problem, or the answer lies in leaning on the blood of Jesus. There is no scriptural assurance that God will automatically solve our problems (especially those we are able to solve ourselves). This idea tends to engender guilt in the dedicated believer, especially when the problems do not solve themselves in spite of relying fully on God. The persistence of a problem tends to be blamed on lack of faith, or some shortcoming in the believer. There is a tendency to rely on such cliches, especially when answers are not easy. It would seem, though, it would be more functional to try to deal more directly with the problems. Tragically these cliches are often dysfunctional in that they stop us from looking for answers which may be more elusive, yet still are there if we keep looking. And theologically "letting God solve it," puts God in the position of being our servant instead of the opposite. This is not to say that God cannot (or does not) solve our problems, but asks only: "to what extent should we give up and wait?"

A major handicap of the book is that few references are provided. One gets the impression that White wrote much of the book "off the top of his head" so to speak, writing thoughts as they came to mind, covering a wide territory and therefore dwelling in depth in few areas. The information is probably helpful to one who has a Christian commitment, but would do little to convince one who is not already convinced of the value system White holds. Although this reviewer agrees with the position White takes in almost every case, one familiar with the subject matter could easily gather a large number of arguments against the usually well put but not well supported arguments White utilizes to defend his position.

White advances several interesting interpretations of the Scriptures related to sexuality. For example, in Matt. 5:27-32 he brings out that condemnation results not because of sexual thoughts or temptation (which White states are normal and expected) but only because of the conclusion the lust began, i.e. adultery. The condemnation is against the result, not the beginning.

Some of his interpretations, although not supported, stimulate the reader to look into the ideas presented, such as that homosexuality is caused by a blocking of the sexual drive in one area, causing sexual release in other areas to become, in time, more desirable, e.g., people starving who find "their mouths watering for such delicacies as boiled rats." Many researchers would probably strongly object to this explanation, but blockage is no doubt to some degree influential, at least in some homosexuals. Some of White's other hypotheses for the cause of homosexuality are somewhat outdated. There is an abundance of research which has severely questioned many of our assumptions about homosexuality, although probably this research has not been scrutinized as much as the research which has caused us to question the more traditional ideas. Many researchers have a vested interest in "causes" which assign the responsibility to someone other than the victim and his family (heredity, a "normal" preference, etc.).

Some unsupported statements would be vigorously challenged by a number of researchers such as: "homosexuals, by and large, are unhappy people." Some support, even a simple statement such as "the writer has interviewed and worked with a number of homosexuals and has concluded . . ." would be helpful. To some degree White's book is an attempt to abstract much of the popular literature on sex, after toning it down by filtering, altering and selectively reporting the information for Christian consumption. One familiar with the literature in sexual perversions, adultery, etc. would probably not gain a great deal from the book. It is primarily intended for a lay audience, especially those who are somewhat naive regarding the variety of sexual behaviors extant today.

White covers a wide variety of topics including divorce, remarriage, homosexuality, premarital sexual relations, variations of sexual technique, etc., providing a lot of general information, definitions, etc. The book is probably an excellent tool for therapists to have their clients read. It is extremely readable, flows quickly, explains the ideas covered well, and keeps the reader's attention. Even for a therapist, it would certainly function as an evening of light, enjoyable, helpful reading. Some sections will be clearly helpful to dispel some of the erroneous beliefs common in many Christian circles. For example, many misperceptions regarding pornography, hypnotism, etc. are briefly but succinctly explained.

An important problem which White touches on is the all too common problem for Christians to have a poor self-image. Indeed this is common for people of most religions. Religions attempt to control by criticizing, degrading, and, in short, by trying to make their followers feel ashamed, guilty, or remorseful. White tries to help his readers overcome this; if not the feelings, at least the idea that guilt is an effective means to control.

