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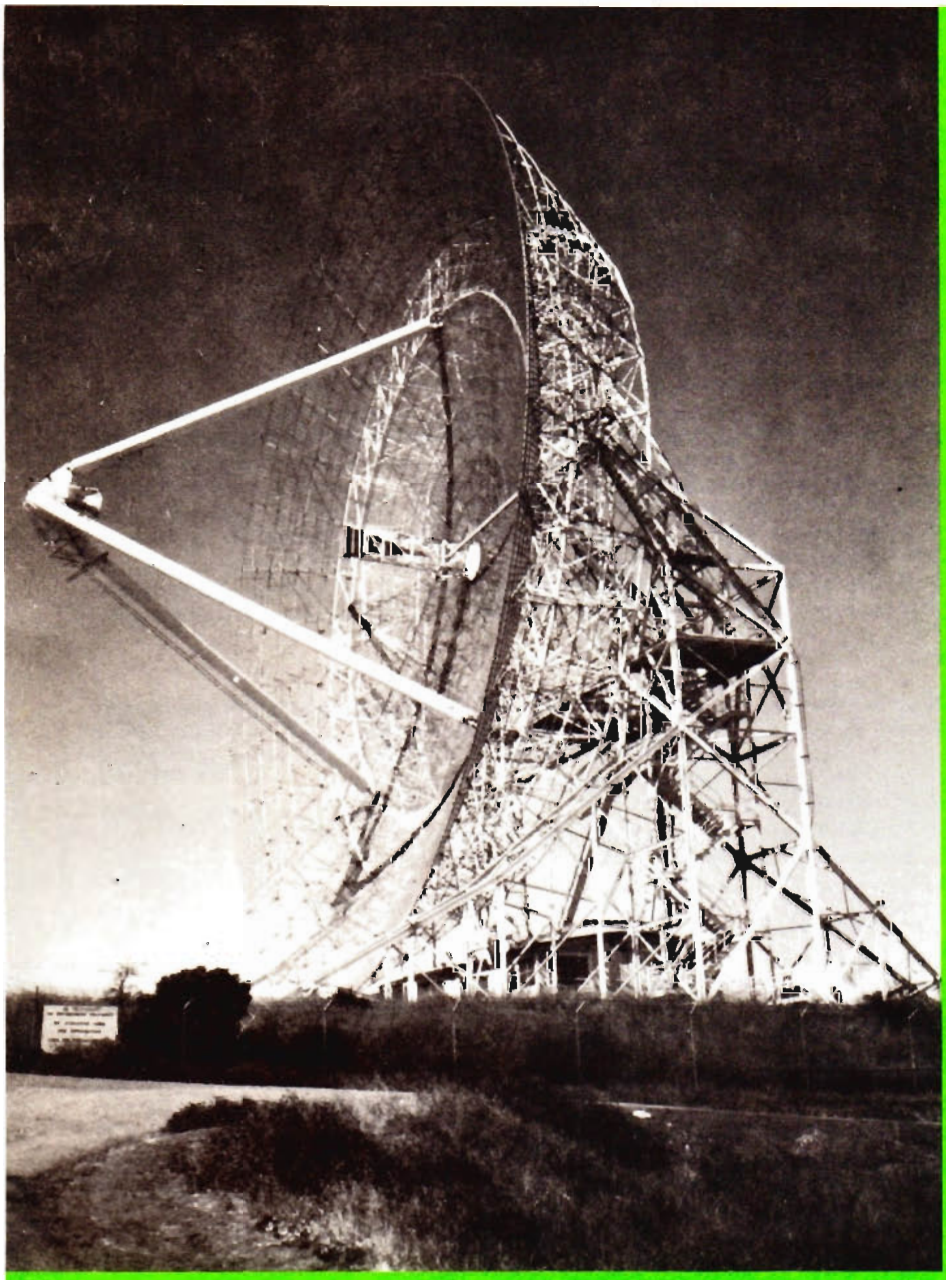

Day to day pours forth speech, and night to night declares knowledge. . . .
. . . their voice goes out through all the earth, and their words to the end of the world.
(Psalm 19:2–4 RSV)

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

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JOURNAL OF THE AMERICAN SCIENTIFIC AFFILIATION

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Science as Allegory

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A new perspective on science can be gained by viewing the universe as God's choral poem. Within the poem are many analogies and metaphors. Science concentrates on using a certain kind of controlled metaphor, the model.

The universe is God's choral poem, and science is a system of allegories within it. That is the thesis that I propose to expound and defend. Yet it is not a "thesis" at all, if the word "thesis" commits me to a certain kind of strict logical defense. I am not putting forward my thesis that science is allegory as the endpoint of a deductive or inductive argument. Rather, it is a springboard for a program of exploration and reflection that turns upside-down some conventional ways of thinking about science.

Open-endedness of Metaphor

I don't exactly envision myself as repudiating the bulk of what has been said about philosophy of science. Nor do I repudiate what I myself have written about the classification of the sciences and their relations to one another in *Philosophy, Science, and the Sovereignty of God* (1976). But I have gone on an intellectual odyssey since the days when I taught mathematics. The odyssey has brought me to the place where I am less interested in explaining everything by assigning it to its pigeonhole. I am more interested in asking some questions and setting in motion a train of thinking that will "shake things up." I have developed a considerable sympathy, if you will, for an approach like that in Wittgenstein's *Remarks on the Foundations of Mathematics* (1967), where things that

An earlier version of this article and its sequels was presented at the 1981 Wheaton College Conference on Christianity and Mathematics. In making revisions I have profited from criticisms and suggestions of many.

we usually take for granted seem to become mysterious once more. I propose, then, to view science in a new light using the analogy of poetry. In this present article I intend to develop a global view of science. In two subsequent articles I focus on Newton's laws and on mathematics as two particular illustrations.

First of all, then, let us set science in a still larger context—the context of the universe. The universe, I say, is God's choral poem. That is, it is a dramatic poem authored by God, in which one hears not only the voice of God but the voices of a whole "chorus" of created things, including the voices of human beings. I intend in saying this not to provide the ultimate key to the texture of our world, but to invite the use of a perspective. I want to stimulate your thinking and mine by the exploration of a metaphor and what it suggests.

The World Personally Structured

I choose this metaphor for several reasons. First and foremost, I want to suggest thereby the exhaustively *personal* character of the world that we live in. The world is a personal home for human beings, individually and collectively, because it is the product of the creating activity of our *personal* God. God, who is an infinite person, created the world and sustains it as a home suitable for us as finite persons. Christianity (along with its heretical sisters Islam, Judaism, Mormonism, etc.) is alone among religions in its insistence on a personal absolute. Polytheism has personal gods who are not absolute in their sovereignty. At the other extreme, Vedantic Hinduism, pantheism, Platonism, and the like have an absolute, but the absolute is ultimately impersonal. Even among "Christian heresies," Mormonism is in danger of losing the absoluteness in a plurality of gods, while Islam and modern Judaism are in danger of losing personality in an abstract fate or legalism.

Science itself can be made into a kind of religion. Modern scientism pretends that science provides an ultimate and exhaustive world view. In this world view, all things reduce finally to a system of laws of nature. Thus, the values of scientific method and technology have become ethical absolutes; physical law is the metaphysical impersonal absolute. These are absolutes, but they are ultimately impersonal. Hence, to sinful man's relief, they do not threaten to call him to account for rebellion, ingratitude, selfishness, or oppression. Modern man has made impersonal whatever absolutes he has left, because he has a guilty conscience. He is in flight from God.

Underlying much of the day-to-day work of modern science, there is an atmosphere, often only implicit, often unconscious or only half-conscious, of presupposing absolutes that are impersonal. The effects are more widespread than one might first suppose. When an American gets sick, he runs to the drug store or the doctor. As a second thought, if at all, he prays or runs to his pastor or church elder. Why? Partly, I suspect, because he has been educated to think that sickness is a *mere* biological process subject to undeviating impersonal laws. With respect to these laws, prayer is irrelevant. In practice, therefore, James 5:14–15 has ceased to exercise a controlling role in his life. This is but a tiny example of a pervasive problem in our culture. People sense that God has vanished from modern life. In the "important" decisions God is irrelevant, because what happens happens under the control of the impersonal laws uncovered by natural sciences and social sciences.

I do not believe in such impersonal laws. There is no machinery, mathematical or otherwise, behind the visible phenomena of everyday life, holding everything in place. It is not machinery or Maxwell's equations that makes the universe tick. It is God. God rules the universe directly (cf. Ps. 104:14). God is so consistent and regular about it that we can plot his activity with mathematical equations. Let me put it another way. God rules the universe by his word (e.g., Ps. 33:6; Lam. 3:37–38). Because his word remains faithful and stable (Ps. 119:89–91), the doctor can act effectively and the drug we take has consistent effects. Elsewhere I have already defended this viewpoint of God's involvement in the world at some length (Poythress 1976). Because it is so alien to the thinking of modern man, I wish that I could take some time here to defend it again. But it seems to me more profitable at this time to develop my metaphor of poetry. As I develop the metaphor, you will perhaps be able to see how the predictive and integrative power of scientific laws is in fact a consequence of God's consistent involvement in ruling the world. "Law" is a personal regularity of action.

The World as Linguistically Structured

With the metaphor of poetry I achieve a second result. I invite us to consider the universe as language. Speaking, thinking, communicating, planning, proposing, commanding, understanding, and so on, are all deeply *personal* activities, and all are intertwined with language. The Bible invites us frequently to view God's activity from this point of view. God is the great king, ruling his realm by issuing verbal commands. Psalm 33, reflecting back on the account of creation in Genesis 1, summarizes it thus: "By the word of the Lord the heavens were made, and all their host by the breath of his mouth" (33:6). "For he spoke and it came to pass. He commanded, and it stood forth" (33:9).

Using one metaphor or perspective on God's activity in the world, we may say that everything that God does, he does by speaking. "Who has commanded and it came to pass, unless the Lord has ordained it? Is it not from the *mouth* of the Most High that good and evil come?" (Lam. 3:37–38). God's speech, of course, is not simply identical with the result in the created world. The trees, animals, and humans are not a part of God, or a part of God's word, but rather a *response* to his word. Nevertheless, the response definitely *corresponds* to what God specifies. It matches. "God said, 'Let there be light,' " and there was light—not a unicorn! The created world, *as* a result of God's speech, bears within it from top to bottom a kind of quasilinguistic character. The created world is not a language in a narrow literal sense. But can we say that it is language-like in its structure and properties? Can a metaphorical or "poetic" extension of the idea of language illuminate the character of creation? Through God's act of creation, things in the world themselves become wordless voices to the praise of God. "The heavens are telling the glory of God, and the firmament proclaims his handiwork" (Ps.

19:1). The created universe may be thought of as a poem, embodying as a created thing the impress of God's kingly words of command, "Let such-and-such be so." Creation is, metaphorically speaking, a "language" answering back to God's creative word. Or, better, individual created things are choral participants in a many-authored poem, with God as choirmaster.

The World Shot Through with Metaphor and Analogy

Using the metaphor of the universe as poem has a third benefit. It draws attention to the pervasiveness of analogy and metaphor built into creation itself. Human beings are made "in the image of God." A human being is a metaphor for God, if you will. A human being represents on a created level an analogue of the uncreated God. He lives, speaks, thinks, plans, makes moral judgments. God likewise lives, speaks, thinks, plans, makes moral judgments. But God is the source and standard for human beings in every respect, so that the two can never be equated. If the human being is a metaphor for God, the animals and lower creation are, perhaps, in certain limited ways a metaphor for the human being. Hence in the parables Jesus can take lessons from the growth of a seed or the lostness of a sheep and apply them to the human situation.

The universe is a poem shot through with metaphors. As in any good poem, the metaphors interlock and form multidimensional patterns that enrich the mind by their richness. And the human being is a poet. He or she is a poet in the image of the great Poet-Creator. In "listening" to the universe as God's poem, he hears a chorus of voices: the voice of each created thing, and, corresponding to them, the original voice of God to which they are a response. So his interpretations of the great Poet's poem are in turn metaphors for the Poet's thinking.

I do not know whether what I am saying seems to you closer to serious philosophizing or closer to a free and rather fanciful flight of imagination. There was a time when I would have been prone to write off the above exploitation of metaphor as not only imprecise (which it is), but fanciful, fictional, and therefore ultimately useless. I don't think so now. I agree with the theoreticians who advocate an "interaction theory" of metaphor (I. A. Richards 1936, Max Black 1962, Paul Ricoeur 1977, Marcus Hester 1967). According to this view, metaphor juxtaposes two domains of thought, and by so doing sets in motion a complex interaction of those domains that opens up a new way of looking at the world. I am trying to do this by saying, "Look at the world as God's choral poem." So bear with me.

I have said that the human being as the image of God is poetic interpreter of the poetry in creation. The scientific enterprise forms one aspect of this interpretive task. In fact, science can largely be understood in terms of work in creating, developing, exploring, testing, extending, modifying, enriching, and sometimes discarding a special species of metaphors, namely models.

What do I mean by a model? If metaphor is defined as the genus, model is a species within the genus. One way of defining metaphor is to say that a metaphor is a piece of discourse that brings together and juxtaposes two distinct spheres of life, inviting us to explore the connections and analogies between them. Following Max Black (1962:38–47), we may label the topic or sphere of life about which the speaker wants to comment the "principal subject." The sphere of life juxtaposed with this in order to make the comment, we label the "subsidiary subject." Consider the metaphor "Herod is a fox." The principal subject is Herod; the subsidiary subject is foxes. The statement as a whole asks us to view Herod, the principal subject, in the light of what we already know about the subsidiary subject. Or, again, in Luke 6:43 Jesus says, "no good tree produces bad fruit." In the context, this is a metaphorical statement in which the principal subject is the relation between men's hearts and their actions. The subsidiary subject is the biological production of fruit.

Now a model is a special kind of metaphor where a detailed, *controlled* correspondence is set up between two spheres. The "principal subject" of the model is the thing or process in the world that is being modeled. The "subsidiary subject" is the known, easily manipulable thing used to do the model*ing*. The word "model," in fact, is often used to denote primarily the subsidiary subject; the principal subject then remains in the background. Models can be physical (a scale model of a ship), mechanical (pipes with water in them to

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represent electrical current; billiard balls to represent the molecules of a gas), or mathematical (Maxwell's equations).

Contemporary philosophers of science disagree about the role of models in science, and about whether models are theoretically dispensable. As you may guess, my sympathies are with those who see models as playing a vital and indispensable role (see Black, Kuhn, Hesse, Turbayne). I suspect, moreover, that it is impossible to have an effective mathematical model of something without having some "richer" context of interpretation to guide the creative use and application of the mathematics. Thus the Schrödinger equation is thought of as describing a density *wave*, and the operators in quantum mechanics are labeled suggestively to correlate them with idealized measurements.

Maxwell continues:

> We must therefore discover some method of investigation which allows the mind at every step to lay hold of a clear physical conception, without being committed to any theory founded on the physical science from which that conception is borrowed, so that it is neither drawn aside from the subject in pursuit of analytical subtleties, nor carried beyond the truth by a favourite hypothesis. (Black 1962:226 from Maxwell 1890:155–156.)

For electromagnetic theory, Maxwell adopts the model of a frictionless fluid.

> By referring everything to the purely geometrical idea of the motion of an imaginary fluid, I hope to attain generality and precision, and to avoid the dangers arising from a premature theory professing to explain the cause of the phenomena. (Black 1962:226–227 from Maxwell 1890:159–160.)

The universe is a dramatic poem authored by God, in which one hears not only the voice of God but the voices of a whole "chorus" of created things, including the voices of human beings.

I realize that scientific description and poetic description are often thought of as diametrically opposite to one another. But I am not the first to have suggested that they are both descriptions heavily exploiting the potentials of metaphor. The distinctiveness of scientific description is largely the distinctiveness of its special species of metaphor, the model. I have said that a model is a controlled metaphor, setting up a detailed correspondence. In fact, I believe that controlled, detailed correspondence is a matter of degree. There is a continuum, if you will, between science and poetry.

Moreover, in the early stages of the development of a scientific theory, the root metaphors being used are less controlled. Only over the course of time do the scientists learn how to specify in detail those aspects of the subsidiary subject that are relevant to the model, versus those aspects that are irrelevant. In this connection, Max Black (1962:226) quotes some illuminating passages from the reflections by James Maxwell on the development of electromagnetic theory.

> The results [of this simplification and reduction of experimental results] may take the form of a purely mathematical formula or of a physical hypothesis. In the first case we entirely lose sight of the phenomena to be explained; and though we may trace out the consequences of given laws, we can never obtain more extended views of the connexions of the subject. If, on the other hand, we adopt a physical hypothesis, we see the phenomena only through a medium, and are liable to that blindness to facts and rashness in assumption which a partial explanation encourages.

The "blindness" and "rashness," I might point out, relate to the fact that the investigator is likely to overlook anything that his physical model leaves out, and to deduce consequences from aspects of the physical model that later prove to be disanalogous or irrelevant to the facts (the "principal subject") that it is intended to model. What will later be a strict "model" is at the beginning still an uncontrolled metaphor.

Maxwell's "generality and precision" arise from the power of the metaphor of a fluid to suggest a whole system of deductions. Using the metaphor of a fluid, a detailed correspondence is being set up between the mathematics on the one hand and electromagnetic phenomena on the other. Maxwell also speaks of the "dangers" of a "premature theory" to warn against extending the analogy beyond its proper sphere. He did not envision that we should ask about the heat, weight, color, boiling point, etc., of this fluid, as we might ask about an ordinary fluid. In the end, it is Maxwell's completed theory as a whole that specifies just what aspects of ordinary fluids are relevant. These aspects, and these alone, are to be used in reasoning about electromagnetism.

But a model always remains somewhat open-ended. Scientists are free later on to modify judgments about which aspects of ordinary fluids are relevant to electromagnetism, and in what way they are relevant. For example, it appears that Maxwell himself, and Lord Kelvin even more, believed that electromagnetic fluid (ether) defined motion and rest with respect to itself, just as ordinary fluid did. It remained for Einstein to challenge this aspect of the older model. And by proposing the interchangeability of mass and energy, Einstein also showed that the concept of weight, thought to be irrelevant by Maxwell, could be applied to the electromagnetic field.

A scientific model, then, is a kind of metaphor. It is an extended, controlled metaphor, selected out from the giant system of metaphors which is the universe, created by God as his poem. An extended, controlled, detailed metaphor is an allegory. A scientific model, therefore, is an *allegory* within the universe-poem. It is poetry choosing the allegorical mode of expression.

Science as allegory? Why should that sound odd? I'm not sure. It makes sense. A model is an extended, controlled,

detailed metaphor, that is, an allegory. But what makes us think that science and allegory are not the same thing at all? I would suggest three possible reasons.

Prediction

The usual type of allegory has very limited, if any, predictive value. The allegorist puts a story together on one plane (the subsidiary subject) in order to express truth on another plane (the principal subject). But stories in general *could* be put together in many other ways. The story is "artificially constructed." Yet isn't it true that Maxwell's fluid is also artificially constructed? For instance, Maxwell had to specify that the fluid was "frictionless." Moreover, the best of allegories do give insight about their principal subject (not *just* entertainment and repetition of what is known).

Difference in Choice of Subsidiary Subject

Second, allegories typically use as their subsidiary subject stories about "ordinary life" focusing on persons and personal interaction. Contemporary scientific models, by contrast, typically use mechanical and mathematical models. This, perhaps, is getting closer to the points of most striking difference. The abstract simplicity of scientific models makes them a more fitting starting point for controlled prediction. Yet the differences here can be exaggerated. Is it possible that an allegory like *Pilgrim's Progress* might be quite useful in giving insight on the basis of which to make psychological predictions about responses to the Christian message?

Reality

Third, what about the question of reality? Does the modern West perhaps tend to think of scientific models not as models, metaphors, analogies of "reality," but as *reality itself?* The oddity of calling science allegory may be partly emotional. Allegory is today out of fashion. It is "mere" fiction, "mere" idle imaginative fancy. Science, on the other hand, gets us to the rock-bottom truth about the nature of the universe. Haven't you been told that the sun "really" doesn't rise? That tables are "really" not solid, but bundles of protons, neutrons, and electrons surrounded mostly by empty space?

Well, I disagree with this modern viewpoint. I think that the sciences furnish us with a set of useful analogies or allegories, not with "reality itself." Scientific models provide one perspective on the world, a highly useful perspective for certain limited and well-defined purposes. The "metaphors" of science do "hold true" to a large extent. As such, they truthfully describe aspects of the universal choral poem. They provide true statements about the world. But science does not provide the only kinds of metaphors or the only "true" perspective. I maintain, moreover, that the sun does rise and that tables are solid. People who think otherwise, under the influence of a so-called scientific world view, are mesmerized by the power and impressive achievements of an allegory.

All this I say to provoke some reflection and reconsideration. But before you try to refute me or write me off as a medieval throwback, pause to consider. I think I can refute scientism, whereas scientism cannot refute me. First, scientism cannot refute me. I quietly accept all the triumphs of scientific explanation and technological invention as so many evidences of the coherence of God's choral poem. God has been careful and consistent in the construction that underlies these allegories of ours, and so we can use them to predict and invent.