Rather than being a self-help book, White stresses the need for professional help when a person is involved in the aberrations he discusses. Unfortunately, though, he occasionally contradicts this advice, stating in one place that any "experienced and godly man can help" one with emotional or sexual problems; a psychiatrist has nothing more to offer. Although there are undoubtedly many mature, sensitive individuals who have gained a tremendous understanding of human behavior through reading, social conversation and direct experience, this reviewer has seen an incredible amount of damage done by uninformed laymen and ministers alike attempting to help people with problems. Human behavior is a complex subject which four years of medical school does not even begin to cover

adequately. Although the qualities of genuine concern can go a long way toward helping individuals with problems, ignorance is a serious and common handicap, even among those who are certified as psychiatrists or psychologists. It is well recognized that the current training is inadequate and thus many states are imposing licensing requirements which require more than a degree, namely varying degrees of supervised experience and continued additional training. Unfortunately, many who may demonstrate they have the knowledge may not have the personal qualities. Enough harm, thus, is already being done by those with the training; to ask those without the training to work in this field is foolish. Quite often deacons, elders and pastors would be much better off doing nothing, as their attempts to help can do more harm. Warm, accepting concern and human compassion is one thing, but helping individuals with problems of sexual deviancy or in neurotic or psychotic states is quite another. Indeed White spends much of his time illustrating this very point—how much harm lay people do in their misguided attempts to help people. Hopefully his advice will be helpful toward those attempting to help others as well as those reading the book to help themselves.

If White feels his comments are helpful in this regard, there are undoubtedly other comments likewise helpful, and presumably the more knowledge a person has in this area, the more capable he will be able to help, assuming other important qualities such as the personality of the therapist are held equal.

In summary, White's book will make a modest contribution to the literature endeavoring to integrate the new knowledge recently gained about sex through modern research with biblical standards of morality. The lively, entertaining reading should be especially helpful for Christians in the struggle to dispel common assumptions and apply Christian principles which are often crushed under the weight of "the invisible talmud."

Reviewed by Jerry Bergman, Department of Educational Foundations and Inquiry, Bowling Green State University, Bowling Green, Ohio 43403.

DEVELOPING A CHRISTIAN MIND by Nancy B. Barcus, Downers Grove, Illinois: Intervarsity Press, 1977, 100 pp., $2.95.

The purpose of this book is to help the reader develop an outlook which will make thinking and believing a joyful and compatible pair. This attitude results from the renewal of the Christian mind. The main assumption of the book is that one should sift all knowledge for its good.

Nancy Barcus, English professor at Houghton College, emphasizes the approach to knowledge of openness. She then applies this approach to science, nature and humanism. Finally, she discusses the reward and pain of such an approach.

Of science she writes: "It takes more than a formula of any size or shape or definition to hold all the secrets of the infinite God of heaven." Of nature she concludes: "It is wonderful. But it is not enough. The problems of personality, mind, conscience, destiny remain." Of humanism she believes: "We can be New Humans. But secular humanism, pushed to its logical extreme, is a dead end."

The beliefs of Skinner, Thoreau, Monod, Whitehead and Eiseley are all discussed. The author skillfully shows the strengths and weaknesses of each view and points to Christian theism as the only valid system.

Reviewed by Richard Ruble, Professor of Psychology, John Brown University, Siloam Springs, Arkansas 72761.

ON SYNTHESIZING MARXISM AND CHRISTIANITY by Dale Vree, New York: John Wiley & Sons, 1976, 206 pp. and xxii.

THE CHRISTIAN-MARXIST DIALOGUE BEGINNINGS, PRESENT STATUS, AND BEYOND by Peter Hebblethwaite, New York: Paulist Press, 1977, 122 pp, $3.95.

The political scientist Vree believes Christianity and Marxism can never be synthesied. With the insights of Ludwig Wittgenstein, he analyzes Christian and Marxist orthodoxy, defined as what most Christians or Marxists have believed most of the time. He studies Christian orthodoxy in terms of the source and nature of revelation, original sin, and the kingdom of God. Marxist orthodoxy is studied in terms of the character of its atheism, the nature of is determinism in the context of the controversy surrounding the young Marx, and the role of the Party. The Christians studied are the American Harvey Cox and the German Juergen Moltmann. The Marxist is the Frenchman Roger Garaudy.