On the other hand, I think that it *is* possible to refute scientism. That is, it is possible to refute the sort of view of the world naively thought to be implied by the discoveries of modern science. Ludwig Wittgenstein has already pointed the way. His argument goes as follows. Tables and such are paradigm cases of what it means to be "solid." One destroys the rules of the "language game" for the word "solid" if one forbids its use in the context of tables. Likewise, though the rising of the sun is perhaps not exactly a paradigm case of "rising," it is close enough to a paradigm to make problematic the meaning of "rising" when we start tampering with the "naive" language about the sun. Now, atomic physics and solar astronomy are specialized "language games" parasitic on everyday language. To use them to abolish everyday language—or the potential for infinite varieties of metaphor—is to destroy the foundations of intelligibility. As Wittengenstein aphoristically puts it, "I must not saw off the branch on which I am sitting" (1958:27, #55).

Am I quibbling here? Does it really matter whether I treat a scientific model as ultimate truth or as fruitful allegory? Well, it matters to me that we become aware of the fact that there are many *other* metaphors, alongside of the standard ones used in current scientific models. These metaphors can be a source of insight and creative thinking. True statements can also derive from the stimulus provided by such alternative metaphors.

But it matters to me for another reason as well. To view the world *ultimately* and *exclusively* in terms of the models of modern science is to view it ultimately mechanistically, impersonally. We too easily slip into a virtual denial of God's presence. The Bible's own presentation is different. God is the chief "reality" with which to reckon; he is the center of things.

There is yet another factor to consider, related to the hierarchical structure of creation. The cosmos, according to Genesis 1, is created with a certain hierarchical structure. The first three days of creation present us with the unfolding of three realms of activity, each including polar contrasts: (1) light and darkness, (2) heavenly and earthly waters, (3) sea and dry land, with vegetation on the land. The last three days present us with "rulers" over these realms (though the correspondence is not perfect). (1) The heavenly bodies have charge over light and darkness (Gen. 1:18). (2) Birds and fish have charge respectively over heaven (1:20, 28; but cf. 1:22) and waters (1:20). (3) Land animals have charge over dry land and vegetation (1:30). Crowning all is man, male and female, created to have charge over everything under heaven (1:28–30). One can plot out a hierarchical structure: the lower orders find their explanation and purpose in their service to the higher.

But modern science, or at least modern "scientism," dreams of completely reversing their hierarchical order by

explaining not only animal life but man himself in terms of paradigms taken from the inorganic realm. Starting with mathematical or mechanical elements characterizing rocks just as much as men, it proposes to articulate the laws governing men. Man the personal is subjected to the impersonal in inanimate "laws," rather than subduing the impersonal and inanimate under himself.

But why not say that, instead of impersonal laws, what we have is the personal faithfulness of God (e.g., Jer. 31:35–36, 33:20)? Why not indeed imagine that when the winds blow, it is because God sends the hosts of angels to make them blow (more or less after the pattern of Ps. 104:3–4, cf. Heb. 1:7, Ps. 18:10, Ezek. 1:4ff)?[1] I am desirous, then, that we not be confined to mechanistic models, nor be seduced by them into forgetting that a mechanism implies a personal designer.

Before coming down to earth and talking about particularities of specific scientific models, I have still to mention three more insights to be gleaned from viewing the universe as God's poem.

The World Utterly Dependent on God

First, by speaking of God's poem, I mean to stress that the universe is utterly dependent on God, as a poem is dependent on its author. The poem exists, of course, there in print. It is not a part of the author or merely a dream in his mind (as if the universe were God's dream, destined to vanish when he wakes up). It is an object of his making. But what it is in every detail derives from its author. This is so even with an ordinary poem. But the universe-poem, I have said, is a *choral* poem. There are other speakers besides God. They each have a meaningful part of their own. At the same time, their meaning is found in their response to the all-comprehensive speech of God himself.

Colossians 1:16 and other passages tell us clearly that everything originated from God. There is no eternally existent prime matter or energy. God always was, but everything else had its origin and its being from him. But that is not all. The universe is no clockwork, wound up and left to run. It is continuously superintended by God's personal activity.

> They [animals] all wait for you, to give them their food in due season.
> When you give to them, they gather it up.
> When you open your hand, they are filled with good things.
> When you hide your face, they are dismayed.
> When you take away their breath, they die and return to their dust.
> When you send forth your Spirit, they are created; and you renew the face of the ground. (Ps. 104:27–30)

But to say that the world is so directly dependent on God appears to involve God in the evil in the world. What do we say about that? There are no easy answers, as the Book of Job reminds us. At any rate, neither the Book of Job nor other passages (e.g., Lam 3:37–38, Exod 4:11, Gen 50:20, Deut 32:39, Acts 2:23, Eph 1:11, Heb 1:3, etc.) permit us the "easy" way out of excluding evil from God's control. Hence I will continue to use a picture stressing God's control even over evil.

The World in Development

A second, related concern expressed by the analogy of poetry is the concern to represent God's creation as a complex interplay of static and dynamic elements. God rested from creating on the seventh day. From then on, there is a stability and continuity in the hierarchical structure of created things. But, on the other hand, the mandate given to Adam to subdue the earth involves vigorous dynamic processes. And God himself is involved in a continuous process of superintending and governing his creation, according to Psalm 104. One can say, then, that the poem is still in the process of being written. Only the first stanza was completed on the seventh day. The first stanza of a well-constructed poem does, of course, set the tone and the general direction for what will come. One can make certain predictions about the rest of the poem, provided one knows something of its author. But within the parameters set by the first stanza, the poem still remains partly unwritten. Its writing, day by day of history, involves the continuous participation of the author. I believe that God as an all-wise author has *planned* the whole poem from the beginning (Eph 1:11, Isa 46:10–11). But the unfolding of history, that is, the *writing* of the stanzas, still has significance.

This way of viewing things puts a heavy stress on the dynamic developments. One could choose to stress the stability more by viewing the poem as already written, but in the process of being read and interpreted by man. The meaning of the poem, and above all the understanding of its meaning, is still a matter of an unfolding process.

The World Surprisingly Victorious Over Chaos

Whatever way one chooses to develop this analogy, it includes within it a reminder of a third truth about our world. There are mysteries and surprises. On the basis of the first stanza, or on the basis of the over-all structure of a poem, one may venture to predict an omitted word, or to predict the over-all direction of a stanza not yet read. One does so on the basis of analogy with what one already knows. But the analogies break down at points, and one may be surprised by new twists. Does the same hold true for our scientific models? I claim that it does. Take Maxwell's electromagnetic theory as an example. Maxwell provides us a model. It is a detailed analogy between equations for an ideal frictionless fluid and the phenomena of electromagnetism. But just what aspects of fluids are relevent? And to just what range of phenomena are they relevant? Both of these are open-ended questions; both can bring us surprises. Maxwell would have been surprised to find that global motion of ordinary fluids with respect to fixed space is a concept best abandoned in the case of electromagnetism. And he would have been surprised to see that his equations cannot be applied at the quantum scale without reinterpretation. Remember also that Faraday and Maxwell first started developing their theory in order to explain the interaction of electric charges and electric currents with magnetic fields. It was a pleasant surprise to find that the theory eventually also accounted for the propagation of light.

What do I imply by this illustration? I would like us to obtain an appreciation for the limitations of our theories.

[1] *I am indebted to my colleague John M. Frame for this illustration.*

Theories are always rooted in analogies. And we never know just how far the analogies will hold true. But, equally, I would like us to recover a sense of wonder at the degree to which the analogies *do* hold up, and do prove fruitful. Eugene Wigner, apparently not writing from a theistic point of view at all, speaks impressively of "The Unreasonable Effectiveness of Mathematics in the Natural Sciences" (1960):

> The first point is that the enormous usefulness of mathematics in the natural sciences is something bordering on the mysterious and that there is no rational explanation for it. (p. 2).
>
> Certainly it is hard to believe that our reasoning power was brought, by Darwin's process of natural selection, to the perfection which it seems to possess. (p. 3).
>
> It is not at all natural that "laws of nature" exist, much less that man is able to discover them. (p. 5).

As a particular case of "unreasonable effectiveness," consider the special theory of relativity. This theory is mathematically the simplest possible theory in which the speed of light is constant under linear transformations of space-time coordinates. How could we dare to hope that the *phenomena* would match this simplicity? Or how could it be the case that P. A. M. Dirac could derive an equation virtually predicting the existence of the positron, simply in the course of trying to formulate mathematically a modification of the Schrödinger equation consistent with special relativity?

My answer is that it is indeed surprising, but not unreasonable. God simply decided to create a universe shot through with analogies and allegories for the delight and use of human beings. Order is not unreasonable in God's creation. But it is a personal order. It is order, if you will, triumphing over a host of other alternatives that God might have selected for his "poem." It is a triumph over chaos. (I am here reflecting a bit on the language of Gen. 1:2. God created an original chaotic situation without using pre-existing material. Subsequently, he subdued this chaos, "triumphing" over it for the sake of creating an ordered world suitable for human habitation.)

In another context G. K. Chesterton expresses eloquently his appreciation for this triumph over chaos. The scene he presents is a dialogue between an anarchist poet and a poet of order. The anarchist had just complained about the sad, tired fact that when the train has passed Sloane Square, the next station must be Victoria. The hero Syme, the poet of order, replies:

> "... The rare, strange thing is to hit the mark; the gross, obvious thing is to miss it. We feel it is epical when man with one wild arrow strikes a distant bird. Is it not also epical when man with one wild engine strikes a distant station? Chaos is dull; because in chaos the train might indeed go anywhere, to Baker Street or to Bagdad. But man is a magician, and his whole magic is in this, that he does say Victoria, and lo! it is Victoria."
>
> "I tell you," went on Syme with passion, "that every time a train comes in I feel that it has broken past batteries of besiegers, and that man has won a battle against chaos. You say contemptuously that when one has left Sloane Square one must come to Victoria. I say that one might do a thousand things instead, and that whenever I really come there I have the sense of hairbreadth escape. And when I hear the guard shout out the word 'Victoria,' it is not an unmeaning word. It is to me the cry of a herald announcing conquest. It is to me indeed 'Victoria'; it is the victory of Adam." (Chesterton 1960:9–10).

The train system is a human triumph, as Syme says. But behind this stands the original triumph of God, who brought order out of chaos and who maintains order. In the course of human exploration, science uncovers aspects of this triumph over chaos.

A scientific model is a kind of extended, controlled metaphor, selected out from the giant system of metaphors which is the universe, created by God as his poem.

Now this view of science must be fleshed out by reference to some concrete example. Those examples will be the subject of my next two articles.

REFERENCES

Beardsley, Monroe C. 1958. *Aesthetics*. New York: Harcourt, Brace and World.

Black, Max. 1962. *Models and Metaphors: Studies in Language and Philosophy*. Ithaca, N.Y.: Cornell University.

Chesterton, G.K. 1960. *The Man Who Was Thursday: A Nightmare*. New York: G.P. Putnam's Sons.

Hesse, Mary. 1966. *Models and Analogies in Science*. Notre Dame: University of Notre Dame.

Hester, Marcus B. 1967. *The Meaning of Poetic Metaphor: An Analysis in the Light of Wittgenstein's Claim that Meaning is Use*. Paris: Mouton.

Kuhn, Thomas S. 1970. *The Structure of Scientific Revolutions*. 2d ed. Chicago: University of Chicago.

Maxwell, James Clerk. 1890. *The Scientific Papers of James Clerk Maxwell*. I. Cambridge: Cambridge University.

Polanyi, Michael. 1958. *Personal Knowledge: Towards a Post-Critical Philosophy*. Chicago: University of Chicago.

———. 1969. *Knowing and Being*. Chicago: University of Chicago.

Poythress, Vern Sheridan. 1976. *Philosophy, Science and the Sovereignty of God*. Philadelphia: Presbyterian and Reformed.

Richards, I.A. 1936. *The Philosophy of Rhetoric*. New York-London: Oxford University.

Ricoeur, Paul. 1977. *The Rule of Metaphor: Multi-disciplinary Studies of the Creation of Meaning in Language*. Toronto-Buffalo: University of Toronto.

Turbayne, Colin M. 1970. *The Myth of Metaphor*. Rev. ed. Columbia, S.C.: University of South Carolina.

Wigner, Eugene. 1960. "The Unreasonable Effectiveness of Mathematics in the Natural Sciences," *Communications on Pure and Applied Mathematics* 13: 1–14.

Wittgenstein, Ludwig. 1958. *Philosophical Investigations*. 3d ed. New York: Macmillan.

———. 1967. *Bemerkungen über die Grundlagen der Mathematik*. Oxford: Blackwell. (Remarks on the Foundations of Mathematics)

Approaches to Evolutionary Theorizing: Some Nineteenth Century Perspectives

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What has happened will happen again, and what has been done will be done again, and there is nothing new under the sun. Is there anything of which one can say, "Look, this is new?" No, it has already existed, long ago before our time. The men of old are not remembered, and those who follow will not be remembered by those who follow them (Ecclesiastes 1: 9–11, New English Bible).

However we may interpret these words of Quoheleth in Ecclesiastes, however cynical and disillusioned we may consider them, we dare not overlook them. And yet, repeatedly we do ignore them; as a result we are consigned to fight battles that have already been fought. We grapple with problems as though they were new, problems that have been tackled at inordinate length in previous generations. Such is the case with the creation-evolution controversy; the essential arguments central to the controversy today were thoroughly worked through over the period 1830–1900. Indeed, in many regards, the issues were far more thoroughly debated then than now. Unfortunately, little heed is paid today to those mid-nineteenth century debates, and in the process much of value has been lost.

The appearance over the past few years of a number of books on historical aspects of the Darwinian and post-Darwinian controversies is therefore, a welcome occurrence. They serve to place people such as Darwin, Chambers, Lyell, Huxley, Mivart, Gray, Agassiz, Romanes and Spencer within the interrelated theological, scientific, sociological and political perspectives of their respective times. They highlight the nuances of the myriad forces at play in the shift from a predominantly creationist paradigm to a predominantly evolutionary one. In demonstrating the reasons behind this major transformation of outlook, they throw light on fundamental principles in the relationship between Christianity and biology and on the significance of these principles for contemporary thinking.

Creationism and Positivism

Neal Gillespie's concern in *Charles Darwin and the Problem of Creation* is to analyze the conflict between creationist and positivist theories of science, and to trace the way in which a move from the former to the latter proved critical in the general acceptance of evolutionary thinking. According to Gillespie, positivism limited scientific knowledge to the laws of nature and to processes involving secondary or natural causes. By contrast, creationism regarded the world as being the result of direct or indirect divine activity; as a consequence science was inseparable from theology (p. 3).

The issue at stake is not whether positivism led to anti-supernaturalism or atheism—it did in some instances, but not in others. Rather, the difference between positivism and creationism lay in the range and kind of scientific questions they engendered. Positivism in the middle years of the nineteenth century began to ask questions, about, for instance, the origin of species, to which creationism could not provide answers within the domain of natural causes. More-

This essay is based on the following books dealing with Charles Darwin and nineteenth century creationist and evolutionary thinking: Gillespie, N.C., Charles Darwin and the Problem of Creation, *University of Chicago Press, Chicago, 1979; Moore, J.R.* The Post-Darwinian Controversies, *Cambridge University Press, Cambridge, 1979; Ruse, M.,* The Darwinian Revolution, *University of Chicago Press, Chicago, 1979. An extended book review of Moore's book by Richard Aulie was published in four parts in this* Journal *in 1982.*

over, the answers given by creationism were not meaningful within the positivist understanding of what constituted a scientific solution, namely, uniformity of law and natural causes (Gillespie, p. 10).

The transformation meant that science, and in particular biology, developed into a completely natural system of understanding the world. Religion was eliminated from *within* science, leaving no room for theology *within* scientific thinking. Not surprisingly, this movement had profound repercussions for a Christian understanding of the world, as well as for religious conceptions of reality, biblical interpretation and apologetics.

The implications of this are graphically depicted by James Moore in *The Post-Darwinian Controversies*, in which the diverse reactions of representative groups of Protestants are sketched and analyzed. What emerges as of principal significance is the response of Christians *to* positivism, rather than their grappling with the *nature* of positivism itself.

Biblicism and Special Creation

Before proceeding further with this analysis, it is necessary to consider Gillespie's use of terms, in particular *biblicism* and *special creation*. By biblicism, he means "the continuing employment of biblical, especially Old Testament, images and language in science, and of explanations directly or indirectly grounded in Christian theology" (p. 20). This attitude did not, of necessity, engender a belief in special creation although there was often a connection between the two. But what of special creation? This, according to Gillespie, was "the belief that God in some way *directly* intervened in the order of nature to originate each new species" (pp. 20, 21). The creative act may signify a miraculous event or an unknown lawful process; no matter which it was, God was purposefully and directly involved. Closely associated with a belief in special creation was the related belief that intelligent design can be appreciated in the natural world. Yet a third related belief was the stability of species.

Gillespie sketches four ways in which the concept of special creation was interpreted by naturalists in the middle of the nineteenth century. These were: (1) God creates species miraculously; (2) species arise as the result of divine action, and yet the means of their creation accords with the laws of nature; (3) species arise in a purely natural way, with no theological overtones, and yet creationist language was still employed; (4) creation referred to the body of laws originally established by God, each new species reflecting divine action and yet requiring no special intervention on God's part (pp. 22–25). The term creation therefore, meant different things to different people, and was even used with different connotations by the same person.

What is of particular significance is that in 1859, the year of the publication of Darwin's *Origin of Species*, most of the then scientific opponents of the transmutation of species (for example, Lyell, Owen and Sedgwick) held to a belief in special creation, but not in miraculous creation (Gillespie, p. 26). The reason for this was that special creation was thought to be supported by the fossil evidence, which pointed towards a sudden appearance of fully-formed species. On the other hand, the fossil record gave no clue regarding the mechanism by which species were formed.

An exception to this generalization was Agassiz, who held to miraculous creation and who went on to advocate an extreme catastrophic view of the earth's geological past coupled with successive subsequent creations. Unfortunately, his position required so many creations that it was something of a *reductio ad absurdum* and probably served to drive other scientists away from miraculous creation.

What is crucial is the realization that all those involved in this debate were scientists—geologists, palaeontologists and biologists. For special creationists, whatever their theological position, scientific ideas had implicit within them the acceptance of ignorance. To postulate a lawful, but mysterious, means of creation left room for God at the expense of scientific ignorance. But was this satisfactory as science? Increasingly, a negative answer was given, because special creation precluded a natural explanation of the origin of species. In so far as it did this, it was unscientific and was even a hindrance to increased understanding within the scientific domain. Freedom to hypothesize within a natural framework was, and still is, central to scientific positivism. This was recognized by Darwin, but not by others such as Lyell and Owen, and it proved the reason why Darwin attacked special creation with such vigor.

For Darwin special creation was a scientific dead-end, because the causes of speciation postulated by special crea-

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tionists were beyond conceptualization. The origin of species was not, in Darwin's eyes, a mystery; it was amenable to natural explanation which, in his view, was provided by natural selection. What Darwin strove for, therefore, was two-fold: a complete separation of biology and theology, and a new understanding of the nature and practice of science (Gillespie, p. 40).

The real conflict revolved around the continuing use of biblical themes and ideas in scientific thought; this was the hallmark of biblicism, and it was anathema to positivism. For biblicism, science could never be autonomous; for positivism it had to be. Hence, the issue was not the validity or otherwise of biblical literalism or scriptural geology, but the nature of science (Gillespie, p. 47).

Lyell, in his influential *Principles of Geology*, emphasized what he regarded as the obstructing influence of theological and biblicist pre-suppositions in science. He argued that the biblical flood and a short age of the earth prevented accurate observation and the formulation of sound theory. What is interesting is that Lyell was not hostile to theology; rather his aim was to protect science from what he saw as the misdirections of theology. This, in turn, resulted in a dilemma between "the positivism of his science and its methodological requirements, versus a desire to maintain a viable theism containing the possibility of some sort of divine activity in the world" (Gillespie, p. 50).

The contention between religion and science therefore, was a contention between two sorts of science: one that was theologically-grounded and one that was not. Of these, the first had reached the limits of its development and could neither ask nor generate new questions. The second, by contrast, was free to pursue new questions and seek new frames of reference (Gillespie, p. 53). The religion-science divide was not inevitable and did not affect scientists uniformly, as Moore brings out in his book. But it did force into the open searching queries about the methodology of science. Chief among these were the separation of science and theology, the uniformity of nature, and the role in science of theories based on actually or potentially observable causes. Such ideas were basic to Lyell's geological concepts, and proved revolutionary for geological research. What is intriguing about Lyell is that, while he so vigorously put forward these positivist ideas in science, he was reluctant to surrender creationist beliefs.

Natural Selection as Theory

Essential for the newly-emerging scientific positivism was a reliance on theory. Darwin saw very clearly that working theories were as important to science as were data. Theories may only be approximations of the truth, but if they lead to useful generalizations they are valuable. For instance, in 1868 Darwin wrote: "I believe in the truth of the theory (of natural selection), because it collects under one point of view, and gives a rational explanation of, many apparently independent classes of facts" (Gillespie, p. 63). In these terms, all of nature must be open to scientific inquiry, and it was at this point that Darwin's approach was incompatible with that of special creation. Indeed, the two were, philosophically, diametrically opposed to one another.

Darwin repeatedly rested his case for natural selection on its wide explanatory power. It was, in his eyes, at the center of what was termed by Whewell, a consilience. Whewell, in the 1840s, had argued that the mark of the best kind of science comes when different areas of science are brought together and demonstrated to arise from the same principles. When this is the case, one has a consilience, a guarantee of truth, because the explanations are not inherent in the hypotheses (Ruse, pp. 58, 59). The significant feature of this approach to science is that a consilience explains experience rather than being derived from it.