His analysis is clear. Vree's forte is to elucidate contradictions and logical ambiguity. However he is not always aware of the intricasies of theological argument. He accuses Moltmann of "intellectual suicide" because he professes to find "certainty only in complete uncertainty." Wittgenstein could never admit such language but the Fathers of the Church who "believed because it was absurd" would understand him immediately.

Similarly Vree would have less trouble with Christian orthodoxy's understanding of the relationship between human freedom and divine omnipotence if he had a better grasp of conciliar teaching. Neither Chalcedon (451) nor III Constantinople (680) explained how, but both affirmed that God and man are able to act in tandem without any limitation of human freedom. That teaching only reaffirmed a doctrinal central to both the Old and New Testament. The conflict with Marxism remains, but Vree would have been less judgmental on the Christian spokesmen if he understood their orthodoxy better.

The journalist-theologian Hebblethwaite examines the same dialogue in Latin America as well as in Europe. His description of how it has progressed only reinforces Vree's philosophical analysis. Hebblethwaite mentions the question posed to Christians For Socialism by the Rev. Bartolomeo Sorge in Civilta Cattolica: "How can anyone who accepts the Marxist belief that the Church is the ally of capitalism and thus the class enemy of the people remain a member of the Church?"

This incompatibility poses problems for Marxists as well as Christians. Garaudy, read out of the Party, be-

came a Christian believer. Christians supported revisionists in Czechoslovakia who helped prepare the way for Alexander Dubcek. Hebblethwaite points out that tanks rolled into Prague in August, 1968, because the Russians were sure the Czechs had exchanged "Marxism for Western liberalism."

Hebblethwaite introduces a new element in his discussion of Christian-Marxist dialogue in Latin America. He cites one of the better known liberation theologians, Gustavo Guttierez, "The two (Christianity and Marxism) became tragic lovers whose only solution is suicide —unless they postpone dialogue altogether and concentrate on praxis." The Christian ecumenical movement began where Guttierez suggests the Christian-Marxist dialogue must remain.

It will be recalled that Christians spurred on by the missionary impulse, first pledged to do together all that their respective faiths did not require them to do separately. That movement—Life and Work—inevitably spawned Faith and Order, and finally evolved into the World Council of Churches. A similar evolution is not likely for the Communist-Christian dialogue, but not impossible either. Common practice or orthopraxis must elicit questions about orthodoxy.

Hebblethwaite cites one striking example in Bishop Arceo Mendez's justification of "revolutionary violence as a legitimate response to the institutionalized violence of repressive societies." This tenet of the Communist revolutionary ethic has become an integral part of Christian theologies of liberation. Both Hebblethwaite and Vree emphasize that Christian participants rely heavily on Marxist social insights without seeing any apparent conflicts with Christian orthodoxy. The conflict will emerge no matter how carefully it is ignored.

For all of their pessimism about the outcome of the Christian-Marxist dialogue, neither author suggests the proper posture is a return to a sterile form of anti-communism. Hebblethwaite writes that one function of the Church is to remind humans that God exists and that only he is to be adored. Such a Church makes for a free society not easily controlled or manipulated by any political party. And that after all is the real reason for Christian-Marxist dialogue being at an impasse.

One criticism remains. Both books make more sense as politics than as religion. This is not to dispute the arguments of Vree nor the descriptive accounts of Hebblethwaite. The danger is to reduce Christianity to politics which it is not, even though Christians are political beings. And Communism is not a purely political system because its adherents profess a rigid ortbodoxy, which dictates their political policies.

Tertullian could have written a book such as these about the impossibility of synthesizing Christianity with the Roman imperial system. However, both Christianity and the Roman empire changed and the synthesis occurred. Bishops who still bore the scars of imperial persecution broke bread with Emperor Constantine in the palace of the Eastern empire.