Two positions on scientific theorizing were paramount therefore, in the mid-nineteenth century: the *rationalist* position, with its reliance on consilience, and the *empiricist*, with its dependence upon analogy from direct experience. Darwin argued rationalistically that a consilience is vital for confirmation of a scientific theory, whereas others such as Huxley looked to empiricism (Ruse, pp. 235, 236). While neither position completely excluded the other, each represented a distinct philosophical position.

Because Darwin relied on consilience as a method of theory confirmation, he was justified in concluding that the theory of natural selection had been largely confirmed—not as a theory for which absolute empirical evidence had been obtained, but as the most probable explanation of the greatest number of facts relating to the origin of species (Moore, p. 195). For many, this was the most offensive aspect of Darwin's work; he had deserted the sure ground of induction for the slippery slopes of hypotheses. Until the latter could be established, the traditional view of creation would stand. This was enunciated, for instance, by the Princeton theologian, Charles Hodge who, in the early 1870s, argued that science deals in facts, not in untested and perhaps untestable hypotheses.

Conflict resided in differing conceptions of science, a conflict brought to a head in biology and highlighted by the question of origins. While this is true, the influence of philosophical and theological premises on scientific theorizing cannot be ignored. Those clinging to special creation and a biblicist viewpoint readily adopted a science-equals-facts position, as it posed no threat to their viewpoint. On the other hand, those with no concern to maintain such a viewpoint found scientific positivism in one of its guises far more amenable.

Although Darwin repeatedly sought to demonstrate that special creation leads to elaborate rationalizations and to theories incapable of empirical verification or falsification, he found great difficulty in throwing off the thought-forms of biblicism and creationism. The idea of design in creation was a particularly pervasive influence. Gradually, however, the sufficiency of law and natural causes alone as scientific explanations of natural processes rendered design causally redundant (Gillespie, p. 85). Natural selection came to replace design within science, not because God was being rejected but because scientific positivism had no room for theological explanations as a part of scientific method.

The design issue proved to be a crucial one for mid-nineteenth century scientists. Many could not follow Darwin's positivism to its logical conclusion, with its absence of any conscious purpose (Gillespie, p. 108). Providential evolution was an option espoused by Owen, Argyll and Mivart who, while differing among themselves, saw a role for God at some point in the evolutionary process. They clung to divine purpose in nature, distinguishing between physical cause and overriding purpose. By contrast, Darwin was not prepared to concede that natural laws were predetermined by divine will; there could be no place within science for theological explanations that are beyond the reach of science. Neither design nor purpose was required to make sense of nature; neither was scientifically comprehensible; therefore, neither could be countenanced. While people such as Lyell and Gray strove to reconcile design and transmutation, this was a non-issue for Darwin.

rationality and meaningfulness of science (Gillespie, p. 144). This was Darwin the positivist, rather than Darwin the materialist. Later on in his life however, positivism acquired materialist overtones, as theism and Christianity were relinquished.

This transformation became inevitable for Darwin because, while his base was a Christian one, his undue reliance on secondary causes and on law gradually isolated God from his own creation. What had been a Christian universe was left to function increasingly on its own. In the long term, Darwin's view of God was too small. Unable to reconcile the character of God with the complexities and tragedies of nature, Darwin sought refuge in designed laws the details of which were left to chance. Consequently God was replaced by secondary causes, and the "Being" behind the universe by "nature." And yet this was not an inevitable

Darwin sought and found solace in secondary forces as the direct cause of evil seen in the world. This was accomplished at the expense of God's control over the universe and perhaps, in the end, of God's concern for the universe.

In spite of this, Darwin was unable to dispense completely with God, for the simple reason that God was required to bestow rationality upon the universe. Science was made possible by the reality and consistency of the universe, and this stemmed from God. The *Origin of Species* therefore, bore marks of Darwin the theist as well as of Darwin the positivist (Gillespie, p. 124).

Darwin and Theism

In spite of the influence of theism on Darwin's earlier thinking, he experienced problems with many contemporary beliefs about God. Darwin's approach to God rested on a number of premises: God cannot be the author of the cruelties and waste seen in nature; God cannot be the creator of a world that deceives and misleads honest enquiry; God has created through general laws alone; God does not stoop to minor aspects of natural engineering (Gillespie, p. 125). Darwin therefore sought and found solace in secondary forces as the direct cause of the evil seen in the world.

This was accomplished at the expense of God's control over the universe and perhaps, in the end, of God's concern for the universe. Unable to hold in conjunction God's omnipotence and the universe's evil, Darwin gave up the idea that God is active in nature. Gillespie expresses it thus: "In the final analysis, Darwin found God's relation to the world inexplicable; and a positive science, one that shut God out completely, was the only science that achieved intellectual coherence and moral acceptability" (Gillespie, p. 133).

Darwin's thought reveals a glaring tension between theism and positivism. Initially, his positivism had a metaphysical base—the rationality and character of God underlay the end-result of Darwinism. God could still be conceived as playing an active role in the world, although for Darwin himself this vista disappeared.

Darwin's road to unorthodoxy and ultimate rejection of Christianity lay in his inability to integrate the phenomena he saw in nature and divine providence. By aligning God too closely with the many examples in nature of profligacy and variations, Darwin felt that God becomes the author of "many injurious deviations of structure" and the "redundant power of reproduction." Increasingly therefore, he introduced a wedge between God and the universe, and finally separated God completely from the universe. In doing this, he laid the foundation of an irreligious approach to the world (Moore, p. 333).

Reactions to Darwin

James Moore in *The Post-Darwinian Controversies* is concerned with Protestant reactions to Darwin after 1870. In particular, he considers the "warfare" so frequently considered to exist between religion and science. This was summed up in Andrew White's influential book, *A History of the Warfare of Science with Theology* first published in 1896. As long as a military metaphor persisted, only two possibilities remained for those aspiring to intellectual honesty—strict orthodoxy or agnosticism. Fight or surrender were the two options, and it was in this spirit that T.H. Huxley waged war against vacillating Christians.

The anti-evolution crusade was more a phenomenon of the 1920s than of the late nineteenth century. This is strikingly illustrated by the Fundamentalism of these respective periods. For instance, Benjamin B. Warfield, the outstanding

Reformed theologian, who contributed an article to *The Fundamentals*, accepted evolution. Warfield went as far as to assert that Calvin's doctrine of the creation, including even "the bodily form of man" is a "very pure evolutionary scheme" (Moore, p. 71). Yet another contributor to *The Fundamentals*, James Orr, contended that no religious interest is imperilled by evolutionary theory, when the latter is viewed as a method of creation.

By contrast, the Fundamentalist anti-evolutionism of the 1920s in the United States was a delayed reaction to the trends of the 1880s. Bereft of the intellectual leadership of people such as Strong, Warfield and Orr, Fundamentalism panicked in the face of moral and spiritual decay. All too readily, the cause of such decay was diagnosed as evolution.

As Gillespie so ably demonstrates, polarization—such as it was—in the latter part of the nineteenth century was not between science and theology. Most scientists were religious, and theologians were also scientists. Dilemmas there were, but these were complex; there was confusing polarity, divisions and uncertainty, but these could not be glibly slotted into a "science versus religion" classification.

Perhaps there was a spiritual crisis; an anxiety in response to growing atheism, immorality and a collapse of established traditions. Darwinism was associated with this threat. A way of life and a view of man intimately linked with Christianity were being replaced by a new era characterized by a changed philosophical framework. Beliefs and cherished ideals appeared to be under assault, and the resulting tension was inevitable among the general public. Moore depicts this transition as a "shaking of the foundations" (p. 110), but he sees the upsurge of biological evolution as just one facet among the diverse intellectual currents then raging.

For Christians, there were broadly three alternatives: to be anti-Darwinian and hence anti-evolutionary, or to accommodate an evolutionary position in one of two forms. These latter forms are what Moore depicts as Christian Darwinism and Christian Darwinisticism (p.116). Of these, Christian Darwinians accepted Darwin's theory as it stood, leaving it substantially intact. Christian Darwinists, on the other hand, modified Darwin's theory by adulterating it with non-Darwinian ideas.

For Christian anti-Darwinians, Darwin's chief offence was not against the Bible, but against the methods and truths of established science. This was based upon the premise that science should lead to certainty and that scientific theories should be capable of explaining all facts. Self-evidently, Darwinism, based upon an hypothesis, was incapable of achieving certainty in these terms. This dilemma emerges in both Gillespie and Moore, and is critical to an understanding of opposition to evolutionary ideas and the mechanism of natural selection.

Moore, however, traces an additional difficulty for anti-Darwinians, namely, that evolutionary schemes demanded change in the facts of nature and in the interrelationships of natural phenomena. Change of this order can be expressed only in theories of greater or lesser probability (Moore, p. 206). By contrast, the immutability of species demands fixity and the unchangeableness of data, which lend themselves to absolute certainty.

The concept of fixity had enormous attraction for scientists such as Cuvier and Agassiz. For them, the world had been constructed by God utilizing rational plans which could be understood through induction. Within this framework, the unity and stability of the creation lay ultimately within the mind of God, whose plan of creation had been laid out over time and had as its object the introduction of humans. Consequently, animal species had no more material existence than the transcendental plan they manifested; each was a discrete act of the divine intellect (Moore, p. 208).

Ideas such as these were little more than Platonism, and Agassiz assiduously propagated an idealistic world-view characterized by repeated catastrophes and re-creations of the created world order. Others, who can more properly be described as *Christian* anti-Darwinians, largely embraced Agassiz's philosophy of nature and used it as support for a traditional reading of the early chapters of Genesis (Moore, p. 211). Even Charles Hodge took Agassiz as his authority in scientific matters, arguing that the whole vegetable and animal world had been constructed on one comprehensive plan.

An issue that has to be faced is whether the desire for *fixity* is Christian. Moore cogently argues that the belief in fixity represented an amalgam of biblical literalism and Neo-Platonism (p.215). As we have seen, the latter owed much to the views of Agassiz. Far from representing the biblical perspective represented by the scientific renaissance of the sixteenth and seventeenth centuries, it stemmed from a philosophy of ideal types.

This was the philosophy associated with Plato, and according to it species have an inviolable extrasensory existence (Ruse, p. 237). Agassiz contended that species, genera, families and orders exist only as categories of thought in the Supreme Intelligence and, as such, have an independent existence. The species is, according to another idealist biologist, an ideal unit which, in its turn, is a unit in the work of creation. Species in the Platonist view, are real and immutable "essences." This, like other forms of idealism such as Aristotelianism, leads to the idea that species are uniform and is specifically opposed to the notion of gradual change and hence of ancestral forms. Other biologists such as Owen and Whewell were also Platonists, whereas Huxley was a staunch empiricist and Darwin an amalgam of rationalist and empiricist.

The quest for *certainty* was equally unchristian, striving as it did for a degree of competence that ignored human creatureliness, finitude and sin. Full and final verification in science and a ponderously predictable Creator have little to do with the world-view enshrined in the Bible. Faith at the human level, and sovereignty as a prime feature of God's person are essential for an orthodox Christian framework (Moore, pp. 214, 215).

Christian anti-Darwinism therefore, was not essentially

Christian, as it had been degraded by a sub-Christian philosophy. Moore writes:

> In the name of Christian and biblical teaching they (the anti-Darwinians) set the static world of antiquity over against a theory that helped to resolve the enigmas of natural history which the old world had merely enshrined. The fixity and certainty banished from the heavens by Christian philosophers—Galileo and Newton . . . , they domesticated on the earth, where Darwin found nought but process and probability (pp. 215, 216).

Christian Darwinisticsm

Christian Darwinists, in general, looked to Lamarckian evolution for the "spiritual" dimensions by which Darwinism could be transformed. Having abandoned special creation and the fixity of species, they turned to evolution as a description of the divine method of creation both in the biological world and throughout the universe (Moore, p. 236). In this, they went beyond Darwin and sought refuge in the far-reaching evolutionistic ideas of Herbert Spencer. Some argued that anything less than universal evolution cannot be worthy of an omnipotent Creator.

Christian Darwinists contended that God created everything by evolution and wrought his designs by evolutionary means. Such beliefs however, went beyond Darwin and his limitation of evolution to the biological world. Moreover, his emphases on natural selection (rather than design), the lowly origins of mankind (rather than creation in God's image) and a struggle for survival (rather than a finished creation) all appeared to exclude God from the world. The Christian Darwinists, therefore, were forced to seek for a modified Darwinism congenial to the purposes and character of God (Moore, p. 220). Understandingly, a variety of attempts was made by people, such as Frederick Temple, Henry Ward Beecher, the Duke of Argyll, St. George Mivart and Henry Drummond, to view natural selection within some form of Christian framework.

For many Christian Darwinists, evolution was regarded as an essential ingredient of inevitable material, social and spiritual progress (Moore, p. 239). The world was improving; the human race was gradually ascending; progress was a reflection of God's great designs for mankind. God, in short, was the key that unlocked the mysteries of evolution (Moore, p. 250). What was perhaps not so obvious at the time was that accommodation of this order demanded a modified view of God as well as a modified view of Darwinism. Again, the question has to be raised whether the interpretation of the doctrines of providence and progress implicit within Christian Darwinisticism was essentially Christian. It is difficult to escape the conclusion that the all-consuming character of evolutionistic progress was achieved only at the expense of a biblical view of the fall and evil, and only by bestowing upon God an impersonal facade.

Nevertheless, there were exceptions to these views, even among some who did not completely oppose evolutionary theory. One such was Charles Hodge's son, Archibald Alexander Hodge, who succeeded his father as Professor of Theology at Princeton Theological Seminary. In the late 1880s Hodge made the distinction between evolution as a scientific account of natural phenomena and as a philosophy. On the scientific level, Hodge did not consider that evolution was antagonistic to the Christian faith; but he warned that once it assumed the status of a philosophy, supplying the ideas, causes and final ends of existence, Christians would have everything to fear (Moore, p. 241).

Christian Darwinism

In his attitudes Hodge was a forerunner of the Christian Darwinians. While the foremost examples of this position are not well-known today, their contribution to Christian thought was a crucial one.

A Scottish theologian, James Iverach, writing in the 1880s and 1890s, regarded Darwin's theory as a good working hypothesis in spite of many difficulties. By contrast, Spencer's grand synthesis was rejected as untenable. To Iverach, evolutionary theory was a strictly scientific postulate and should be treated as such. Nevertheless, he was prepared to use it within a religious context, believing that Darwin's theory strengthened the argument that order within nature must be the consequence of an intelligence behind nature (Moore, p. 255). Of even greater significance to Iverach was continued belief in the dependence of all creation on its Maker.

Iverach believed firmly in the immanence of God in the world, by which he meant the rational and conscious immanence to which the Apostles first bore witness, that is, Christ himself. Modern science and philosophy would have done a great service, Iverach thought, if they drove theologians back to the New Testament to discover afresh its teaching on the relation of God to the world.

Another influential voice in the latter half of the nineteeth century was an English clergyman, Aubrey Lackington Moore. He refused to link the Christian faith necessarily with evolution or its denial. For him, evolution *or* creation is a false antithesis. Faith is not dependent on any particular understanding of organic origins; whatever science may reveal in this sphere is only a revelation of God's method of creation (Moore, p.261).

Aubrey Lackington Moore was perceptive in his realization that evolution is a scientific theory and should be regarded as such. Linked with this was his resolute questioning of the status of "creation." In order to press home his point, he was prepared to distinguish between "supernatural evolution" and "natural creation," the latter alternative underlining the unconscious deism into which many Christians had relapsed. His concern was with the belief—stated or unstated—that once God had created the world, he withdrew from his creation allowing it to unfold by itself. Whether this unfolding was by an evolutionary or non-evolutionary mechanism was not of prime importance—the self-unfolding contradicted belief in God.

Another distinction of Aubrey Lackington Moore's was between "creation" and "special creation." He recognized all too clearly that evolution was a foe of special creation, as it was one mechanism against another. Special creation, according to Moore, is found neither in the Bible nor Christian

antiquity; it is not a religious view at all, although it had become an integral facet of much Christian orthodoxy. This appalled Aubrey Lackington Moore, because to him it represented the dead hand of an exploded scientific theory resting upon theology. Christians, therefore, were being forced to defend belief in organic fixity, which had been destroyed by Darwin and which had neither biblical, patristic nor medieval authority (Moore, p.263).

To Aubrey Lackington Moore the Darwinian theory was infinitely more Christian than the theory of special creation, because it implies the immanence of God in nature and the omnipresence of his creative power. By contrast, any theory of occasional intervention by God (as in at least some forms of special creation) implies as its correlative a theory of ordinary absence. He was not unreasonable therefore, in his conclusion that: "Cataclysmic geology and special creation are the scientific analogue of Deism. Order, development, law, are the analogue of the Christian view of God" (Moore, p. 264).

Perhaps Wright's foremost contribution to the evolutionary debate lay in his attempts to relate Calvinism and Christian Darwinism. He maintained that Darwin's work allies itself with Reformed theology by discouraging romantic, sentimental and optimistic interpretations of nature, and by illustrating the lawfulness of nature. The fundamental principle held in common by Darwinian scientists and Calvinistic theologians is the sovereign rule of law throughout nature (Moore, p. 295). Not surprisingly, therefore, Wright could contend that Calvinism is comprehensive enough to shelter any reasonable system of evolution within its scope.

Darwinism and Christian Orthodoxy

Moore's conclusion, in the light of these nineteenth century attempts at coping with Darwinism, is that only those with a distinctly orthodox theology were able to embrace it. The theologically liberal, perhaps surprisingly, were unable to accept it. Christian Darwinism, Moore concludes, was a phenomenon of orthodoxy, whereas Christian Darwinisticism was an expression of liberalism (p. 303). Those other Christians who remained implacably opposed to Darwinism were epitomized by a devotion to pre-Darwinian natural philosophies allied to a literal interpretation of the early chapters of Genesis. Nonetheless, those who, if anything, were the most orthodox theologically, lived relatively easily with Darwinism.

The theological consequences of positivism are just as prominent in the physical and social sciences, in psychology and in biomedicine as they are in mainline biology, and yet are perceived by ardent anti-evolutionists to be less of a threat to theological orthodoxy. This, I suggest, is an illusion.

Aubrey Lackington Moore was always careful to maintain the separateness of theology and science, and his one major crusade was against the absent-God concept of deism. It was Darwinism which, in his view, forced a choice between two alternatives: either God is everywhere present in nature, or he is nowhere. Darwinism was the catalyst which stirred Moore to condemn the prevalent unmetaphysical ways of thinking that had lost sight of God's immanence in creation (Moore, p. 269). Such thinking was frequently, so Moore contended, a characteristic of special creationism.

Two further examples of Christian Darwinism were Asa Gray and George Frederick Wright. Both were orthodox Christians, Wright being an ardent Calvinist. Gray was a prominent naturalist, and well-known for his advocacy of Darwin's cause.

Gray argued strongly for the metaphysical neutrality of scientific knowledge, a neutrality he recognized in Darwinism but which was lacking from the positions of both Agassiz and Spencer. While Darwinism gave no proof of theism and left the question of design untouched, Gray thought it did coincide with a theistic view of nature by permitting the construction of a broader teleology than possible with any previous approach (Moore, p.273).

Wright, for his part, was critical of special creationism for its unwillingness to find an explanation of the origin of species in secondary causes. This, Wright considered, was to abandon the method by which alone science can survive and Christianity can establish its basis in historical fact (Moore, p. 287).

The major contributing factor to this state of affairs was that, for Darwin, the world was a world of historic process; it was a unique, creative and unrepeatable world, and one constantly open to change. His world was a real historical place, characterized by meaningful events and including human beings in its purposes. His cosmology therefore, was essentially Christian, and owed much to two Anglican clergymen—William Paley and Thomas Malthus. Through their writings, he derived a mechanism for evolution. Paley had earlier stressed adaptation to environment through divine contrivance, whereas Malthus had stressed formation and improvement through struggle without inevitable progress. Darwin synthesized the two in the theory of natural selection but, by omitting divine contrivance, ultimately lost his faith (Moore, p. 314).

The triumph of Darwinism was essentially the triumph of a Christian way of picturing the world (Moore, p. 308). Darwin's base was a Christian one, but his dependence upon secondary causes inevitably led him away from any dependence upon God. The question that arises is why Darwin went in this direction, while Christian Darwinism went in the diametrically opposite direction. For an answer, Moore looks

to Calvinism and its expression in people such as McCosh and Wright.

Moore argues: "The outstanding feature of this tradition was its ability to hold in tension the doctrines of free will and predestination, to reconcile 'chance' and providence, 'second causes' and a *prima causa omnium*. With Calvin it could ascribe all things to the 'directly upholding and governing hand of God,' even those events which seemed independent of or irreconcilable with divine purposes" (p. 334). The result was that a Calvinistic theology, by grounding providence in a high view of the sovereignty of God, enabled Christians to dilute the dissonance arising from the conflict of teleolgy and natural selection (p. 336). Linked with this was an emphasis on the immanence of God in the world, so that God was seen to be active in the universe *through* all time. This served to protect Christians of this tradition from the deistic tendencies of some other Christians and from the agnostic tendencies of such as Darwin.