Christians have confronted Communists in modern-day arenas as combatants no more equally matched than the gladiators and martyrs of old. Now they talk together. The road will be long and dangerous; the detours many and often impassable. Vree and Hebblethwaite have documented some. But the voyage must be made, even though the end may never be in sight. The dialogue should continue not because Christians and Communists can be melded into one, but precisely because they cannot.

Both authors admit the dialogue should continue. Hebblethwaite even believes a synthesis of a renewed Christianity and a transformed Communism is possible, but he is worried about Christian naivete. Vree is hesitant about the significance of all dialogue but especially about the Christian-Communist one. He does not believe their two systems can be fused "without doing violence to the integrity of both." And yet dialogue is never fruitless. The Christian has no choice but to announce that Christ has risen. Communists, hearing that good news, can only be expected to respond with the social gospel of Marx. No dialogue should ever propose refutation as its goal. Human community is what should happen when people talk together.

A Jewish participant at a recent dialogue with Christians at Princeton said that he hoped such a dialogue would make Christians hesitate before participating in the next pogrom. Even Vree would admit that Christians cannot hope for less from their dialogue with Communists.

Reviewed by William J. Sullivan, S.T.D., Associate Professor, Religious Studies, St. John Fisher College, Rochester, New York.

THE EXPERIENCE OF DYING by E. Mansell Pattison, Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1977, 335 pp.

Without a doubt, E. Mansell Pattison has brought together the best collection of articles that I have ever seen. His competent understanding of people has enabled him to draw the best from the twenty-four contributing experts who have written lucidly and expressively for Pattison's book, *The Experience of Dying.*

The stated goal of the author is to provide a broad, in-depth, portrait of the dying process not so much from the academic, scholastic perspective but in its many personal forms. The central theme of the book is that the dying experience is uniquely individual and can be understood best by a humane, dignified and personal approach to the care of the dying.

Pattison gives us clear guidelines for care of the dying with specific attention to accidents, infections, malformation, metabolic diseases, cancer, and organ transplants. He shows how illness influences the dying process. Yet, he does not emphasize the psychopathology but the adaptive, the necessary, the functional, and the relevant styles of dying. By doing this, he allows the reader's attention to be focused not on the normal versus the abnormal styles of dying but on adaptive styles in the dying process.

His experience as a psychiatrist working with dying patients has given him the keen insight that people cope with dying not in preconceived rigid fashion or according to our expectations. Consequently, we do not truly help a person cope with his or her dying unless we seek to adapt ourselves to his or her style. Pattison examines both the meaning of death and coping styles of dying in each of the major areas of the life cycle, for there are significant differences in each epic of life.

Perhaps the most unique aspect of the book is the vivid demonstration of the dying process conceptualized as the living-dying interval, within which there are different dying trajectories. Some people face dying with a certain expectation of death, whereas others are faced with uncertain expectations. Since some people experience an acute trajectory toward death and others face death as a chronic trajectory, the dying process is directly influenced differently for these two groups. Pattison concludes that the concept of stages of dying that have been elucidated by others is not accurate but that there are phases in the dying process that have some clinical utility.

The style of the book is beautiful and allows the individual to experience the dying process somewhat, at least in thought, within him- or herself. All readers will find this volume to be an excellent reference. The authors have beautifully eliminated technical jargon in order for a broad spectrum of people from physicians to morticians to each understand the book for him-or herself. At the end of the book, Pattison gives excellent helps to care for the dying, assisting the family during the dying process of their loved ones, and supporting the professional staff who is dealing with the dying person. I am particularly impressed with his general principles of helping the dying person to achieve an integration of dying into the person's lifestyle, and to maintain phase-appropriate responses. In the initial acute phase, we are faced with the issue of acute anxiety and high ambiguity. In the chronic living-dying phase, we are faced with the resolution of reality issues of the interpersonal relationship to the dying and means of coping with problems in daily living. In the terminal phase, we are faced with support for achieving separation and withdrawal. In the terminal phase, the goal is to achieve relative synchrony, so that the social, psychological, and physiological dimensions tend to merge together in a coherent fashion. He points out that we must attempt to maintain social and psychological attitudes that are consistent with this physiological state of the dying person. Pattison deals specifically with the fears of the dying person. Fear of the unknown, loneliness, sorrow, loss of family and friends, loss of body, loss of self-control, suffering and pain, loss of identity, or regression. Pattison also deals with religion, faith, and healing in a single chapter as well as by intertwining these themes throughout the book.