Darwinism never provided a dynamic for individual and social action; in that sense, it was never a philosophy (Moore, pp. 346, 347). In this, it has to be contrasted with Herbert Spencer's version of social Darwinism, with its grandiose vision of evolutionism, universal progress, free enterprise and individual rights. For Spencer, biological evolution was soon transmuted into social evolutionism, which controlled life and history in all its facets. Darwin, however, was a specialist, whose aim was metaphysical neutrality for his scientific conceptions. The fact that such neutrality is rarely attained is a reflection of the impossibility of existing in a philosophical vacuum, and far more has frequently been asked of Darwinism than the non-committal stance of neutrality. Darwinism, of necessity, has created conflicts for those intent on upholding a Christian conception of the purposes and character of God in the world. Nevertheless, the theological affinities of Darwinism were recognized by a number of prominent figures in the latter part of the nineteenth century, including Thomas Henry Huxley. What is more, these affinities were with theological orthodoxy, especially Calvinism.

By contrast, theological liberalism cut itself off from Darwin's world in its attempt to transform Darwinian evolution into a philosophy of progress. By resorting to a *pot pourri* of divine immanence, human goodness and socio-religious progress, liberal theologians ensured that a world dominated by Darwinism would not be a Christian one.

Darwinism itself was superseded by evolutionary naturalism and evolutionary liberalism, philosophical vistas having nothing in common with orthodox theology. Christian Darwinism, unfortunately, never succeeded in gaining a popular following. The popular mind, at least in fundamentalist circles never rose beyond the anti-Darwinism of the mid-nineteenth century. Being wedded to concepts of fixity and stability, it clung to a pre-Darwinian world in the hope that Darwinism would be vanquished. In struggling against Darwinism, it allowed the modern world and modern biological concepts to pass by; as these did pass by, so did the minds of successive generations.

Some Contemporary Perspectives

The central issue of the creation-evolution debate today, as in Darwin's era, is the nature of science. For the scientific community at large positivism is the only acceptable methodology. Moreover, positivism has been at the heart of scientific advance in both the life sciences and the physical sciences.

For some Christians today, there is an implicit rejection of positivism in biology and geology at those points where evolutionary issues are at stake. Unfortunately, arguments against evolution are rarely framed in this way, criticism being grounded instead in alleged flaws in the data supporting it. As a result, the central theological issues are rarely tackled.

One question needing to be faced is why positivism appears to pose few problems for Christians in the physical arena, or even in the biological sphere when evolution is not under discussion. For instance, difficulties within evolution (phylogeny) may be of much the same order as difficulties within the development of individual organisms (ontogeny). For Darwin, phylogeny was no more irreligious than ontogeny. He expressed his feelings thus, at the conclusion of the *Descent of Man:* "Few persons feel any anxiety from the impossibility of determining at what precise period in the development of the individual, from the first trace of a minute germinal vesicle, man becomes an immortal being; and there is no greater cause for anxiety because the period cannot possibly be determined in the gradual ascending organic scale." If the growth of individuals is not seen as a threat to Christian theology, neither should the development of species. Scientific positivism applies in both instances or neither.

The theological consequences of positivism are just as prominent in the physical and social sciences, in psychology and in biomedicine as they are in mainline biology, and yet are perceived by ardent anti-evolutionists to be less of a threat to theological orthodoxy. This, I suggest, is an illusion. The challenge of scientific positivism is all-pervading, requiring a Christian analysis and response on all scientific fronts. To elevate evolutionary considerations above others is to misunderstand that particular area, and to fail to provide a Christian contribution to debates on nuclear power, therapeutic abortion, artificial insemination by donor, euthanasia, *in vitro* fertilization, mood-controlling drugs, behaviorism, and many others.

Finally, there can be little doubt from a historical survey of nineteenth century thought that Christian premises aided the coming of evolutionary theory, and even of Darwinism. The emphases of particular importance were those on the significance of law in the universe, the progressive nature of the fossil record, and the design argument with its dependence on the role of adaptation (Ruse, p. 272). If this is the case, we have to ask where the same premises lead today.

Dualism or Holism?: A Look at Biblical Anthropology, Ethics, and Human Health

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The dualistic doctrine of human nature (soul separate from body) stems from an established philosophical tradition dating back to Plato. But both the Old and New Testaments posit a holistic alternative by viewing humans as unified wholes, Although biblical anthropology thus appears to reject dualism, the historical Christian church has often adopted soul/body schism, thereby encouraging human alienation from self, others, and nature. Holism from a biblical perspective is offered here as an alternative. Special attention is focused upon the many complex psychological and social realities as addressed by a renewed ethic for the whole person.

Of what do humans consist: two separate essences, physical and spiritual, or only one? Are we "ghosts in machines," as the dualists suggest? It is certainly true that many people are accustomed to considering the mind (or its theological counterpart, the soul) and the body as distinct entities. This dualistic doctrine of human nature, in which soul (the "ghost") and body (the "machine") exist separately and yet interact with each other, has found such illustrious proponents from history as the following selected list of representative thinkers. (a) *Plato* viewed the body as "only an outer garment which, as long as we live, prevents our soul from moving freely and from living in conformity to its proper eternal essence" (Cullmann, 1958, p. 19), and, in the *Timaeus*, blamed "disorders of the soul" on the "badness" of the body (c. 390–348 B.C./1952, p. 474). (b) *Augustine*, in the *City of God*, regarded the soul as an immaterial spiritual substance that reigns supreme over its inferior counterpart, the despicable body (c. 413–426/1952, pp. 379–380). (c) *Calvin*, in the *Institutes*, referred to the human being as consisting of a physical body in addition to a soul that he described as "an immortal, yet created essence . . . which rises above the world" (1559/1949, pp. 203–204). (d) *Descartes*, in his *Discourse on Method*, equated that which is purely spiritual with the mind, which exists separate and apart from the material realm of physical substance (1637/1952, p. 60).

A conflict has arisen, however, as those who study the Bible have discovered within the language of the Scriptures certain basic assumptions about human nature, assumptions that seem to contradict the dualistic hypothesis. Among biblical scholars there is a burgeoning consensus that biblical anthropology presents *homo sapiens* not as two distinct "substances" but as a *unified whole*. Painstaking examination of both the Old Testament Hebrew concepts and the New Testament Greek terminology has pointed toward a more unanimously accepted picture of *holistic*, not dualistic, humanity.

Although it is true that many within Christian circles, particularly the academic-theological community, have turned away from traditional philosophical/anthropological formulations (due to the apparent lack of biblical relatedness of such doctrines), such metaphysical conceptualizations of personhood, primarily emanating from Platonic dualism, remain deeply entrenched within religious thought. As Norman Pittenger (1980) notes,

> A good deal of so-called "religious" discussion has been conducted on altogether too highly a spiritual plane, as if human beings were really nothing but angels who for the time being happened to be resident in a physical abode (i.e., the idea of an eternal "ghost" in an ephemeral "machine"). Such a view would be more appropriate for proponents of ancient gnostic theories, come alive in our day, than for those who profess a biblical basis for their religion. None the less, much that has been taught and preached in the Christian churches has resembled this heretical theorizing. (p. 23)

In fact, it is this traditional concept of soul-body separatism that has come to be viewed by the general populace as *the* Christian understanding of humans. Although not intending to discount the worth of dualistic speculation on the philosophical level of striving for greater anthropological understandings, nor attempting to deny the consideration of metaphysical dualism as "a" religious view of humanity, I nevertheless contend that this essentially unbiblical construct

is *not the Christian understanding of human nature.*

In this discussion I seek to demonstrate three ideas. (a) Exposition of key word-concepts in the Bible shows that the scriptural understanding of humans is far removed from the dualism of not only Greek philosophy, but also much of subsequent Christian speculation. (b) The historical cleavage between a human's soul and a human's body, particularly within the bounds of religious ethics, has served to encourage a host of unbiblical actions as well as attitudes among dualistically-oriented Christians. (c) A thorough-going anthropology based upon biblical holism serves as a practical, as well as theoretical, basis for a renewed Christ-like emphasis on ministry to the whole person.

Biblical Anthropology

In my conceptual exposition of numerous Old and New Testament passages, particularly focusing on I Corinthians 15:35–58, I have reached several key conclusions (Weathers, Note 1). One primary insight deals with Paul's use of *soma* (or body) always to indicate humans as indivisible wholes as contrasted with human beings existing in parts. Gerhard Kittel, the editor of the *Theological Dictionary of the New Testament* (1971), elaborates by declaring the following:

> In fact (to Paul) *soma* means man in his confrontation with God or sin or fellow-man. *Soma* is the place where faith lives and where man surrenders to God's lordship. It is thus the sphere in which man serves . . . *The I, then, cannot be divided up into an inwardness of soul, affection, or understanding on the one side and an outwardness of the body in which one draws or neglects the consequences therefrom on the other.* (p. 1066; italics added)

Paul equates the holistic *anthropos* (or human being) with *soma*. In opposition to the "spiritual" emphasis of his peers (no less applicable to a similar phenomenon today by those who overemphasize the transformed, "spiritualized," inward nature of humanity without accompanying corporeal witness) Paul, in such pertinent passages as II Corinthians 5:1–10; Romans 6:12–14; Romans 8:12–14; Romans 8:11f.; I Corinthians 4:14f; and Philippians 3:21, calls for humans to live their faith out not only in an intellectual or emotional manner, but in the comprehensive arena of "somatic" existence. This willingness to bear bodily witness to God's salvation, most adequately defined in Isaiah's Old Testament depiction of the Suffering Servant (cf. Isaiah 42:1–4; 49:1–6; 50:4–9; 52:13–53:12), is best exemplified in the New Testament by the "life-giving spirit" himself . . . Jesus (cf. Mark 10:33–34; Acts 8:32; I Peter 1:18–19).

Another important word, *psuche* (cf. *nephesh* in Old Testament), or soul, represents in both testaments the individual being in totality. Paul, resisting attempts to equate the *psuchikon* human (or person "possessing" a soul) with some extracorporeal metaphysical vision of a spiritualized entity, posits *psuche* in a sense that is best epitomized by the modern term "self."

In the Bible then, humans, as holistic vessels, possess no "immortal" inner part that guarantees heavenly life. Humanity's destiny is determined not by its nature, but by its relation to God and to its fellow human beings. Salvation, seen through this perspective, is not representative of a human-initiated retreat from one's "somatic" nature into the "spiritual." Rather one's bodily activities are drawn into a functional relationship of responsible complementarity with one's mental activities, thus leading to a unified expression of life in relationship to God. God redeems humanity, not by abolishing its human wholeness, but by calling the holistic person into unison with his/her Creator (cf. Gatch, 1969, pp. 43–44; Hick, 1973, pp. 99–100; Hick, 1976, p. 278).

Dualism and Religious Ethics

In contrast to this biblical concept of anthropological holism, or *psuche-soma* indivisibility, stands the steadily increasing impact of dualistic considerations upon much of the Judaeo-Christian heritage. The impact of dualism on the historically evidenced ministry of the Christian church can most profitably be analyzed on three interrelated levels of alienation: (a) alienation from oneself, (b) alienation from one's fellow person, and (c) alienation from creation as a whole (Ruether, 1972, p. 255).

Drawing from Gnosticism's renunciation of this world and man's presence in it, the early Christian church sometimes "fostered a dualistic tendency in Christian anthropology by identifying man's true humanity as something outside history" (Childs, 1978, p. 20). From this understanding it was but a brief step to the position that "whatever is a threat to my body is not a threat to me" (Evans, 1977, p. 104). This self-alienating view of reality came to epitomize the classical

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Christian breed of spirituality.

> Salvation came about through repression of the body: the sensual appetities and feelings, and a flight to an inner spiritual self. Eating, sleeping, even bathing, the delights of ear and eye, and most of all, sexual pleasure, as the most intense bodily pleasure, were the seat of the "enemy." This constituted literally a "death ethic" in which life-long "mortification" gained fulfillment in the separation of the "soul" from the body. (Ruether, p. 255)

Just as *asceticism* under the guise of Christian servitude has led irrevocably to self-alienation, so have the characteristic forms of *individualism* (Dueck, Note 2) and *dogmatism* (cf. Fowler, 1981, pp. 9–15). Here the words of a great Old Testament prophet ring clearly:

> I hate, I spurn your pilgrim-feasts;
> I will not delight in your sacred ceremonies. . .
> Spare me the sound of your songs;
> I cannot endure the music of your lutes.
> Let justice roll on like a river
> and righteousness like an ever-flowing stream.
> (Amos 5:21, 23, 24—New English Bible)

Human beings who accept a dualistic view of themselves are indeed alienated from everything: themselves, their fellows, and creation as a whole. Never before has there been a time in which the need for courage and introspection was greater. The great question of our age is: "What changes are necessitated in order for humans to once again focus on accepting *the gift of wholeness* from God?"

Human Health

The changes we accept in our ways of talking and thinking about human nature are related to the problems we have to solve (Dueck, Note 3). Reverting to the biblical model of understanding human beings as whole units in relation to God is imperative to the resolution of the problems that have emanated from the dualistic milieu. Only through a renewal of emphasis upon the holistic person, who is called into God's salvific covenantal family, can expectations for genuine renewal by concerned Christians be realized within the churches.

It is this traditional concept of soul-body separatism that has come to be viewed by the general populace as the *Christian understanding of humans.*

In fostering social alienation, body-soul dualism has manifested itself in Christian ethical attitudes and practices toward sexism, anti-semitism, class polarization, anti-black racism, and colonialist imperialism (Ruether, pp. 256–257). Quebedeaux (1974) poignantly summarizes the inadequacies of the dualistic separation of personal and social gospels,

> Holders of the Orthodox position (based upon the aforementioned dualistic presuppositions) have been guilty of neglecting the social dimension of the Gospel entirely—seeking the salvation of souls but allowing bodies to go to hell (p. 16).

As is evidenced today in such glaring crises as fuel shortages, carcinogenic radiation from malfunctioning nuclear reactors, and choking fumes from all sorts of human-made atmospheric pollutants, alienation in its third form, from God's creation, is likewise an undeniable reality—yes, even for (possibly, most especially for) the church of Jesus Christ. By now it is apparent to the reader that a "dichotomy between matter and spirit is not only anti-biblical but ecologically fatal" (Stagg, 1973, p. 59). As Stagg remarks,

> If philosophy or religion teachers us to despise the material (a la dualism), counting it worthless or even evil, the next step is to neglect it, abuse it, deplete it, pollute it (pp. 59–60).

Christians, working more often than not from a dualistic conceptualization of themselves in relation to God's universe, have helped to perpetuate many of modern man's fallacious assumptions and self-destructive behaviors in relation to the material realm, including "God's good earth, the larger 'body' or 'house' ('ecology' is from *oikos*, 'house') in which we live" (Stagg, p. 59).

Biblical holism as an alternative to anthropological dualism opens the door to human casting away of the bonds of self-alienation. Redefining repentance is seen by some as an integral part of the process of people getting back in touch with both themselves and their Creator. As one author puts it:

> Repentance means . . . return(ing) to that true body-self in community with our fellow persons and creation in an aspiration for that 'good land' of messianic blessedness which makes all things *whole* (Ruether, pp. 253–257).

Just as biblical holism affects one's body awareness (by teaching one to accept, be good to, and attentively listen to one's own body), such a view of human nature also shapes the Christian view of sex. In his efforts to "demythologize" sex within the context of biblical holism, Bruce Larson discusses "sex not as an entity unto itself but as one dimension of life which *cannot be separated* from the other aspects of human personality" (Quebedeaux, pp. 103–104; underlining added). More recently, Cliff and Joyce Penner (1981) assert a similarly holistic alternative to traditional Christian conceptions of sex. The Penner's explicate the Bible's "prosexual message" in careful detail. When the Bible speaks of human sexual experience, it is "talking about that mystical union between husband and wife that includes the emotional, physical, and spiritual—*the total person*" (p. 41). As such, sex is to be celebrated!

These last comments serve as a natural transition into a discussion of biblical holism as a reply to dualism's inevitable alienation of persons from their fellow human beings. Just as

self-alienation is such a direct corollary of dualistic notions within religion, dualism also unquestionably "ignores (the) social-cosmic character of sin" (Ruether, p. 252). Artificially separating persons into two or more mutually exclusive spheres of activity, which is exactly what dualism has propounded throughout history, has resulted in a marked tendency within Christianity to repeatedly fail to address social complexities.

That "conversion, discipleship and social concern are inextricably linked together" seems to be a foregone conclusion of the biblical writers (Quebedeaux, p. 81). As one example of the very real implications involved in a holistic view of man, consider biblical holism's response to the dichotomy between church and state. A properly holistic view suggests

> that the doctrine of separation of church and state has, in fact, been misinterpreted, that it really pertains to the prohibition of government interference in church affairs and does not forbid the churches to speak and act prophetically when the state fosters political or social unrighteousness (Quebedeaux, p. 99).

Holism's response to a pervasive anti-black racism (constructed on a foundation of religious dualism) has been well articulated by William Pannell and Tom Skinner. Pannell (1970) declares that "the sin of Evangelicalism is not that we are un-American. It is rather that we are more American than Christian" (p. 31). Pannell posits a tentative solution (not inconsistent with holistic conceptualizations), as well as acknowledging the difficulties presented, even promulgated, in today's church.

> Here we clearly need to preach a Christ who moves alongside of contemporary man, helping him to affirm his individuality and personal worth. Unfortunately, He (Jesus) often comes through as Anglo-Saxon, Protestant, suburban, Republican. Black young people simply cannot identify with that kind of Christ in a racist society (p. 31).

Biblical holism opens the door to the church's realization of the following rendition of Galatians 3:28: "In Jesus there are no 'niggers' or 'whiteys,' no 'freaks' or 'straights,' no male or female because we are all one in Him" (cited in Quebedeaux, p. 110).

Living out a holistic gospel is of necessity often demanding upon the committed disciple. Such demands can be adequately met only by the one whose roots remain firmly implanted in the redemptive acts of God. This form of Christian radicalism is best summarized in the powerful message of black evangelist Tom Skinner (1971):

> You will never be radical until you become part of that new order (God's kingdom) and then go into a world that is enslaved, a world that is filled with hunger and poverty and racism and all those things of the work of the devil. Proclaim liberation to the captives, preach sight to the blind, set at liberty them that are bruised, go into the world and tell men that are bound mentally, spiritually and physically. '*The liberator has come!*' (pp. 208–209).

Although the problems of self-alienation and alienation from one's fellow humanity are indeed severe in the modern church, perhaps the most pressing urgency lies in contemporary human interaction with the natural environment. Lynn White, Jr. has described the etiology of the ecological crisis.

Finally, concluding on a more positive note, Henri Nouwen directs the holistic Christian to a deeper appreciation of humankind's undeniable relatedness to all of creation. "The closer we come to nature, the closer we touch the core of life when we celebrate. Nature tells us that life is precious not only because it is, but also because it does not have to be" (1971, pp. 104–105). As God's people, committed as a church to right the many wrongs to be associated with philosophical and practical roots of dualistic anthropology, we collectively reject all forms of the "cheap grace" that Dietrich Bonhoeffer so detested. Rather we seek, in God, the truly transcendent foundation for humane ethics and wholesome personhood.

NOTES

[1]Weathers, R.S. *Dualism or Holism? A Look at Biblical Anthropology and Practical Implications.* Unpublished senior research thesis, Fresno Pacific College, Fresno, California, June 1979. (Available from author upon request.)

[2]Dueck, A. *Individualism.* Paper presented at the meeting of the Christian Association for Psychological Studies, Badger, California, June 1980.

[3]Dueck, A. "Is Mennonite Mental Health Services Mennonite?" *Mennonite Quarterly Review*, in press.

REFERENCES

Augustine. (*The City of God*) (M. Dods, Trans.). In R.M. Hutchins (Ed.), *The Great Books of the Western World* (Vol. 18). Chicago: Encyclopedia Britannica, 1952. (Originally written, c. 413–426.)

Calvin, J. (*Institutes of the Christian Religion*) (J. Allen, Trans.). Grand Rapids, Michigan: Eerdmans, 1949. (Originally published, 1559.)

Childs, J.M., Jr. *Christian Anthropology and Ethics.* Philadelphia: Fortress Press, 1978.

Cullmann, O. *Immortality of the Soul or Resurrection of the Dead?: The Witness of the New Testament.* London: Epworth Press, 1958.

Descartes, R. (*Discourse on the Method of Rightly Conducting the Reason*) (E.S. Haldane & G.R.T. Ross, Trans.). In R.M. Hutchins (Ed.), *The Great Books of the Western World* (Vol. 31). Chicago: Encyclopedia Britannica, 1952. (Originally published, 1637.)

Evans, C.S. *Preserving the Person.* Downers Grove, Illinois: InterVarsity Press, 1977.

Fowler, J.W. *Stages of Faith.* New York: Harper & Row, 1981.

Gatch, M.M. *Death: Meaning and Mortality in Christian Thought and Contemporary Culture.* New York: Seabury Press, 1969.

Hick, J. *Death and Eternal Life.* New York: Harper & Row, 1976.

Hick, J. *Philosophy of Religion* (2nd ed.). Englewood Cliffs, New Jersey: Prentice-Hall, 1973.

Kittel, G. (Ed.). (*Theological Dictionary of the New Testament*) (G.W. Bromiley, Trans.). Grand Rapids, Michigan: Eerdmans, 1971.

Nouwen, H.J.M. *Creative Ministry.* Garden City, New York: Image Books, 1971.

Pannell, W.E. "Race." In G.R. Collins (Ed.), *Our Society in Turmoil.* Carol Stream, Illinois: Creation House, 1970.

Penner, C., & Penner, J. *The Gift of Sex.* Waco, Texas: Word, 1981 Pittenger, N. *After Death—Life in God.* New York: Seabury Press, 1980.

Plato. (*Timaeus*) (B. Jowett, Trans.). In R.M. Hutchins (Ed.), *The Great Books of the Western World* (Vol 7). Chicago: Encyclopedia Britannica, 1952. (Originally written, c. 390–348 B.C.)

Quebedeaux, R. *The young Evangelicals.* New York: Harper & Row, 1974.

Ruether, R.R. "Cultures for a Theology of Liberation." *Dialog*, 1972, *11*, 252–257.

Skinner, T. "The U.S. Racial Crisis and World Evangelism." In J.R.W. Stott (Ed.), *Christ the Liberator.* Downers Grove, Illinois: InterVarsity Press, 1971.

Stagg, F. *Polarities of Man's Existence in Biblical Perspective.* Philadelphia: Westminster Press, 1973.

White, L., Jr. "The Historical Roots of our Ecologic Crisis." *Science*, 1967, *155*, 1206–1207.

A Psychological Profile of Biblical Demons: The Fear of Death

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Traditional approaches to demonology have significant exegetical and practical limitations: exegetical, since none is able to fully answer certain questions about demons that arise in a study of them based on scriptural accounts; and practical, since they tend to be unconcerned either with twentieth century life or with scriptural truth. It is therefore suggested that a new approach, a psychological profile of demons based on such truth, provides more satisfying answers to these questions. Such a thesis has particular value in two areas: (1) the light it sheds on the nature of death fears; (2) its contribution to the debate over the reasons that biblical accounts of demon possession and present day psychopathology overlap so much.

Metaphysical and psychological questions about the actual nature of biblical demons[1] are not popular queries in theological circles and have not been for many years. Theologians and psychologists alike may feel that even the consideration of such questions involves an unwise marriage of what should remain separate disciplines. Yet, the integration of theology with other disciplines is in fact a healthy sign of the maturation of evangelicalism. The present study is intended as a commencement of such a multidisciplined look at demonology, in this case, through the eyes of psychology and theology. I believe that the results of such an inquiry are significant for the life of the church.

It is of course legitimate to first ask whether there is enough biblical data from which one can construct any kind of sophisticated psychological profile of these beings. An affirmative answer is proposed in the context of an evaulation of previous approaches to demonology.

Previous Approaches to Demonology

Approaches to demonology can be effectively divided into those that do not take belief in personal evil beings as viable in the twentieth century, and those that do. Outside of conservative scholarship (defined here as the position of those who accept the reality of personal evil spirits as found in biblical accounts), both psychologists and theologians treat accounts of demons similarly: as arising from a primitive hypostasis of evil, an attempt to relegate evil outside of the self, though still personalizing it.[2] Rather than refer to such theorists as demythologizers as is usually done, let us be more specific in this paper and call them ademonologists. Most ademonologists would probably maintain that the idea of demons arose when a person had some unfortunate experience or illness but did not wish to find the origin of or responsibility for the experience within, and so created a persecutor or seducer in the form of a spiritual being. A typical theologian who advocates ademonism is Edward Langton, who wrote in his classic study of demonology:[3]

> We conclude therefore that the main factors accounting for demon possession as portrayed in the Gospels are pathological conditions of body and mind, such as those that are associated with hysteria and epilepsy; a strong popular belief in the power of demons to take possession of persons; subconscious activity of the mind; and the existence of a psychic state which can assume the appearance of individuality; together with some measure of hallucination and auto-suggestion.

Thus while one can safely assert that the belief in demons has been effectively exorcised from most theologians and psychologists, the etiology of their unbelief is not as simple as many conservative responses would lead us to think. Often the skepticism and psychologizing of modern ademonologists is dismissed simply as "sinful" unbelief that arises from an apriori denial of the supernatural. This is not always a sufficient and fair explanation, for some theologians seem to have abandoned belief in demons at least in part because study of the subject has remained in a medieval lifelessness, totally unrelated to the twentieth century Christian. Bultmann expresses this when he relegates Jesus's beliefs in such things as angels to the latter's adoption of the religious and moral values of his day, values which Bultmann himself obviously considers irrelevant and valueless in the present.[4] And, in fact, ademonological theologies of demons clearly reflect an intense (and correct) concern over relevance, even

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though their methods of integration tend to elevate psychology over theology, treating the "demonology" of the biblical authors as entirely psychologically induced. Evangelicals have not yet made specific meaningful responses to Bultmann's assertions.

It is my intention to confront directly the assertions of Bultmann and other ademonologists that belief in the reality of demons is irrelevant to the concerns of modern humanity. In so doing I depart from critical scholars by accepting the reality of demons, but I concentrate on the same concerns they have with the application of theology to life. At the present time this particular focus offers the best and most important apologetic that evangelicals can give, for its result does indeed leave skeptics with only a priori objections to the doctrine and none based on its supposed irrelevance.[5]

Evangelical demonologies, of course, treat demons much differently than their critical counterparts. Thus while demons are dead in ademonological theologies, they are alive and well among evangelical theologians! One sometimes even hears warnings that devoting too much attention to the study of these beings may bring harm to the student. Karl Barth wrote of just such a danger:

> Why must our glance [at demonology] be brief? Because we have to do at this point with a sinister matter about which the Christian and the theologian must know but in which he must not linger or become too deeply engrossed. . . . Sinister matters may be very real, but they must not be contemplated too long or studied too precisely or adopted too intensively. It has never been good for anyone . . . to look too frequently or lengthily or seriously or systematically at demons. . . . It does not make the slightest impression on the demons if we do so, and there is the imminent danger that in so doing we ourselves might become just a little or more than a little demonic. . . . The very thing which the demons are waiting for, especially in theology, is that we should find them dreadfully interesting and give them our serious and perhaps systematic attention. . . . A quick, sharp glance is all that is legitimate in their case.[6]

Following Barth's advice, evangelicals have in my opinion neglected, and only recently in scant numbers begun to show an interest in, a creative integration of the theology of demons with life in the church. For example, Berends (1975)[7] attempted to isolate the biblical criteria present in all cases of biblical demon possession, and has been followed by others in the difficult task of distinguishing between demon possession and psychopathology.[8] These, however, are pioneers in a largely uncharted wilderness, and it is especially disappointing to note how few theologians are numbered among the explorers.[9]

The primary energy of evangelicals has rather been directed toward apologetics[10] and what has been called "descriptive" theology[11]—espousing only what the biblical authors thought, with little sophisticated consideration of what this biblical theology has to say to the church today.[12]

Kallas, for example, writes a passionate plea for a new acceptance of the reality of Satan and demonic powers, yet when he encounters Bultmann's objection of irrelevance, he tells us that he nevertheless chooses to write a (safer) "descriptive" theology of the biblical position, rather than an "applicational" one.[13]

This paper, then, is an attempt to build upon the traditional statements of conservative demonologies to find intersections between them and the life we live. The most significant of these points lies not in the psychology of demonology that critical theologians offer, nor in the "psychology of critical theologians" that evangelicals apologetically offer, but in a psychology of demons themselves.

The Biblical Portrait of Demons

Throughout both the Old and New Testaments, evil spirits and demons are most noted for their attempted destruction of individuals and their relationships with God. One first reads of the serpent seducing Eve to her own death (Genesis 3:1–7); later, of Satan's physical attack of Job (Job 1:2); then Saul, under the influence of an evil spirit (1 Samuel 16:14–16), lives his last days in pursuit of David—God's anointed king—to kill him (1 Samuel 18 ff.). One reads of Satan moving David to number Israel (1 Chronicles 21:1), resulting in the deaths of 70,000 men; and of the devil's desire to accuse Joshua of sin, and so ruin his relationship with God (Zechariah 3:1).

In the Gospels, physical suffering is often attributed to the work of demons. Thus dumbness (Matthew 9:32–33), blindness (12:22), insanity (Luke 8:26–36), suicidal mania (Mark 9:22), personal injuries (9:18), and physical deformities (Luke 3:11–17) have been attributed to the work of demons. Physical destruction is also attributed to the work of demons, though to a lesser extent, in the epistles (1 Corinthians 5:5; Hebrews 2:15).

Spiritual ruin is also a part of their work. It is Satan who, in the parable of the sower, comes and removes the seed of the word from the new believer (Mark 4:15), and who wishes to "sift" Simon like wheat (Luke 22:31). It is demons who inspire false doctrines in the last days (1 Timothy 4:1); and it is against spiritual attack that believers must arm themselves (Ephesians 6:10–16).

Thus the activity of demons as reported in Scripture is consistently destructive in nature. Foerster writes, "The power of evil [in the Synoptic Gospels] is regarded as a single power working towards a specific objective. This objective is the destruction of man in every respect."[14]

Why do the biblical authors record the destructive activity of these beings? Most theologians give a very complex answer. If there is one major purpose, however, it is to highlight the ancient and persistent hostility between the kingdom of light and the kingdom of darkness, that the forces of God and the forces of Satan are locked in mortal combat during the present age.

To go beyond the above theological reason for demons' destructiveness, however, and to ask metaphysical and psychological questions about their motives is quite unfashionable. To ask, for example, what relationship there might be between Satan's destructive work and his nature is generally treated as too speculative, even medieval in its level of sophistication, especially since the biblical authors themselves showed no interest in the subject. Foerster writes, "The traditions preserved in the Synoptic Gospels do not offer any fully developed Satanology . . . but they do [pass on the

important aspects of] the work of the evil one. No attempt whatever is made to depict the devil's being, origin, or work.... Here is a mystery which no effort is made to solve."[15] However, cognizance of the nature of demons significantly contributes to an understanding of their consistently destructive activity.

A Psychological Profile of Demons

Speculation regarding the nature of evil spirits has a long history. Early Jewish thinkers attributed the destructiveness of demons to their jealousy of humans.

> Angels had in vain opposed the creation of man. The fact that he was able to give names to all creatures, which the angels had failed to do, had proved his superiority to them, and led them to conspire against Adam in order that by his fall they might gain the supremacy.[16]

It was at that time, according to Jewish thought, that they were cast out of heaven.

Early church fathers, like biblical authors, primarily emphasized the activity of Satan rather than his nature, though, as we shall see, they did indulge in some speculation on the subject. Medieval thinkers became increasingly speculative, considering such questions as the velocity with which the angels originally fell from heaven, the true color of the devil, and his true physical form. At one time it was even thought that the tritone, a certain musical interval, was demonic in origin, and so it was dubbed *diabolus in musica*.

Is there internal biblical support for a quest to understand the nature of demons? Is there in fact sufficient biblical data to justify a study of the character of demons? One might, for example, object by stating about the Scriptures as a whole what Foerster observed about the Gospels: they do not directly address the issue of the emotional makeup of demons. While we shall show that such a statement cannot honestly be widened to include the entire Bible, nevertheless even if true, the lack of direct evidence does not in itself form a substantive criticism of the present study. After all, the objection that the Bible does not address an issue has never yet been a stumbling block to the work of theologians (!), part of whose task of synthesis consists precisely in the construction of doctrinal hypotheses based on legitimate implications, not necessarily direct statements, of Scripture (e.g., the doctrine of the Trinity). The true question is whether enough biblical data exist to support conjectures about any given doctrine.

Turning now to the biblical data themselves, one must first admit that in the case of so-called "elect" or "good" angels, there are numerous allusions to their emotional attributes. They, at least in the past, felt lust (Genesis 6:1–4);[17] wonder or curiosity (1 Peter 1:11–12); and joy (Luke 15:10), all of which imply emotional normalcy. Finally, in the conversations and actions of angels as preserved in Scripture there is every indication that they experience life through the same kind of emotional grid as humans. Thus there is good evidence that the psychological profile of angels roughly parallels that of humans. And if one accepts that elect angels have an intrapsychic makeup at least roughly parallel to that of humans, then can it be a very long distance from harps to pitchforks, emotionally speaking?

While it is true that nowhere in the Bible is there any extensive treatment of the nature of demons, an initial justification for the study arises from some passages which do provoke interest in and questions about the topic. This writer, in fact, first became interested in the subject during a study of the Gospel of Mark, whose author shows a great interest in the demonic. In certain passages, questions seemed to emerge from the material itself for which Mark nevertheless provided no answer.

To go beyond the theological reason for demons' destructiveness and to ask metaphysical and psychological questions about their motives is quite unfashionable.

Let us first consider the only two extant conversations (excluding the Temptation) between Jesus and demons. The first, Mark 1:24 (Luke 4:33–37), occurs in the synagogue, and the second, Mark 5:7 (Matthew 8:28–34; Luke 8:26–39) occurs by the sea. For our purposes, the most significant observation is that in both cases the demons implore Jesus not to destroy them. Most scholars argue—convincingly in this author's opinion—that these incidents are primarily recorded in order to demonstrate both the superiority of Jesus over demons as well as the approaching judgment of the latter.[18] However, if these conversations do reflect the real character of demons,[19] then the above view, while probable, does not provide an exhaustive explanation of their theological significance. The reason is that, regardless of how the Gospel writers used these conversations in their respective theologies, the overlooked fact remains that the demons, in fearing their own proximate demise, were *wrong*. Read it again. They were mistaken. On two occasions they betrayed an egregious misunderstanding of Jesus's intentions, fearing immediate judgment by him. Yet, according to the Gospel records, he gave no evidence that he had come to destroy them, and in fact actually indicated the contrary when he repeatedly predicted his approaching death, an event which at least at the level of immediate experience militates against any reason for the demons fear. Yet despite all of the evidence to the contrary, demons' continued to fear their own destruction at the first advent of Christ. Why? A purely "intra-Gospel" theological exegesis of these fears does not provide an adequate answer to this question, even though the authors' own recollections of the conversations encourage us to ask it.

To state the problem differently, if the recorded dialogues between Jesus and demons have historical validity, then the reason(s) for the latters' mistaken expectations is (are) at least

a valid historical inquiry. But if, with the help of other biblical passages, a portrait of the character of demons can be painted that can account for—even predict—such misunderstandings, then the search for the reason demons were mistaken attains *theological* validity. The Gospels have therefore sent us in search of other biblical criteria to explain the demons' misunderstandings. Let us follow their lead. This search unearths many similar mistakes on the part of demons.

Sometime in the primordial past there was a hopeless rebellion against God himself (2 Peter 2:4; Jude 6), doomed to failure but carried out anyway (and still being enacted). Did these beings mistakenly hope to be victorious? Further, Satan predicted the unbelief of Job, not once, but twice (Job 1:11–12; 2:4–6). Wrong again. The Gospels, then, are not alone in presenting a picture of inconsistency on the part of demons. One final glaring inconsistency is noted by Russell:[20] "Curiously, Christ calls Peter the Devil for attempting to avert the Passion, and Judas the Devil for working to bring it about" (Mark 8:33; Luke 22:3–6).[21]

The above are some of what have, through the ages, encouraged a certain amount of speculation about the character of the devil and demons, speculation that Scripture itself encourages by its record of their activities. The question is, how do we account for such inconsistencies? The very early but spurious "Epistle of Ignatius to the Philippians," for example, attempted a kind of psychological synthesis to solve the Peter/Judas inconsistency noted above: "For the leader of all wickedness assumes manifold forms, beguiler of men as he is, inconsistent, and even contradicting himself, projecting one course and then following another."[22] Does biblical evidence exist, that the demons' behavioral inconsistencies arose from some psychic confusion? Certain passages do point us in that direction. Satan is called the "father of lies" by Jesus (John 8:44; 14:1), which can provide evidence for a psychic disorder if the latter is supported elsewhere. Interestingly, Jesus is accused of having a demon in John 7:20 because he made the "inaccurate" claim that some were trying to kill him, and in John 8:52 they make the accusation again because he makes the "absurd" claim that those who keep his word will not see death. It almost seems as though it was common to try to recognize Satanic inspiration by the subject's overstatements and inaccuracies.

It was of course Satan who seduced Eve into thinking that she would not die by eating the forbidden fruit; a lie, to be sure, but is it not possible that he himself also believed the lie? He apparently believed such a lie when he looked on his own beauty and rebelled againt God (Ezekiel 28:17).[23] In both of these instances he was of course wrong. In all of these cases there are very significant *theological* implications, to be sure, but, if we accept the reality of the biblical portrayal of Satan, is there not also ample room to speculate on what a "person" would have to be like to fit this portrait? Indeed, are we not invited by these accounts to engage in some speculation? It is undeniable that the Bible consistently portrays Satan as a malicious being whose interpretation of life is deluded. Foerster's comment on Hellenistic demonology, that "... falsehood belongs to the very essence of demons,"[24] is thus particularly useful here if read psychologically.

The Fear of Death

A more specific hypothesis of the nature of these beings begins to take shape when we place the activities of demons side by side with the previously mentioned accounts of their conversations. Their single intention, as we have seen from the biblical citations above, is to destroy. Yet from their conversations with Jesus, we are able to see that at their core they themselves *fear* destruction, even misinterpreting the purpose of Jesus's mission. Putting these together, the profile is that of beings who avoid their own guilt and fear of destruction by themselves destroying. This dynamic, easily recognizable among humans, has received the psychological label, paranoid psychosis. Becker refers to this when he chillingly writes, "only scapegoats can relieve one of his stark death fear: '*I* am threatened with death—let us kill plentifully.' "[25]

The paranoid denies or avoids his own personal feelings of guilt by claiming that there are people seeking to punish him; he denies or avoids his own personal fears of death by claiming that there are people "out to get him." This disorder becomes psychotic when the subject is unable to control these defenses; when, for example, the subject so believes that others are "out to get him," that he actually kills to protect himself, as in the case of the demon-possessed King Saul, cited above.

Turning now to demons themselves, the psychotic intensity of their paranoia is revealed by their willingness (need?) to destroy in order to avoid their own personal fears of destruc-

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tion. These defenses are enervated, and the fears surface, only when Jesus confronts the demons and their destructiveness through exorcism and healing; now their terror is uncovered—a terror very similar to that of a paranoid whose denial of his own guilt and anger takes the form, not of attack, but of a panicked accuser trying pathetically to locate these feelings outside of himself. Meissner describes this similarly as "a form of superego projection in which the critical agency is located outside the subject."[26] Now listen for the demons' confused accusations when confronted by (the earthly) Jesus.

> for He was teaching them as one having authority, and not as the scribes. And just then there was in their synagogue a man with an unclean spirit; and he cried out, saying, "What do we have to do with You, Jesus of Nazareth? Have You come to destroy us? I know who You are—The Holy One of God! (Mark 1:22–24)

> And seeing Jesus from a distance, he ran up and bowed down before Him; and crying with a loud voice, he said, "What do I have to do with You, Jesus, Son of the Most High God? I implore You by God, do not torment me! (Mark 5:6–7)[27]

The above outbursts do indeed reveal confusion, panic, and paranoia on the part of the demons—probably a form of theophobia.

Assuming a basic psychological community between angelic beings and human beings, how might demons react to the knowledge of their own approaching "death," their probable guilt, and the meaninglessness that derives from the lack of an object "big" enough to provide an ontological reference point outside of themselves? Is not madness possible—even likely?

While the intention of demons is clearly to destroy, it seems quite possible that they are motivated in this vocation by an uncontrollable need to protect their own haunting fear of destruction (pathetically manifested, we might again point out, in their only two verbal statements ever recorded, apart from those of Satan!). Paranoia is, of course, manifested in just such a panic.

The above theory becomes probable when we take into account *explicit biblical statements about the nature of demons*. For it is actually not quite accurate to say that the nature of demons is never directly addressed in the Bible. There is one emotion that is directly attributed to them. That emotion is fear. It is explicitly stated that the demon-possessed Saul was motivated to kill David out of his own (paranoid) fear of him (1 Samuel 18:12)—a fear which we know was paranoid from David's later acts of loyalty. Significantly, Saul lived out the rest of his life animated and possessed by an intense paranoia. In James 2:19 we read further of demons "shuddering" (*phrissousin*). Langton points out that this word "properly means 'to be rough' or 'to bristle', and like the Latin '*horreo*' it is used of the physical signs of terror, and especially of the hair standing on end."[28] He continues, "among pagans, Jews, and Christians of earlier times demons were physically conceived, and were regarded as being capable both of inspiring terror *and of being terrified* and put to flight"[29] (emphasis added).

When the above biblical attributions of fear to demons are placed beside their mistaken, apparently panicked notions of a premature judgement, is this not at least similar to a classic case of paranoia, in which the destruction of others serves as a defense against the fear of one's own destruction; in which the accusation of others (Revelation 12:10) is a defense against facing up to one's own guilt? Paraphrasing Freud, Becker writes, "The death instinct represents the organism's desire to die, but the organism can save itself from its own impulsion toward death by redirecting it outward. The desire to die, then, is replaced by the desire to kill."[30] Rank writes similarly, "The death fear of the ego is lessened by the killing, the sacrifice, of the other; through the death of the other, one buys oneself free from the penalty of dying, of being killed."[31]

The present construction of a psychological profile of demons is with just such a dynamic. Generally, the reality of their approaching destruction is denied or replaced by an insatiable appetite to kill. It is only when, in those brief confrontations between them and the Holy One of God,[32] preserved in the Gospels, that their defenses are penetrated and reality intrudes upon the demons' psychotic rage; the resulting outburst is one of mixed reality and fantasy—Judgement Day has come!