As a general surgeon over the past fifteen years, I have dealt with many people during their dying stage. During this time I have made many observations and asked many questions about caring for the dying patient. In this single volume, E. Mansell Pattison has brought together what I consider the best understanding of the dying process with the most lucid unifying concepts which will allow all of us to deal much more effectively with death both from our own point of view, the patient's and his family's than we have been able to do in the past. I, therefore, express a debt of gratitude for Dr. Pattison and the two dozen contributors to his book, *The Experience of Dying.*

Reviewed by Kenneth E. Schemmer, M.D., General Surgeon in private practice and Clinical Professor, Anderson School of Theology, Anderson, Indiana.

THEOMATICS, GOD'S BEST KEPT SECRET REVEALED by Jerry Lucas and Del Washburn, Stein and Day, New York (1977) 347 pp. $8.95.

The purpose of this book is twofold (p. 26): (1) "to prove beyond a doubt that God has unequivocally written his entire Word mathematically and that in the last days this may be one of the means used by God to help unlock the true meaning of Scripture," and (2) to "give all God's people a common cause to rejoice and as a result be more united in their views." In addition, "this book sheds new light on Bible prophecy and end-time events" (p. 19), "the faith of Christians can be built up and strengthened in a brand new way." (p. 21). "The Lord Jesus will be glorified" (p. 48) and "it can throw definite light on the subject (textual criticism) adding weight to one reading over another in cases where textual comparison is inconclusive" (p.

Objectivism's long search for "objectivity," defined as impersonal knowledge from the machine of scientific methodology, *is really the continuing attempt to perform that impossible task (creating and guaranteeing knowledge beyond doubt, knowledge as* object-in-itself). *There is no knowledge beyond possible doubt. The refusal to acknowledge personal participation, and the insistence upon an explicit, external formalism devoid of personal commitment, is really the refusal to admit the necessity of faith by the knower in reality outside himself. . . . in theological terms the whole thing is childishly simple. The essence of Descarte's program is autonomy for the human mind; the Cartesian self is a self-proclaimed God, epistemologically speaking; and the existential task which is set by Descartes, and accepted by much of modern philosophy, is the creation of a world from that self as origin, a world where no faith is ever required. The present rather sterile and confused state of analytic philosophy . . . could quite fairly be caricatured as the resultant milling around at the dead end of the route: Whatever became of objective reality?*

Walter R. Thorson

"The Spiritual Dimensions of Science," in *Horizons of Science*, C. F. H. Henry, ed., Harper and and Row (1978), p. 248.

252).

Jerry Lucas has written a brief Foreword supporting Washburn's work and conclusions, but the author is really Del Washburn. Del Washburn calls himself a Fundamentalist Christian and he believes that God has chosen him to be the recipient of a special revelation, Theomatics. A fascinating world view is revealed through the many side comments of the author. "We who have been born of the spirit know that the entire Word of God was given to us directly by God, and that it was His very pen which wrote it" (p. 22). "Because of America's freedom of worship, she has enjoyed the greatest prosperity of any nation on earth" (p. 26). "In Scripture, the sea has always been understood to represent mankind, or the human race as a whole" (p. 90). "If Theomatics is numerology, then this means that what we are presenting in this book has come from Satan, which also means that the devil must have written the Bible" (p. 100). "Banks and retail outlets are experimenting with the idea of a cashless society—every person in the world would be branded and identified by his own personal number—there is little question in our minds that the mark of the beast may in some way involve a worldwide computer network" (p. 184). "Scholarship cannot answer all the questions of the (Greek definite) article but Theomatics can" (p. 340). Here it seems to me, we have the bold self-assurance of a mystic who, even in the face of obvious contradiction, builds up his program on one mysterious inner revelation after another.