A further element present in classic paranoia is delusions of grandeur. But the demons' thought that Jesus's mission was to destroy them demonstrates just such delusions—that the purpose of his first advent focused on them. And is it not true that such a projected delusion (theomania) formed the essence of Satan's temptation of Eve ("You shall be like God," Genesis 3:5), as well as the explicit delusion manifested in his temptation of Christ ("Worship me," Matthew 4:9)? More significantly, was it not his own preoccupation with his beauty and splendor—a kind of delusion of grandeur—together with his self-apotheosis, that originally brought about his own fall? Significantly, 1 Timothy 3:6 ("Conceited . . . the condemnation of the devil") may be a direct reference to this delusion, and the author asks us to learn from it. Finally, we continue to see this theomania in the present activities of demons as they inspire humans to worship them (1 Corinthians 10:20). Thus while it is impossible to know when or why demons became paranoid in the primordial past, many of the peculiarities of their behavior in the present age as preserved in the Bible are more understandable given this thesis.

Other odd statements about demons also become meaningful given this thesis. Often, for example, one finds demons living an eremitic existence in locations devoid of life—even in tombs (Mark 5:2–5; for their haunts in deserted places see Leviticus 16:10; Isaiah 13:21; 33:14; Luke 14:1–2). Thus Langton writes, "Burial grounds, and any places of filth or refuse, were especially associated with demons."[33] In the context of our thesis, does this not appear to be an acting out of their own "buried" preoccupation with death and destruction? An outright denial of real death fears results only in a less direct manifestation of them, such as living in lifeless regions and among the dead! One even wonders in this light whether the fact that demons always destroy their host is more than just the rage which always possesses the paranoid, and is actually a form of self-destructive activity (i.e., tearing down their own "body" or "home") characteristic of some forms of paranoid psychosis in which the guilt that is present sometimes turns the rage inward toward the self resulting in

suicidal behaviors.[34]

Having suggested and attempted to defend a thesis of paranoid psychosis in biblical demons, one final step remains, that is, to document independent support for this view. However, since this thesis breaks new ground, no other actual studies of the question can be cited in support. There are, however, some supportive statements that are relevant.

Beginning with the earliest references, it is interesting to observe that in Canaanite magical/incantation and related texts, demons inflicting disease and death are described by adjectives translated "fierce," "furious," "raging," "ferocious," "overbearing," and "savage,"[35] thus attributing to these beings the emotional explosiveness of a psychotic paranoid. This view of ancients, that the emotional structure of demons is akin to that of humans, is supported in the West by Empedocles, Plato, Xenocrates, Chrysipus, Posidonius, Plutarch, Apuleius, and the Neo-Platonists.[36]

As noted earlier, the church fathers did not generally show any unusual interest in the nature of demons. One exception is Lactantius (c. 240–320), who wrote of the "fury" (Latin, *furore*) of demons thrown against Christians.[37]

More recently, Barth used terms like "hate" and "rage" when describing demons.[38] Merrill F. Unger also made an interesting comment in his study of them:

> As Satan's vast though finite wisdom became corrupted when he sinned (Ezek 28:12, 17), it is reasonable to conclude that the great wisdom which characterizes angelic beings in general (2 Sam 14:20) was in the case of the multitude of angelic collaborators who followed him, likewise perverted.[39]

Unger did not follow up on this idea, and the question of how Satan's wisdom was corrupted has until now remained unaddressed. If, though, his wisdom was corrupted as Ezekiel 28:17 states, is it too surprising to find this corruption implied in later biblical accounts, and is it unreasonable to theorize about the specific manifestations of that corruption?

Finally, Sall wrote an essay some years ago, alluded to above, attempting to differentiate between demon possession and psychopathology, in which he wrote, "demons spoke in a rational manner . . . . They stated where they did and did not want to go. They communicated in a logical manner."[40] Many elements of Sall's basic argument were challenged later by Bach who, like this author, observed to the contrary a certain lack of logic in the verbal statements of demons. Bach writes, for example, of "the [Gerasene demoniac's] *notably paranoid request* of Jesus, 'Do not torment me' (Luke 8:29), or the dissociative, perhaps epileptic manifestations of the dumb spirit described in Mark 9:17–25"[41] (emphasis added). Another of his statements is, "the Gerasene demoniac behaves not unlike a *paranoid schizophrenic*"[42] (emphasis added). Thus this paper's thesis of paranoid psychosis in biblical demons is not entirely without previous support.

Conclusions

Prompted by a study of certain biblical accounts of demonic activity, we have asked, "What psychological dynamic might account for the confusion and mistaken fears of destruction on the part of demons when confronted by Jesus? Is there a psychological profile that would predict the consuming desire demons have to destroy and deceive?" The answer that we have suggested is that the impulses and defenses (dynamics) known to be operative in paranoid psychosis predict the demonic behavior abundantly attested to in the Bible. This means that demons are driven by subconscious feelings of guilt and rage. It is not necessary to assert that paranoid psychosis is the only set of psychological dynamics operative in demons. There may be others; nevertheless, it does appear that this is the dominant personality disorder which either resulted from or else contributed to, the primordial fall of angels (Ezekial 28:17), since it is consistently supported by the behavior of demons preserved in both the Old and New Testaments.

The profile of demons is that of beings who avoid their own guilt and fear of destruction by themselves destroying. This dynamic, easily recognized among humans, has received the psychological label, paranoid psychosis.

Demonic Paranoia and the Christian Life

One might conceivably ask of this thesis, "So what?" It is an interesting psychological theory, but the analyst who reads this paper cannot put a psychotic demon on his couch (and no doubt would not wish to). So what is the relevance of this study?

One fairly obvious practical benefit is apologetic: the onus of demonic inconsistency is taken off of the Bible and placed upon demons. When Satan is alternately said to have tried to avert Jesus's death and to have inspired it, the inconsistency is his, not Christ's or the Gospel authors'.[43]

A second application for evangelicals is that while Christians are often told to beware of Satan's power, it is rare that we focus on our victory (Colossians 2:15). This thesis encourages a balance between the Christian's fear of Satan and a realization of the devil's limitations and creatureliness. Paranoid psychotics are both dangerous and pitiable! The devil's pathetic moral condition is now clearer. When Deuteronomy 32:17 calls demons "not-gods," implying a wholly negative ontology, we understand this metaphor better. Demons exist only because they deny that God exists; they are to him what

shadows are to their objects. Barth writes, "What is the origin and nature of the devil and demons? The only possible answer is that their origin and nature lie in nothingness." Further, "They are, but only in their own way; they are, but improperly."[44] Luther's statement, that the devil is always God's devil, is particularly piquant here.

Satan, then, is not a master, but a slave. The Bible recognizes that death brings fear to creatures (Hebrews 2:14–15), and Satan too is a creature who fears death and is a slave to his own fears. His raison d'etre—destructiveness—now appears to be a direct result of the fear of his own inevitable conclusion, and it is this fear which screams out the one proposition he most vehemently tries to deny, namely, that the Lord is God and Judge. In his own pathetic way his essence proclaims the contradiction of his message. Stated in another way, Satan's pathology reduces his vociferous contention of his own apotheosis to the level of a pitiable, ultimately impotent, Walter Mitty perspective of the world. The awesome Wizard of Oz now is unveiled as a lowly professor with lofty imaginings. The devil's importance in the universe is, after all, derived rather than self-perpetuating, so that in spite of himself, his ontology contradicts his gospel.

humanity's biological limitations, from the fact that humans are flesh and blood and will die.[46] This explanation, it now appears, is inadequate, and its inadequacy is such that only the Christian can see it. Demons are not biological creatures who will die biologically, yet they fear death (destruction) terribly. They are spiritual creatures, whose fear is likewise grounded in spiritual realities hidden from the natural eye. Fear of death, the Christian therapist realizes, is not rooted in the flesh and blood of this life alone, but also in spiritual realities. The Christian therapist can look beyond the inadequacy and superficiality of secular etiologies of death fears, and can assert that *there is to the fear of death and to paranoia a spiritual dimension*—an insight and perception that separates him immeasurably from his secular co-worker. Physical death and its accompanying fear is only a parable of a deeper and more significant type of death (and fear thereof). The non-Christian therapist cannot, in dealing with death fears, encourage healing on this deeper level. Only the Christian therapist can recognize that the resolution of death fears does not rest in the resolution of fears about physical death. Only the Christian therapist can point the client toward the emotional resolution of spiritual death fears whose origin is not rooted, ultimately, in flesh and blood alone.

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This thesis also has two messages for psychotherapists. There have been numerous attempts in recent years to distinguish demon possession from psychosis, indicating the difficulty of this enterprise. Bach writes with cautious optimism of maintaining the distinction: "The two [i.e., demon possession and psychosis] can be expressed in a fashion which is confusingly intertwined (cf. John 9:2), but can nonetheless be held conceptually distinct."[45] In fact, our thesis suggests that it may be impossible to meaningfully distinguish the two, at least empirically. The possessed individual behaves like the psychotic individual because Satan himself possesses psychotic dynamics. The problem is that in the literature on the subject of demon possession and psychosis, the therapist's couch has hosted, until now, only the possessed and not also the possessor. This insight, if accepted, would mean that psychotherapists need not any longer carry the burden of proposing observable differences between the effects of possession and those of psychopathology. *Perhaps that distinction can only be made mystically* (the subject of another study; cf. I John 4:1–3).

Secondly, and most significantly this thesis suggests a distinction between the Christian psychotherapist and his secular counterpart. It is the contention of many secular theorists that the fear of death arises naturally from

REFERENCES

[1]Unless otherwise indicated, we use "demons," "Satan," the devil," "evil spirits," and other such terms for denoting evil spiritual beings in the Bible synonymously to refer to any or all of such beings; i.e., they are treated as a class. For a defense of their synonymity within the NT, cf. H. Kruse, "Das Reich Satans," *Biblica* 58 (1977), pp 29–64, esp. pp. 29–37.

[2]See J.B. Russell, *The Devil* (Ithica and London: Cornell U. 1977), entire book, for a purely psycho-historical etiology of the idea of the devil. Also see A.J.W. Taylor, "Possession or Dispossession?" (*Expository Times* 86 [1975],pp. 359–363) for skepticism regarding the whole notion of demon possession as an acceptable explanation of any phenomenon.

[3]Edward Langton, *Essentials of Demonology* (London: Epworth, 1949), p. 155.

[4]R. Bultmann, *Theology of the New Testament* (2 vols.: New York: Charles Scribner's Sons, 1951), pp. 1, 3–7.

[5]Obviously, Bultmann's objections are rooted in questions arising from significant philosophical issues which need to be addressed in any truly valuable evangelical polemic, questions which go far beyond the scope of this paper. For an introduction to these questions, see R. Johnson, *The Origins of Demythologizing* (Leiden: G.J. Brill 1974).

[6]K. Barth, *Church Dogmatics* (3 vols.: Edinburgh: T. and T. Clark, 1960), 3, 3, p. 519. Others could be cited as well.

[7]W. Berends, "The Biblical Criteria for Demon-Possession," *Westminster Theological Journal* 37 (1975), pp. 342–54.

[8]Millard J. Sall, "Demon Possession or Psychopathology?: A Clinical Differentiation," *Journal of Psychology and Theology* 4 (1976), pp. 286–90; H.A. Virkler and M.B. Virkler, "Demonic Involvement in Human Life and Illness," *Journal of Psychology and Theology* 5 (1977), pp. 95–102; P.J. Bach, "Demon Possession and Psychopathology: A Theological Relationship," *Journal of Psychology and Theology* 7 (1979), pp. 22–26; M.J. Sall,

"A Response to Demon Possession and Psychopathology: A Theological Relationship," *Journal of Psychology and Theology* 7 (1979), pp. 27–30. Finally, note the careful approaches to the subject by theologians and a psychiatrist in several articles in *Churchman* 94 (1980).

[9]It should be observed that it is Christian novelists and storytellers like C.S. Lewis, D. Sayers, J.R.R. Tolkien, and, more recently, Walter Wangerin, who have used their imaginations to clearly expose the opposition between the cosmic forces of heroism that accompanies the human struggle against the latter.

[10]Virtually every conservative publication on demonology contains some apologetics; cf., e.g., M.F. Unger, *Biblical Demonology* (Wheaton, Ill.: Scripture Press, 1952; 9th ed. 1971), pp. 1–40; C.F. Dickason, *Angels Elect and Evil* (Chicago: Moody Press, 1975), pp. 17–23, 115–19, 150–54; also see J. Wilkinson, "The Case of the Bent Woman in Luke 13:10–17," *Evangelical Quarterly* 49 (1977), pp. 195–205. Unfortunately, the apologetics offered do not usually correspond to the questions that ademonologists ask.

[11]J. Kallas, *The Satanward View: A Study in Pauline Theology* (Philadelphia: Westminster, 1966), pp. 9–10.

[12]Most would probably admit that evangelical attempts at relevance have usually taken the form of pointing out what elements of twentieth century culture (such as the occult) may be influenced directly by demons. While not unimportant, and even biblical (c.f. 1 Cor 10:20), what has not been explored are the more subtle implications, or symbols, of demonology for other, less directly related areas of the Christian life. Often it is not the stone itself dropped into the water that affects me, but rather, the effect that it has on the water around it. Exploring the effects of demonology, not just demons, on my life, requires more work, but it also yields more exciting results.

[13]Kallas, *Satanward*, pp. 9–10, 133–52. Kallas made no further attempts at "applicational" theology in his second book, *Jesus and the Power of Satan* (Philadelphia: Westminster, 1968), and even argued that "descriptive" theology is needed more that the former. However, it is more precise to say that an *appreciation* for what the biblical authors thought is what is needed; can that be encouraged by stating, however eloquently, only what they thought?

[14]W. Foerster, "Satanas," *TDNT* 7 (1971), p. 160. Langton (*Essentials*, p. 192) essentially says the same thing about Pauline thought.

[15]Ibid. cf. also Langton, *Essentials*, p. 192; O.A. Miranda, "The Work and Nature of Angels According to the New Testament" (unpublished ThD dissertation, Princeton University, 1961), p. 2.

[16]Langton, *Essentials*, pp. 55–56.

[17]As D.J.A. Clines notes, "the majority of scholarly opinion supports the identification of the 'sons of God' as heavenly beings" ("The Significance of the 'Sons of God' Episode [Genesis 6:1-4] in the Context of the 'Primeval History' [Genesis 1–11]," *Journal for the Study of the Old Testament* 13 [1979], p. 34).

[18]Cf. O. Cullmann, *Christ and Time* (London: SCM Press, 1952; rev. ed. 1962), p. 41.

[19]Notice that this condition does not necessitate the conversations' actual occurrence in history. On the other hand, J.D.M. Derrett has recently argued that at least in the case of the Gerasene demoniac (Mark 5:1–20), the events of the story are "marvellously plausible" (Spirit-Possession and the Gerasene Demoniac," *Man* 14 (1979), entire article.

[20]Russell, *The Devil*, p. 239.

[21]A New Testament scholar might object to citing two different Gospels to achieve the desired inconsistency, pointing out that the differences simply arise because of differences in the authors' respective theological concerns. The debate among evangelicals continues about whether and to what extent Gospel writers embellished or changed stories for such purposes; however, that is not the issue here, because in this case we are dealing on the level of the theological *interpretation* of events. Mark says that Satan was behind Peter's actions; Luke tells us that Satan was in Judas. Accepting differences in accounts of stories to achieve a Gospel's theology is quite different than accepting a difference in theology itself. Perhaps it was Satan who was inconsistent, not the Gospel writers.

[22]*Ignatius to the Philippians*, IV.

[23]"Your heart was filled up because of your beauty; you corrupted your wisdom because of your splendor" (NASB). Isaiah 14, the other Old Testament passage sometimes associated with the original fall of Satan, is more disputed in that interpretation than Ezekiel 28:11–19, though the latter's being a reference to Satan is also debated. Among those opposing any hint of Satan in Ezekial 28 is W. Eichrodt, who views the passage as "[sketching] the evil in man in the lineaments of a demonic cosmic power" (*Theology of the Old Testament* [2 vols; Philadelphia: Fortress Press, 1961], I, p. 378; also see II, pp. 223–28. Among those supporting the passage as a (mythologically-dressed) reference to Satan are R.E. Morosco, "Conceptions of Spiritual Powers in the Pauline Corpus" (unpublished ThD dissertation, Fuller Theological Seminary, 1974), p. 63; L. Sabourin, "The Miracles of Jesus," *Biblical Theology Bulletin* 4 (1974) 156; and, albeit reluctantly, L.E. Wright, "Are Demons Outmoded?" *Journal of Religious Thought* 18 (1961), pp. 5–22. In the NT, of course, 2 Peter 2:4 and Jude 6 are the two specific references to this event.

[24]Foerster, "*Daimon*," *TDNT* 2 (1964), p. 5.

[25]E. Becker, *Denial of Death* (New York: Free Press, 1973), p. 149.

[26]William W. Meissner, *The Paranoid Process* (N.Y. and London: Jason Aronson, 1978), p. 281.

[27]NASB

[28]Langton, *Essentials*, p. 199.

[29]*Ibid.*

[30]Ernest Becker, *Denial*, p. 98.

[31]Otto Rank, *Will Therapy and Truth and Reality* (N.Y.: Knopf, 1936; one vol. ed., 1945), p. 130.

[32]This is their choice of titles—Mark 1:24.

[33]Langton, *Essentials*, p. 5.

[34]Meissner, *Ibid.*, pp. 85–86, 341.

[35]Hayim Tawil, "Azazel the Prince of the Steepe: A Comparative Study," *Zeitschrift für Altestamentliche Wissenschaft* 92:1 (1980), p. 57.

[36]Foerster, "Daimon," p. 5.

[37]Lactantius, *The Divine Institutes* XXII, "Of the Rage of the Demons Against Christians, and the Error of Unbelievers."

[38]Barth, Dogmatics, 3/3, p. 523.

[39]M.F. Unger, *Biblical Demonology*. Wheaton, Illinois: Scripture Press, 1952 p. 67.

[40]Sall, "Demon Possession," p. 288.

[41]Bach, "Demon Possession," p. 24.

[42]Ibid., p. 25.

[43]It might be stated at this juncture that ademonologists would have to view this paper as a revelation of projected paranoia from the biblical authors onto mythological beings. The difficulty of this (anthropological) approach to the data would seem to be that of accounting for such a subtle theme (rarely openly stated) that was nevertheless perpetuated over many centuries, if not millenia.

[44]Barth, *Dogmatics* 3/3 pp. 522–23. But he goes too far in asserting the negative ontology of demons when he rejects any notion of a "fall of angels." Therefore, for the sake of his theology, he must deny any significant impact of apocalyptic literature on New Testament angelology, and he must call 2 Peter 2:4 and Jude 6 "too unclear" to provide support for such a primeval fall. It appears that his theology has triumphed over the Scriptures.

[45]Bach, "Demon Possession," p. 25.

[46]See, e.g., Becker, *Denial*, pp. 11ff.

Notes on "Science and the Whole Person"—
A Personal Integration of Scientific and Biblical Perspectives

Part 20

Energy and The Environment (B) Barriers to Responsibility

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In the Western world human beings have been often profligate and irresponsible in energy use. Since it appeared that the source of energy was inexhaustible, waste was a matter of no concern. Since it appeared that the reservoir to receive human waste was inexhaustible, what was done with the environment was a matter of little concern. Since most of the time was spent for so long in conquering nature, it never occurred to people that nature after all was delicate and structured in a way that human victories increasingly destroyed. All too often mankind and the environment were considered as distinct entities; human beings tended to forget that they too were integral parts of the environment. Almost abruptly, over the space of just a few decades, we have found ourselves facing major disruptions associated with energy exhaustion and environmental degradation, and wondering what to do about it.

In this installment we consider some of the main barriers to a responsible use of energy and protection of the environment.[1] We are not concerned here with the specific issues and problems that must indeed be faced on dozens of different fronts to put such a plan into action, but rather with the underlying motivations that lead to actions. We are all so shaped by cultural, political, economic and ethnic factors that we sometimes fail to see the picture except from a distorted perspective, even when we sincerely desire to exercise Christian responsibility.

Probably we should start with the clear disclaimer that we are not claiming that good motives can be a substitute for essential knowledge of the problem. Good motives are necessary, but they are hardly sufficient. Without a careful, often scientific, assessment of the various problems and their proposed solutions, we are unable to apply our best motives intelligently and effectively. The assumption that environmental degradation can be wholly accounted for, for example, by the growth of population—triggering a reduction in population as the *only* need for reducing such degradation, is made severely questionable by the realization that the increase in environmental pollution over the past twenty years has been many times larger than the growth of population over the same period. The simple recognition that impoverishment of the soil and pollution of nearby water supplies is caused by overfertilization of fields with chemical fertilizers is not sufficient to show how the farmer, who depends vitally on such overfertilization for his economic survival, can both prosper and avoid pollution. The simple recognition that every plastic item ever manufactured has either ultimately to be burned, and thus contribute to air pollution, or else is still somewhere in the land or water masses of the earth, is not sufficient to guide the development of our future culture without plastics. As in all cases where Christian

motives are applied to produce intelligent and effective solutions, a great deal of hard knowledge obtained only with difficulty and diligence is essential. Many of our technological problems demand technological solutions applied with humane concern, not just humane concern alone. Commoner,[2] for example, makes a convincing case that the large increase in pollution in the last twenty years is not due directly to an increase in population or an increase in affluence, but rather to a drastic change in productive technologies. In this connection Christians particularly should remember the memorable words of James Allcock, "I do not think that either prayer or flair will see you through. There is no substitute for a profound competence at your job and this will be the source of your persuasiveness."[3]

Neither should we suppose, however, that motivation is not essential. We know in many ways, or are rapidly learning, what it is that we *must* do,

> Technologic man must listen to the Spirit. Earth must be mastered and transformed . . . Mastery must include control . . . Mastery must also include effective legal and social guarantees . . . He must learn to share the goods of this world with his less fortunate brothers in other lands . . . Man must return to his senses. He must be willing to count environmental costs into production costs; he must not tolerate exploitation.[4]

But *how* and *why* are people going to do it? We've known in some sense what we *must* do for a long time: "You shall love your neighbor as yourself." The weakness is often not in not knowing what we should do; the weakness is in willing to do what we already know we should do. This is essentially a religious problem. The power to break the patterns of selfishness, waste, unconcern, and exploitation can come ultimately through a restored relationship with God in Jesus Christ. That is why the Christian considers the biblical faith to be so crucially relevant to today's pressing crises in this area as in others.