Now let us consider Theomatics itself. What is it? It is a method of relating numbers to the Nestle's version of the Greek New Testament. "What the Lord has done is to assign each letter and in turn each word of the Bible with a number, or Theomatic value" (p. 78). "The number assignments are the same as in Webster's dictionary" (p. 31) (and incidently, the same as the Greeks used for their numerals starting in the fourth or fifth century B.C.) *alpha* = 1, *beta* = 2, *gamma* = 3, . . . , *psi* = 700, *omega* = 800. "Every major Bible truth has multiples of a key number assigned to it" (p. 34). "Theomatic features related to a major Bible truth have numbers which cluster within one or two numbers of the key number assigned to the Bible truth" (p. 35). For example, one Bible truth or theme is that every feature related to the law or the Old Testament covenant under Moses works out to a multiple of 276. One "feature" is Heb. 9:15: "the first covenant" = 176 x 6. Another "feature" is John 10:34: "Written in the law" = 276 x 9 ± 2 (p. 155).

The greatest difficulty for the reader is to determine what exactly a "feature" is. It is never defined and often seems to be determined by mysterious ways known only to the author. In the appendix an elaborate argument is given to show that the Greek article has no meaning and therefore can be added or taken away in the formation of a feature. "Without the option of article removal, the whole Theomatic structure would be so rigid that God would not have the flexibility he needed to make all these designs fit together" (p. 345). But conjunctions, for some reason, are also kept or deleted at the will of the author and the same seems to be true for pronouns. Features are sometimes under the same theme if they are opposites. "Darkness is the exact opposite of light, and sometimes in Theomatics exact opposites will have the same number value" (p. 104). One basic approach the author uses goes all the way back to the Pythagoreans. "All creation, no matter how large or small the scale, can always be reduced to numbers" (p. 27). "Seven is God's perfect number. Everything to do with God's law is based on the number seven—Man was incapable of keeping the law, and this is why the Savior had to come. Eight follows seven and starts everything over again. Therefore eight is the number of the new order and the number of Jesus" (p. 60). "Because the number eight speaks of faith, resurrection and the new order, this is why Christians—or those who have put their trust in Jesus by faith—meet on Sunday instead of Saturday" (p. 61).

Now let us consider the "proof" of Theomatics that we are given. "We are going to hinge our entire case on one scientific statement of fact—Numbers must occur at random, unless there is a design. If there is no theomatic design present in the Bible then all the number values for the words would simply be one great big conglomeration of random numbers" (p. 256). Considering the subjective approach to the selection of "features" and the non-randomness of Greek letters in any Greek manuscript, I would be very surprised if there were no theomatic design in any written communication in the Greek language. The exact opposite conclusion is drawn by the author. "Can these mathematical designs be found in any other works of literature?—Absolutely not!—Have you checked out other works of literature to see if they contain a design?—The answer is no, and the reason is simple. Which work of literature are we going to examine?" (p. 98-99).

In the last chapter, the author presents three statistical methods to "prove" Theomatics. According to the author, method one does not prove the existence of the theomatic design in the Bible (p. 292). Method two applies the following principle, "If there is nothing special or nonrandom about our features, and if they were carefully selected or chosen, then we can readily assume that there exists within the New Testament an equal number (proportionate to the probability of our features) that do not contain any multiples that fall within the cluster of ± 2 of the multiples" (p. 293). Assuming this principle makes sense (I am not sure it does), I still don't see how to use it without some definitive way of selecting "features". Method three, however is the "acid test". "Theomatics either stands or falls based on Method three" (p. 305). This method is based on the following "daring declaration from which there is absolutely no escape. If the theomatic designs we have presented in this book are untrue, then this means that all of these so-called designs were simply created from random numbers. Therefore, any other number values randomly assigned to the letters of the alphabet should produce the same results" (p. 305). Again, I find no way to apply this method without knowing how to find a "feature". The author did make a random assignment of numbers to Greek letters and he did not produce the same results as he obtained using Webster's assignment. "God may allow man to condemn, criticize, and even abuse this truth, but he will never allow anyone to duplicate these designs with any random assignment of numbers to the letters of the Greek alphabet other than those that He Himself

placed in the papyrus. In fact, no one will even come close" (p. 335).