Materialism

If there is a common philosophico-religious base for the great majority of people living in the Western world, it is that of secular materialism. It claims quite simply: to *have* is to *be*. Things bring happiness. Buy this and your lives will be complete, happy and sexually fulfilled. "She doesn't own a house, or more than one beatup car, or any really *nice* things—she must be a failure!" The production, the purchase and the owning of things is constantly pressed upon us as *the* way to the good life, the beautiful life, the American life. All of this makes genuinely responsible use of the earth's resources quite impossible.

We are all so shaped by cultural, political, economic and ethnic factors that we sometimes fail to see the picture except from a distorted perspective, even when we sincerely desire to exercise Christian responsibility.

A new Christian definition of success is a first necessity in combatting these tendencies, a definition in terms of *being* rather than in terms of *having*. We saw in the last installment[5] that the biblical picture of ownership is quite contrary to what we ordinarily experience; we in fact never own anything, but at best recognize that we are caretakers of what God has given into our trust for a brief time. Thus success cannot be found in the ownership of things. A person can be said to be successful only if he/she is living within the will of God in the place and in the situation where God has called him/her to live, and when he/she is using the abilities and gifts that have been given to him/her by God responsibly in that place. Surely any man or woman who can truthfully say, "I am in the place where God wants me, doing what God wants, and fulfilling the role to which God has called me," can truly be said to be successful. Such a person can be wealthy or limited financially, in a position of great power and importance or in a position of humble service, having at his/her disposal many things or few, being brilliantly intellectual or simply loving—none of these things are crucial as far as success is concerned.

Once we face our relationship with things seriously, we soon come up against a whole group of issues that cluster around the concepts of *necessity* and *luxury*. To each of us comes in one way or another an inflow of goods, whether in the form of money or of products. How much of this inflow is it appropriate for me to spend on *my*self, *my* family, *my* group, *my* pleasure—and how much on *yours*? There are no general answers that can be given to these questions that apply to everyone at every time. Each must be decided within the context in which an individual lives before God and out of an informed and lively conscience in relationship with God. We face these questions so seldom, however, generally coasting on cultural normals without further thought, that simply their realization is a valuable beginning.

This continuing series of articles is based on courses given at Stanford University, Fuller Theological Seminary, Regent College, Menlo Park Presbyterian Church, Foothill Covenant Church and Los Altos Union Presbyterian Church. Previous articles were published as follows. *1.* "*Science Isn't Everything,*" *March* (1976), *pp.* 33–37. *2.* "*Science Isn't Nothing,*" *June* (1976), *pp.* 82–87. *3.* "*The Philosophy and Practice of Science,*" *September* (1976), *pp.* 127–132. *4.* "*Pseudo-Science and Pseudo-Theology. (A) Cult and Occult,*" *March* (1977), *pp.* 22–28. *5.* "*Pseudo-Science and Pseudo-Theology. (B) Scientific Theology,*" *September* (1977), *pp.* 124–129. *6.* "*Pseudo-Science and Pseudo-Theology. (C) Cosmic Consciousness,*" *December* (1977), *pp.* 164–174. *7.* "*Man Come of Age?*" *June* (1978), *pp.* 81–87. *8.* "*Ethical Guidelines,*" *September* (1978), *pp.* 134–141. *9.* "*The Significance of Being Human,*" *March* (1979), *pp.* 37–43. *10.* "*Human Sexuality. (A) Are Times A'Changing?*" *June* (1979), *pp.* 106–112. *11.* "*Human Sexuality. (B) Love and Law,*" *September* (1979), *pp.* 153–157. *12.* "*Creation. (A) How Should Genesis Be Interpreted?*" *March* (1980), *pp.* 34–39. *13.* "*Creation. (B) Understanding Creation and Evolution,*" *September* (1980), *pp.* 174–178. *14.* "*Determinism and Free Will. (A) Scientific Description and Human Choice,*" *March* (1981), *pp.* 42–45. *15.* "*Determinism and Free Will. (B) Crime Punishment and Responsibility,*" *June* (1978), *pp.* 105–112. *16.* "*Abortion,*" *September* (1981), *pp.* 158–165. *17.* "*Euthanasia,*" *March* (1982), *pp.* 29–33. *18.* "*Biological Control of Human Life.*" *December* (1982), *pp.* 325–331. *19.* "*Energy and the Environment. (A) Is Energy a Christian Issue?*" *March* (1983), *pp.* 33–37.

We could in principle decide that our resources should be spent only on providing the physical necessities of life: food, clothing and shelter. How quickly do "necessities" in these areas arise—former "luxuries" being transformed over night, as it were, into things that are essential for our very existence! Even so, would such a decision be responsible in view of our full understanding of human life? Shall we devote nothing to poetry, music, painting, drama and the other arts? Shall we feed only a starving person's stomach as though he were an animal, and not feed his human aspirations as well? Is it responsible to plan for a person to have every physical and material need supplied—and never to stand on a mountaintop to view a sunrise? The master violinist in a symphony orchestra contributes "nothing" to the physical needs of humanity; shall his position and function therefore be deliberately abolished? Yet, how can we delight in the grandeur of opera, while others have never even heard an organ grinder? What fraction of our resources can be dedicated to the aesthetic rather than the physical?

One of the reasons that there are no simple answers to these questions is that no solution exists that would remove the challenge of them. If everyone's present wealth were put into one large pile and then distributed equally to every person in the world, the only result after a few weeks at most would be that we would then all be paupers. In at least some sense, the enjoyment of the good things of this world (not necessarily the expensive things!) is part of the essential meaning of human life.

Economic Barriers

There are two basic approaches to carrying out the requirements of society: competition and cooperation. The curious fact is that both of these approaches, when attempted exclusively, ultimately lead to something quite different and much less satisfactory.

The competition model argues that society is best served as a result of competition between many sources of supply, each trying to gain a larger share of the market and hence a larger profit than its competitors. In the course of this sharp competition, the final product is presumably improved, economies are ensured, and incentive is provided where it counts the most: in the pocketbook.

When this model is chosen, however, it is often found that the final product is degraded because the necessity for profit has made quality an unaffordable luxury, economies are obtained at the benefit of the public and in order to provide larger profits for the relatively small number of wealthy investors, and the foundation is laid for a class-conscious society with the "common man" finding himself crushed between Big Business and Big Labor. Although it is commonly assumed that in this model those who are successful will provide help and support for those who are not, the reverse seems to happen as those who are successful consider their success as a sign of "divine favor" and the failure of others therefore as a sign of their deserved desserts. The consequence of this set of circumstances is that only Big Government is adequate to deal with Big Business and Big Labor and to enforce the observation of minimal rules of social equity. Furthermore the pursuit of unrestrained profit leads to the design and production of short-lived and often ill-designed products, and a continuous and growing demand for the exploitation of energy sources in order to keep production and the market for production in an increasing status. Third World nations are granted their identity as "potential consumers" and the welfare of these nations and their people is not a prime matter of concern. Under the system of competition, which is the system in which simple profit is exalted as the motive for all business enterprise, conservation of energy and care for the environment can be brought about only by making conservation and care more profitable, or by the edict of Big Government. In the unhappy state of affairs in which Big Government joins Big Business and Big Labor in an unholy Big Triumverate, the concerns of the people and the requirements of the environment matter very little indeed.

The curious fact is that both competition and cooperation, when attempted exclusively, ultimately lead to something quite different and much less satisfactory.

The cooperation model, on the other hand, argues that society is best served when people willingly work together for the common good, sharing both talents and the fruits of the applications of these talents, in an atmosphere that cultivates a sense of brotherhood and mutual responsibility among all people.

When this model is chosen, however, it is often found that the spirit of cooperation is not given freely and must be strongly coerced, again by Big Government, in order to make the system work at all. Although cooperation is given strong lip service by almost anyone who reflects on human society, the sad reality is that a sufficiently large portion of society would rather have someone else do their work for them than work for themselves. Even in a Christian context, Paul had to issue the order, "If any one will not work, let him not eat" (II Thessalonians 3:10). A large industrial enterprise operating under enforced cooperation is a wasteful system, with any desire for conservation, responsibility, and quality production imposed from above rather than arising from the individuals involved. It appears to be a matter of record that every Utopian community starting on the basis of voluntary cooperation, has either passed out of existence or has shifted of necessity to a non-voluntary program based on economic, political, physical or psychological coercion. Even the Christian community described so lovingly in Acts 5:32 ff, which seems the epitome of Christian spirit in practice, passed out of existence and has not been successfully revived on any major scale.

Why should it be that neither the system of competition

nor the system of cooperation is able to function in spite of the obvious theoretical strengths of either? The Christian believes that the biblical insight into the nature of the human being provides a fundamental clue; our intrinsic self-centeredness, often considered to be the essence of biblical "sin," turns either system from a Utopia into a problem society. Competition becomes cut-throat animosity; cooperation becomes selfish laziness.

Neither approach then, by itself, is able to respond to the need for responsibility in the utilization of energy in the future. As long as competition is the motivation of business, and profit is the final goal of all activity, the common welfare has no business advocate. As long as enforced cooperation is the social system, the spirit of individual freedom and responsibility is quenched. Christian principles lead one to consider starting with the approach of cooperation and providing such incentives as are necessary for the development of practical results and the involvement of individuals on a voluntary basis.

What can be done? The answers to this question fill many volumes and even libraries of economic theory and political speculation. A couple of ideas come to mind that are not meant to do more than illustrate the type of creative variations that may be desirable. These ideas may well be criticized as arising from simplicity of concept and economic and political naivete. On the other hand, sophisticated solutions haven't worked too well to date, either!

Reworking Management/Labor Categories. Do away with the categories of management and labor within individual businesses, not by making all workers come under the category of labor, but by bringing all workers under the category of management, i.e., enabling all workers to be owners of the enterprise with which they are associated. Initially the capital outlay may come from one individual or small group of individuals, but as the company grows, the other members of the company become part-owners as well. In this way all participants in the company profit when the company profits, and all suffer when the company suffers. This approach, already in limited practice, aims at removing the working class vs ruling class distinctions so often destructive in a free enterprise system. It retains the pursuit of profit, but acts to make the profit directly applicable to the general welfare, rather than the property of a privileged few. It encourages the spirit of cooperation rather than competition among the participants in a particular business venture.

Alternative Payments. It may well be objected that reworking management/labor categories as above, even if systematically carried out, does not eliminate the problem of competition between companies. Following the suggested route simply broadens the base of cooperation from the individual or the family to the group of business associates, but if anything, accentuates the competition between business groups. This is true, and to deal with such competition between groups, a still more radical change is needed. An alternative must be found for payment for work well done to the only payment effective today: money. For too long society has regarded money as the only acceptable measure of success. This attitude afflicts even the women's liberation movement with the sometimes unfortunate emphasis on a woman's participation in a money-making job as the source of her identity. The ability to reverse present trends requires the recovery of a sense of achievement in public recognition of a job well done, of a sense of pride in a quality performance, of a feeling of satisfaction from having contributed to the full extent of one's ability to the task. Competition between companies should not be eliminated; it should be redirected. It should become competition, not for the greatest financial profit, but for the greatest contribution to the special situation. And even this competition, which also can get out of hand, needs to be leavened by a system in which such public recognition is generously distributed for all kinds of contributions corresponding to all kinds of abilities.

It is fairly universally accepted in a profit-oriented, competitive society, that a person with greater gifts of talent should receive greater payments of money than a person with lesser gifts. Perhaps the principle itself might be disputed, but foregoing that I would like to argue merely for steps to shrink the difference between the maximum and minimum incomes. When the complaint is made that a person with only vocational training makes more money as a plumber than a scholar with a Ph.D. after 10 years of post-high school study, a fallacious set of values is being espoused. What the scholar has "bought" by his dedication and long years of study is not the "right" to a larger income, but the opportunity to occupy himself in a scholarly profession capable of giving personal satisfaction in ways commensurate with his abilities and his possibility of contributing to society. If it is desirable, as to some extent I think it is, to equilibrate the aesthetic plus financial rewards of various occupations, it is not unreasonable to suppose that those necessary occupations with the least aesthetic satisfaction should receive special financial rewards. The goal of this exercise is not to give everyone the same income regardless of ability or effort, but rather to encourage in every possible way the attempt to provide substitutes for financial remuneration as the only measure of success, and the only measure of a job well done.

In such a context it may become possible to make recognition for responsible action in energy conservation and utilization, for environmental protection and concern, the accepted goals of organized efforts, rather than the begrudged stepchildren who are tolerated as long as they do not cut into the profits.

Nationalism, Racism and Ethnicism

Nationalism (exaltation of nation), racism (exaltation of race), and ethnicism (exaltation of ethnic background) can be grouped together as analogous challenges to the responsible use of energy. They correspond to putting some group of people above the welfare of all people, whether that group be the nation, the race, or the ancestral background, respectively. In each case the preservation of the welfare of the group takes priority over all other possible responsibilities.

In our culture, nationalism is frequently falsely equated with patriotism. The unfortunate consequence has been a decrease in patriotism through a resistance to this limited view of nationalism. Yet the difference between nationalism

and patriotism is easily stated. Patriotism means a love for country, a desire for its welfare, and the willingness for the devotion of whatever means are necessary for the improvement of the country that do not conflict with more basic responsibilities. Patriotism loves country as I might love California, but it does not place country above the world anymore than I would put the interests of California above those of my fellow Americans in other states. Nationalism absolutizes the virtues of patriotism, proclaims, "My country, right or wrong!" and demands allegiance to the welfare of the country (as perceived by some) even when that allegiance demands actions harmful to other nations. Nationalism is a spirit of competition on the world level, untempered by cooperation between nations except where one's self-interest is served. Exactly analogous statements may be made about racism vs appreciation of racial heritage, and ethnicism vs. appreciation of ethnic background, and need not be repeated. In each case we need a decreasing consciousness of the separations caused by nations, races, and ethnic emphases, and an increasing consciousness of the basic unity of the entire human race.

Nationalism threatens the responsible use of energy because it demands that one nation's energy utilization be maintained and expanded even at the expense of all other nations' energy needs. Calls for the United States to become energy independent, a natural goal for nationalism, become suspect when one begins to inquire as to the cost for the rest of the world. The United States has 6% of the world's population but uses more than one-third of the world's energy. More than half of the energy consumed in the United States is discarded as waste heat. Energy consumption in the U.S. has doubled over the past 20 years, and over 20% of this energy is involved with the automobile.[6] By continuing our inordinately large share of the world's energy, and in fact continuing efforts to increase or at least maintain that share, what are we deciding as far as the rest of the world is concerned? Nationalism hardly sees it in the interests of the native country to "allow" undeveloped Third World countries to have control over the energy resources in and around their countries. By unifocal efforts to make one's own country Number One, not only does one become committed to non-Christian attitudes and actions toward others in the world, but one's own goals growing out of authentic patriotism are frustrated rather than advanced.[7]

Support of Scientific Research

Many of the problems raised by consideration of the energy and the environment are indeed political ones, but there are also many problems that are susceptible to scientific investigation. In such a situation, basic questions need to be asked about the support and direction of scientific research. By whom should science be supported? To what extent should science be supported? What is the relative value of "basic" research vs technological applications? To what extent should imminent possibility of practical results be the criterion for the support of a scientific endeavor? In what ways does the scientist bear personal responsibility for the uses to which the results of his work are put? These are very practical questions, of interest to Christian and non-Christian alike; all offer a challenge for the application of Christian principles to the removal of barriers against energy development and conservation, and environmental protection.

Up until the last century the scientists have been either independently wealthy or have been supported by wealthy patrons. This was a workable system when scientists numbered only a small minority of the total population. Today, however, we are told that 90% of all the scientists (taking that term generally, I am sure) who have ever lived, are alive now. Many of these scientists are supported by private industry and are paid out of profits made as a result of their scientific and engineering work—at least over the long period. But a large proportion of scientific work is supported either directly (in government laboratories) or indirectly (in research contract funds to private and public universities) by the federal government out of tax money, i.e., by the ordinary taxpayer. What fraction of the national economy can safely be committed to the support of science, what fraction must be committed to maintain desired progress in the future, and how should this support be divided between the possible areas of research?

It may become possible to make recognition for responsible action in energy conservation and utilization, for environmental protection and concern, the accepted goals of organized efforts, rather than the begrudged stepchildren who are tolerated as long as they do not cut into the profits.

There are at least two reasons why a definite balance must be maintained between the effort to obtain a basic understanding and the effort to apply present understanding to a multitude of possible practical goals. The first reason is that science is a valid technique for gaining understanding, and the increase of understanding must always be to some extent the concern of the collective society as well as of individuals. The second is that continued technological advancement can occur only on the basis of a continued growth of understanding.

The need for a *balance* between support for the sake of basic understanding and for the sake of technological advancement is illustrated by the cases of nuclear physics and space science. Every year brings the request for a larger and more energetic instrument to probe deeper into the heart of nuclear structure. Each new instrument requires a greater and greater capital investment. Obviously this continued escalation cannot be justified indefinitely. When the next requested nuclear facility requires a major fraction of the national income for its construction, a halt will come in a very natural way. The space program offers an exciting and unlimited prospect for increasing our knowledge of the universe; realistic evaluations of our limited resources, however, have greatly curtailed the original plans.

Of course, when the fraction of the national income spent on scientific research is compared with other aspects of the government budget, one quickly realizes that no major excesses in spending in this direction threaten us. One further quickly realizes that major spending on scientific and engineering projects is closely linked to the perceived military interests of the country. Much of scientific research today is motivated by one of two simple questions: (1) does the research promise financial profit in the near future (if supported by private industry), or (2) does the research promise contributions to the military program (if supported by the government)? It is possible to point to other government support of scientific endeavors that does not fit this criterion, but the fractional support is small indeed. The pressure toward applied science and engineering is great.

For many years a large fraction of scientific research has been supported under the aegis of a contribution to the national defense. It was far easier to obtain funds for research if it could be correlated with military programs, than if only a vague correlation with general human welfare or understanding could be established. Such military funding has supported a great deal of basic science, but the result is that much research that might more properly have been supported as a basic contribution to understanding, has been as a practical matter supported as a contribution to the military effort. This means that the choice of research subjects and the direction of research efforts tends to be more or less directly influenced by the military in a proportion out of balance with essential needs. Today a shrinking budget is directed toward problems in connection with the energy needs of the country, dispensed by agencies other than those of the military, and the major share of this budget is being invested in the possible development of nuclear energy sources.[8] In the next installment we will consider some of the specific problems related to nuclear energy.

A few short years ago manned exploration of space was viewed as a major program to comprehend the mysteries of the universe and to demonstrate human dominion over everything that could be brought within reach. In the brief interval since men first walked on the moon, the world has been brought to the realization that there are limits to what people can do—not limits necessarily of human imagination and desire, but limits of physical resources available for the testing of that imagination and the realization of those desires. The travel of human beings to the moon might be viewed as one of the more idealistic ventures of mankind. It

lifted human beings from the earth to new heights in the universe for the thrill of achievement and the hope of knowledge. How sobering it is to realize that our space program from the very beginning was stimulated by military concerns, that its glamorous facade sometimes resembled an ancient circus, designed to take our minds off the fact that the space program was in large measure direct competition with the Soviet Union for nationalistic dominance of space and a means for providing support during a few years of peace for an industry previously committed to instruments of war. Reflection might lead us to wonder whether the expenditure of the money and energy resources to put humans on the moon can be justified when the expenditure of much smaller amounts is begrudged to keep men and women from dying on earth. Today all wraps are off; the space program is almost totally dedicated to military interests. It is true that valuable byproducts did come as a result of the space-oriented research, but is also remains a live question whether or not they could have been achieved with less cost by the support of other earth-related programs.

The Responsibility of Scientists

Being a scientist is a difficult task, especially today. For a time it seemed that scientists could be simply scientists, investigating the marvels of the natural world with scarcely a thought for the results of their investigation, trusting that somehow knowledge was equivalent to goodness, and that their results would be put to a humanitarian and productive use. The subject of the responsibility of the individual scientist is a big one and certainly not limited to questions of energy and the environment; these areas do emphasize in a particular way this responsibility, however, and it is appropriate to make a few remarks in this context in preparation for a consideration of the broader issue of a Christian response to evil to be discussed in the final installment of this series.[9]

As the producer of knowledge and potentialities for good or evil, the scientist is in a uniquely different position from other professionals.

It is abundantly clear that every advance with the potentiality for good has a potentiality for evil that is probably proportional to the good. It is also clear that while men of good will are attempting to harness the potentiality for good, others are as busily engaged in harnessing the potentiality for evil. Every increase in knowledge is dangerous. The scientist, the producer of this potentiality, cannot sit back and let non-scientists make all the decisions about the uses of it. Scientists resist becoming politicians and activists, but for some there may be no other choice. Some may indeed be driven even to the giving up of science if their own context totally prevents an honest expression of conscience and life motivation.