I have quoted a great deal from the book to let it speak for itself. It is obviously unscientific. Its basic assumptions are fuzzy. It is not clear how to determine a "feature". There is a confused understanding of the nature of "proof". The analysis of data is highly subjective. It is also bad theology. In spite of the elaborate method of assigning numbers and considering multiples of key numbers, the basic position of the author is constantly read into and then out of the Holy Scriptures. The God of history, who came to us in love, in the flesh, and reveals himself through the Holy Scriptures in a personal, vital relationship, is replaced by a kind of Gnostic Deist clockmaker who reveals himself through immutable laws of mathematics, but only to the inner circle of those who know Theomatics.

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THE ROAD OF SCIENCE AND THE WAYS TO GOD by Stanley L. Jaki, The University of Chicago Press, Chicago, Ill., 60637 (1978), 478 pages.

This book is a work of major importance for it marks the culmination of many years of research and reflection by the distinguished physicist and historian of science, Stanley L. Jaki. It testifies to the coherence of the world view that asserts

> the mind is capable of understanding reality because both mind and reality are the products of the One who disposed everything according to 'weight, measure, and number' . . . (p. 259.)

as the book of Wisdom indicates. If one is not willing to acknowledge the validity of this world view one is left with the task of explaining the sense of awe and wonder contained in the following affirmations by the two pioneers of twentieth century science, Planck and Einstein.

> The eighty-eight-year-old Planck still felt the ardor of a young lover when he recalled the first steps of his approach through science to the absolute: 'What has led me to science and made me since youth enthusiastic for it is the *not at all obvious fact* that the laws of our thoughts coincide with the regularity of the flow of impressions which we receive from the external world, [and] that it is therefore possible for man to reach conclusions through pure speculation about those regularities. Here it is of essential significance that the external world represents *something independent of us, something absolute which we confront,* and the search for laws valid for the absolute appeared to me the most beautiful scientific task in life (italics mine, p. 167).

Einstein, in turn, said

> the very fact that the totality of our sense experiences is such that by means of thinking . . . it can be put in order . . . is a fact that leaves *us in awe,* but which we shall never understand (italics mine, p. 259.).

Note that two themes are interwoven in Planck's and Einstein's affirmations. First, the structure of the material universe has something in common with the laws that govern the working of the human mind. Secondly, physical reality is independent of us and hence must be investigated by observation and experiment in order to confirm or deny the intuitions of the human mind. These affirmations are consistent with the epistemology of moderate realism as contrasted to the opposite extremes of idealism or empiricism. This realism provides an epistemology that allows one to affirm the classic proofs of existence of God; such realism flows naturally from belief in a personal and rational creator-sustainer God. The interplay between human reason and nature is beautifully brought out in Jaki's discussion of the birth of Einstein's special and general relativity:

> From his Spencer Lecture on, Einstein took more and more frequently a look at his own creative steps, and whenever he spoke of this to the world it was a variation on the same theme, the marvelous inventiveness of the human mind. This inventiveness was not, however, caprice in any sense. The avenues to its marvels, though not securing automatic progress, were clearly recognizable in a broad sense. The chief of those avenues was steeped in the invariable, absolute, geometrical beauty of nature. If this was the case with nature, true scientific knowledge of it had to reflect that beauty. . . . His two theories were in a sense mislabeled *relative,* because both the special and general theories of relativity were more absolute in character and content than any other scientific theory. Their starting point was not a positivist aggravation with experimental incongruities, but a burning desire to safeguard the beauty of nature and of laws which reflected that beauty. Such laws were Maxwell's equations. To protect their simple beauty from deformation, to which they were subject while being referred from one inertia system to another, Einstein preferred to part with the simple rules of correlating inertial frames of reference. Such was the birth of special relativity. . . . A paradoxical birth indeed. The simple beauty of Maxwell's equations was safeguarded by according to them the utmost generality which in turn imposed a most specific singularity, the invariable constancy of the speed of light. The measure of that speed, the same regardless of the motions of light-emitting bodies, was a powerful indication that the beauty of nature was most singular in its utmost generality.
>
> The fruitfulness of special relativity was an invitation to Einstein to unfold even more of the constant beauty of nature and of the exact science of that beauty. . . . To formulate the interrelation of accelerated frames of reference in a way satisfying their covariance was one thing. To fill them with physical content was another. The most universal case of constant acceleration was provided by gravity, but no branch of physics was in a sense less explored than gravitation. Until Einstein, the innumerable cases of gravitational acceleration had been studied as examples of the inverse square inertial frames of reference. In the theory of general relativity that same acceleration was to stand for all similar accelerations and for any and all accelerated frames of reference. Being a scientific law, this generalization had to have not only inherent beauty but also an ability to predict unsuspected effects of gravitation. The first of these new effects, the bending of light in a strong gravitational field, was perceived by Einstein as early as 1907, but it was only in 1911 that he realized it might be detected during a full solar eclipse. It took four more years before he was able to draw two other consequences of general relativity. They were the gravitational red shift of light and the advance of the perhihelion of planets, detectable only in the case of Mercury. He now had for his theory three supports which were all the more priceless because they were not dependent upon one another and showed that Newton's great synthesis of gravitational was but a limiting case of general relativity (pp. 188-189).

The wide scope of the book is indicated by the fol-

lowing extended quote taken from the book's dust jacket. This quote beautifully and accurately summarizes the contribution this book makes to the ongoing dialogue between men of science and men of religion.

> In this challenging work, Stanley L. Jaki illuminates the intimate connection between scientific creativity and natural theology. He draws especially upon the history and philosophy of science to show that a rational belief in the existence of a Creator, or at least an epistemology germane to such a belief, played a crucial role in the rise of science and in all its great creative advances.
>
> Originally presenting his ideas as the Gifford Lectures for 1975 and 1976, Jaki maintains that the birth of a viable scientific enterprise could take place only when, in the High Middle Ages, natural theology had become steeped in Christian faith. Through proclaiming both the rationality and the contingency of the universe, natural theology then helped form a cultural matrix in which science could rise and prosper. Jaki also points out that whenever in later times rational belief in a Creator, as based on the classic proofs of the existence of God, has been radically criticized, the results have usually been at least potentially disastrous for the cultivation of science.
>
> With painstaking attention to original sources, the author pursues his theme through the thought of Bacon, Descartes, Newton, Hume, Kant, Hegel, Comte, Mach, Planck, and Einstein. Special chapters show the connection between a rejection of natural theology and an implicit assertion of the incoherence of the universe in the Copenhagen interpretation of quantum mechanics, in logical positivism, and in the "psychologist" branch of the new historiography of science. In addition the book offers chapters in which thematic reflections on the history of cosmology and evolutionary theories are built into consideration supporting rational belief in the existence of God. Taken together, these investigations strongly suggest that the road of science and the ways of God form a single intellectual avenue.

This reviewer strongly recommends this book in conjunction with Jaki's *Science and Creation-From eternal cycles to an oscillating universe* (Scottish Academic Press, Endinburgh, 1974) for a course or seminar in *A Judaic-Christian Philosophy of Science* or *The Emergence of Science from a Judaic-Christian Tradition.*

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Founded in 1941 out of a concern for the relationship between science and Christian faith, the **American Scientific Affiliation** is an association of men and women who have made a personal commitment of themselves and their lives to Jesus Christ as Lord and Savior, and who have made a personal commitment of themselves and their lives to a scientific description of the world. The purpose of the Affiliation is to explore any and every area relating Christian faith and science. The *Journal ASA* is one of the means by which the results of such exploration are made known for the benefit and criticism of the Christian community and of the scientific community.

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