The responsibility of the scientist must be construed, as for all others, in terms of his or her respond-ability. Since the scientist is the *producer* of the potentiality, his/her responsibility does not begin only when the potentiality has been brought into existence, but back when the potentiality is still only an unrealized speculation. The scientist must feel immediately responsible for the direction and goals of his work; she cannot abdicate and place this responsibility on the shoulders of others in authority over her, such as her supervisor, her company board of directors, or the government. Any time that an individual scientist devotes his talents in a direction that violates his basic moral conscience, he has given up his choice position as a responsible professional in society, and has become a technical prostitute instead.

Such a position is in sharp contrast to the course of events when a scientist regards himself and is regarded simply as an employee.[10,11] As the producer of knowledge and potentialities for good or evil, however, the scientist is in a uniquely different position from other professionals such as lawyers or doctors, who mediate the consequences of knowledge and ethics but do not produce it themselves. The lawyer administers the law on behalf of his client, perhaps even without concern for the guilt or innocence of his client, because he is acting as a servant of society that sees the greatest equity in a system of law uniformly applied to all men. The doctor administers medicine on behalf of his client, without concern for the moral status of that client, because she is acting as a servant of a society that sees the greatest equity in a system of medicine uniformly applied to all. But the scientist has far more difficult decisions to make. What he does may affect the lives of future generations for years to come. Certainly the "first obligation" of a Christian scientist is to God, and not to his employer. Here we have another application of the familiar tension between Acts 5:29, asserting the basic principle that we must obey God rather than man, and Romans 13, asserting the basic principle that Christians should submit as good citizens to the authority they find themselves under. In the final crisis, however, for the Christian it must always be a choice of God's law over human law, and the claim that it is moral, or required, because it is legal according to human law is a deceptive claim indeed.

The relationship between individual and group responsibility is not easily assessed, and depends of course on the specific group involved. To claim that a person is responsible only for his own actions, and never for those of the group in which he lives, is far too broad a claim to make. It would absolve the person who does not use a weapon to kill, but who makes the weapon available knowing that others will use it in this way. It lays the foundation for a society in which each individual continues on her own way, prevented by blinders and tunnel-vision from detecting the inhumanities resulting from a group of individuals all concerned only with their own immediate moral purity. A far more Christian perspective is to recognize that a person's responsibility for group actions is commensurate with his authority and ability to change those actions. The responsibility of a first-century Christian in the Roman Empire for the excesses of Rome is far less than that of a 20th-century Christian living in the United States for the actions of this country. The responsibilities of the individual for the actions of the government is much greater in a

functioning democracy than it is in a totalitarian dictatorship. And yet, even under the latter condition, I would have hoped that a Christian scientist in Hitler's Germany working on armament would not consider himself absolved from guilt because he was only following orders or fulfilling the terms of his employment contract. A lawyer might conceivably choose to defend Hitler in order that the law might have full opportunity for functioning; a doctor might conceivably choose to heal Hitler because he had sworn to heal all persons alike.[12] But there are no grounds on which a scientist could choose to develop rockets and bombs for Hitler and remain free of the responsibility for Hitler's future use of these weapons.

The scientific community at large has become increasingly aware of the responsibility of a scientist. The constitution of the American Physical Society, for example, said only

> The object of the Society shall be the advancement and diffusion of the knowledge of physics.

An amendment adds the words,

> in order to increase man's understanding of nature and to contribute to the enhancement of the quality of life for all people. The society shall assist its members in the pursuit of these humane goals and it shall shun those activities which are judged to contribute harmfully to the welfare of mankind.

Brave—and perhaps empty—words, but there is a growing consensus that the pursuit of science does not take place in a vacuum, but must be related to the welfare of the society that supports it. Personally, I would terminate the above amendment after the words, "humane goals," on the grounds that judging which activities might "contribute harmfully to the welfare of mankind" is an essentially impossible task.

Current practices in funding university-based research in the United States are inefficient and inferior to the practice in most other major countries in the world.

Human and Environmental Values

A final reflection on the responsible use of energy resources centers on the intrinsic value of the natural world and the relationship of this value to human values. Three major models exist with fairly direct consequences if consistently followed.

In the first model the natural world has value only because of its usefulness to human beings. This can be a fairly broad view, including not simply the grossest forms of environmental exploitation, but even efforts to preserve the environment based only on the conviction that conservation is in the best selfish interest of human beings. Of course the natural world does have *a* value because of its relationship to human beings, but the position that this is the only source of its value—like that position that the individual has value only because society gives it—is ultimately insufficient to meet the requirements of a total worldview.

In the second model, which is often advanced in reaction against the first, the natural world is considered to have the same value as human beings. Usually advanced in the pantheistic framework of Eastern religions, this view attempts to remove the lordship of mankind over the natural world by identifying mankind with the natural world and frequently divinizing both. Although the divinization of the natural world might be conceived as raising it to identification with mankind, the final effect is to dehumanize mankind to the level of the natural world.

Neither the view that exalts mankind over nature or that reduces mankind to nature is the view presented by the biblical record. It is recognized that nature has intrinsic value as nature because of Creation; a tree has value as a tree because God made it as a tree. The value of nature to mankind is then a second source of value in addition to this intrinsic component. Second, it is recognized that on the level of creation mankind is part of the natural world and cannot ever forget this interdependence, but as the only creature made in the image of God, man and woman are also distinct from nature and responsible for its care before God. Francis Schaeffer has dramatically captured this relationship in the words,

> But I must be clear that I am not loving the tree or whatever is standing in front of me, for a pragmatic reason. It will have a pragmatic *result*, the very pragmatic results that the men involved in ecology are looking for. . . . When we have learned this—the Christian view of nature—then there can be a real ecology; beauty will flow, psychological freedom will come, and the world will cease to be turned into a desert. Because it is right, on the basis of the whole Christian system—which is strong enough to stand it all, because it is true—as I stand and face the buttercup, I say, "Fellow creature, fellow *creature*, I won't walk on you. We are both creatures together."[13]

Summary

Great cultural patterns and convictions stand in the way of the responsible care of planet earth, patterns and convictions that commonly aspire to the status of religious categories in the lives of those who hold them. Materialism is usually accepted without reflection as the guiding principle for success in life, but materialism values "the thing" above all else and will sacrifice all for the possession of more things. Profit-making as the sole motivating spirit of economics and production in a competitive system cannot afford to be consciously responsible if profits are threatened, and automatic responsibility as a natural consequence of the system appears to be a discredited illusion. All economic systems founder on the basic self-centeredness of the human heart, and Christian realism demands inclusion of this reality in any attempts to improve the system. Nationalism, racism and ethnicism are all other ways in which individual self-centeredness without concern for others is generalized to a larger group and made a virtue rather than a vice.

A special responsibility falls upon those in charge of scientific research and technological development. There is both the responsibility to use resources wisely in the pursuit of basic understanding and practical applications, and the responsibility of choosing projects that appear to maximize benefits to the human race. A scientist cannot simply sell his talents to any legal bidder without becoming responsible for the outcome of his investigations. To be a practicing scientist or engineer in certain situations may well not be an honorable profession.

A Christian view of human responsibility with respect to the environment is based on the biblical doctrine of Creation. The natural world has value in itself because it was made in the form it has by God Himself. Mankind is not the owner of the natural world, nor is the only purpose of the natural world to serve him. God has provided the resources of the world for the benefit of people, and has entrusted them with the responsibility of caring for these resources so that they may be used in the best way for all people. We must not forget that we are part of the natural world and hence are direct participants in the ecology, and that we are responsible for the natural world in a way assigned to no other creature. Such human awareness cannot be evoked, however, by an intellectual enumeration of the things that must be done in order to save the earth from further pollution and exploitation; a knowledge of what must be done must be coupled with a personal will to do it, a motivation that has no ultimate source except a personal relationship with God through Jesus Christ.

REFERENCES

[1]Portions of this installment are based on R.H. Bube, "A New Consciousness: Energy and Christian Stewardship," *Journal ASA* Supplement 1 (1976), p. 8

[2]Barry Commoner, *The Closing Circle: Nature, Man and Technology*, Bantam (1971)

[3]James F. Allcock, "A Christian in Industry," *Journal ASA 29*, 139 (1977)

[4]A.J. Fritsch, *A Theology of the Earth*, CLB Publishers (1972), pp. 6-3,6-4.

[5]R.H. Bube, "Science and the Whole Person. Part 19. Is Energy a Christian Issue?" *Journal Asa 35*, (1983)

[6]A.L. Hammond, W.D. Metz and T.H. Maugh, II, *Energy and the Future*, AAAS (1973)

[7]James W. Skillen, "Security and Morality in Planning for US Defense," *Journal ASA 24*, 84 (1982)

[8]Current practices in funding university-based research in the United States are inefficient and inferior to the practice in most other major countries of the world. Every research project must be obtained through proposals to government or industrial agencies by the investigator involved; this is the only source of funds for research in most institutions. Such proposals when finally granted usually have a term of only one or two years, before proposals must again be written if an extension is desired. Far more efficient would be basic institutional grants to cover every faculty member with a sufficient basic amount to support, for example, two students; faculty desiring to expand their programs beyond this basic amount could then pursue the proposal route as at present.

[9]It is somewhat remarkable how the fallacious optimism about the "innate goodness" of human nature lies at the root of so many of mankind's attempts to solve its problems. The liberal politician believes that if the causes of poverty and hunger are removed, then the innate goodness of human nature will assert itself and remove all causes of strife and discord. The conservative politician believes that if the individual is left free of control to develop according to his individual initiative, the innate goodness of human nature will lead him to share with others for the benefit of all. The Communist is relying in principle on the innate goodness of human nature to finally achieve the ideal of the socialist state. Neither the biblical record nor the historical record offer much support for such optimism.

[10]John A. McIntyre, "Is the Scientist for Hire?" in *The Scientist and Ethical Decision*, C. Hatfield, ed., InterVarsity Press (1973), p. 57; John A. McIntyre and Richard H. Bube, "What Is a Christian's Responsibility as a Scientist?" *Journal ASA 27*, 98 (1975)

[11]Samuel C. Florman, *Blaming Technology*, St. Martin's Press, N.Y. (1981), Chapter 15.

[12]In the unique circumstance of Hitler, one might well debate whether either the lawyer or the doctor could, in view of their larger knowledge, responsibly maintain professional neutrality.

[13]Francis A. Schaeffer, *Pollution and the Death of Man: A Christian View of Ecology*, Tyndale, Wheaton, Illinois (1970), pp. 92, 93

TOPICS FOR DISCUSSION

1. Can any major change in society's attitude toward materialism be expected as long as there is no change in the advertising seen in newspapers, heard on radio, or seen and heard on TV?
2. How does the knowledge that Americans use six times more energy per person on the average than anyone else in the world affect you? Does it make you more determined to hang onto this possibility in the future, or does it lead you to resolve to use as much less energy as you can possibly manage regardless of what anyone else does?
3. It has been suggested that no Christian has the right to build up a bank account to cover the large expenses required for his children's education when this money could be put to use to keep starving people elsewhere in the world alive. How do you respond to this suggestion?
4. Define a "luxury" as contrasted to a "necessity." Is it proper for a person's definition of "luxury" to change with his economic status? Is it possible to define "luxury" in such a way that is is applicable to specific items in the lives of all people? Is there any ethical reason to limit our "luxuries," and if so, where do you draw the line?
5. In today's Western society, it is commonly assumed that a successful person will advance continuously throughout life to positions of greater administrative responsibility, requiring greater commitments of time, and paying higher salaries. Will society accept a person who arrives at a certain level of responsibility and duties, and then decides not to advance further, but to spend time and energy in a variety of alternative pursuits of value to him personally as well as to others? Can such a person be called successful?
6. Would you take a job doing something you don't like if it paid twice as much as your present job which you do like? If you said no, how much more would it have to pay before you would say yes?
7. Would a world in which there was a virtually unlimited source of energy (as, for example, from successful nuclear fusion reactors) necessarily be a more trouble-free world than our present one? Why?
8. In his book *2001* author Arthur Clark compares mankind's venture into space as an evolutionary quantum step forward comparable to the first time that a pre-human creature first realized the value of a tool or weapon. Do you see such significance in this activity? How much additional support should be given to human trips into outer space?
9. Consider the relationship between the responsibility of the person in Nazi Germany who ordered that Jews be taken to the gas chambers, and the person in Nazi Germany who was in charge of designing the functioning of these gas chambers for maximum efficiency in ending human life. Not only were both persons acting in accord with the contemporary Nazi legal system, but both were acting under direct orders from their superiors. Does the principle established in the Nuremberg Trials have general applicability to this kind of situation?
10. A friend of mine left his position as a research scientist for a large industrial laboratory because he felt that he was contributing there only to the development of esoteric products of use to the very rich; instead he started his own small business laboratory dedicated to products of general utility and to projects of social value. Was he wise or foolish in taking this action? Is he an oddball or an example to be emulated?
11. What gives a person the right to cut down a tree? Does it matter what the cut tree will be used for? Consider the response according to each of the three positions described in this installment.

Faraday, Sandemanian

A 13-year old errand boy delivering newspapers in Marleybone, London: what are his expectations to contribute to the intellectual development of the world? Look at his heredity: the father a blacksmith, the mother maid-servant to a farmer, one uncle a weaver, another a grocer, still another a tailor—good stock, respectable workers—but intellectual prospects? Look at his environment: cramped quarters above a coachhouse, his allotment one loaf of bread a week at one period, his schooling limited to the four R's, readin', 'ritin', 'rithmetic—and religion. Cultural opportunities? At twenty one as an apprentice book binder he wrote to the President of the Royal Society, Sir Joseph Banks, for assistance in obtaining a scientific job, however menial. Persistent inquiries resulted in a message, "No answer required!" Submitting a bound-copy of notes he had made on four lectures given by (Sir) Humphry Davy, Professor of Chemistry at the Royal Institution, he was appointed a laboratory assistant there at 25 shillings per week plus fuel and candles for two rooms in the R.I. What a bleak future! Nevertheless, this self-trained analytical chemist became Director of the Laboratories of the R.I. This non-mathematical natural philosopher contributed the liquefaction of chlorine and the discovery of benzene, the motor and the dynamo, the laws of electrolysis and the Faraday effect of polarized light, diamagnetism and the "ice-pail experiment" with induced electric charges, et al. His successor, the physicist John Tyndall, called Michael Faraday, "the greatest experimental philosopher the world has ever known."

Faraday has been called "the arch-empiricist," a misnomer. An empiricist looks *at* everything and listens *to* all sounds; an experimentalist looks and listens *for* something. The former has a Baconian empty mind, the latter an open mind seeking to check a theory (from the Greek word for view) with observed facts. An imaginative theory guides the experimentalist just as suggestive facts stimulate the theorist. In the case of Faraday, experimental thinking about nature involved wonder and joy. He recommended the teaching of science as comparable to that of the classics as a means of educating the judgment.

Faraday's family were Sandemanians, followers of the 18th century deposed Scottish Presbyterian minister John Glas and of his minister son-in-law Robert Sandeman, who died in Danbury, CT, after seven years sojourn in colonial America (he established six churches here). Faraday himself did not join the church until one month after his marriage to Sarah Barnard (he was 30, she 21); he became an elder and had to preach occasionally (a book of four of his sermons was printed; a Sandeman lent me a copy when I was at Oxford. At that time I visited a surviving church in Edinburgh and had dinner with the clerk of the one in London). The Sandemanians are opposed to any established church; they believe strictly in the Bible and in Christ. In a London sermon Faraday himself said, "I cannot do better than to read to you the words of the Scripture instead of multiplying my own words."

In a letter (1844) to Lady Lovelace, he noted, "In my intercourse with my fellow creatures that which is religious and that which is philosophical have ever been distinct things." The agnostic Tyndall commented unsympathetically, "When Faraday opened the door of the oratory, he closed that of the laboratory." Consequently he has often been held up as the example par excellence of the compartmentalization of science and religion. Closer examination, however, reveals that his attitudes towards both are quite similar. They are both rooted in the same experimental view of nature. In his only public address involving science and religion (Prince Consort Albert in the audience) he confessed, "The book of nature which we have to read is written by the finger of God." This lecture is published at the end of a volume on *Experimental Researches in Chemistry and Physics,* where he states, "These observations are so immediately connected in their nature and origin with my own experimental life; either as a cause or a consequence, that I have thought the close of this volume not an unfit place for their reproduction." He believed the universe is intelligible, beautiful, and adaptable to man's use—designed by a rational, wise, and good God (cf. Rom. 1:20). He wrote, "The beauty of electricity, or of any other force, is not that the power is mysterious and unexpected, but that it is under *law,* and that the taught intellect can even now govern it." And so, he sought relations among the various forces in a unified nature: electric, magnetic, and even gravitational.

He regarded facts as fundamental, the observed ones of science and the revealed ones of religion. Each group, however, is surrounded by an aura of speculation, i.e., theory or theology. If these auras are large, overlap will occur and inevitable conflicts owing to the incompleteness and imperfection of each. (Everyone, I believe, will continually experience such personal conflicts of science and religion, but hopefully they will change as one matures.) In Faraday's case speculation was relatively less important so that the apparently independent facts remained separated—without conflict.

Faraday's life was consistent with his faith and hope. He had an unquenchable thirst for truth, but he recognized his own limitations (Job 9:20 was boldly marked in his own copy of the Bible). He pursued truth industriously throughout his whole life. Above all, he had great humility, born out of reverence for God and His universe, man and his environment. Tyndall noted that in Faraday's case, "You cannot separate the moral and the emotional from the intellectual." This irreligious colleague described him in Christian terms, "blameless, of good behavior, apt to teach, not greedy of filthy lucre, but patient" (cf. I Tim. 3:2–7).

At seventy-five this recipient of the Royal Society medal, the Rumford medal, the Copley medal (twice), a D.C.L. from Oxford University, one who expressed disinterest in the presidency of the Royal Society and a knighthood, was quietly laid to rest in Highgate cemetery. The grave, which is difficult to find, has a simple slab (erected in 1933 by a technical society); it reads

Michael Faraday
Born 22 September 1791
Died 25 August 1867

Raymond J. Seeger

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This is the fourth in a series on religious scientists.

Music, God, and Psychology

Few Christians have seriously considered the possible relationship between psychological principles and Christian music forms, although a few have ventured to give advice that might sound "psychological" to those outside the field of academic psychology, most notably some anti-rock crusaders. The relationship between music and psychology has rarely been given serious consideration, but going the next step to consider Christian or church music as they relate to psychology has been almost completely ignored.

Yet it seems to me that there are a number of possible insights that psychology can give in understanding this often controversial area of Christian music. Behavioral psychology particularly may contribute to the psychological analysis of music used in religious circles, although other branches of psychology need not be excluded. This communication considers the potential interface between psychology and Christian music.

Few psychologists have made serious attempts at relating psychological theory to music. One sociologist (Hoult, 1979) posits that musical *talent* is the product of learning via positive, rewarding experiences, which implies behavioral conditioning theory. He points out that gifted children are usually raised by musical families that emphasize the value of music through conversation and listening to music, thus negating a genetic theory of musical giftedness. As an example, Hoult describes a Japanese music teacher who chose a large number of children without regard for talent, and made each one—without exception—into an excellent string musician, largely playing music by ear.

Hoult's conclusion is quite controversial, but the value of psychological theory in understanding musical behavior can be observed. Rather than concentrating upon the genesis of ability, however, the primary concern here is music and its behavioral and emotional effect upon humans.

Classical conditioning can particularly help in understanding the emotional responses many have to particular songs. Experiences in listening to various forms of music, combined with affection and an otherwise pleasant environment, may help to instill positive associations with certain forms of music. As an infant, for example, the primary reinforcement of milk may be consumed while the mother sings to the child (or as music plays in the background), so that music becomes a secondary (learned) reinforcer. Likewise, as a youth, pleasant associations with one of the opposite sex accompanied by a particular tune on the radio, may be responsible for the "that's our song" phenomenon. Emotional responses may be conditioned responses to a particular song or perhaps even to certain chord and/or note progressions, the latter comprising the conditioned stimulus. Thus the person may respond with a statement "that's a pretty tune" or "that's familiar" due to a pleasant past experience accompanying similar or identical performances. This may be the result of long-forgotten conditioning, but the classically conditioned stimuli still produce the particular emotional response.

With additional education and broad exposure to differing qualities of music, the individual may come to discriminate poor from good performances of a selection. In such a case, similar stimuli to those stimuli in the past that were considered "good music" will also be considered to be of a positive quality (stimulus generalization), while stimuli quite different (i.e., a poorly executed performance of a well-known song) will not be considered positively due to stimulus discrimination. With more experience, discriminations become finer and finer, just as Pavlov's dogs were able to make finer and finer discriminations of the pitch of the ringing bell associated with salivation.

Emotional Response

Christians also make associations between their music and their emotions through classical conditioning, although operant conditioning probably plays a large part also. Christian music may be associated with pleasant experiences, often emotional in nature, such as revivals and times of intense group worship. Later, although the religious experience may have been forgotten, the association between the feelings and certain music selections may remain. Thus, someone playing or singing a particular selection may result in tears or less outward expressions of emotions, such as a feeling of worship or praise.

Negative associations are also possible. The Christian may come to associate guilt feelings with certain hymns and invitational selections, due to guilt associated with earlier church experiences. Certain kinds of sermons and pleas for response from an evangelist can arouse guilt feelings (genuine or false guilt), which are associated with the organ or piano playing in the background. Perhaps more likely, specific songs such as "Just as I Am" may be classically conditioned with the response of going forward, either by modeling others making the response or by the individual making numerous such responses. Thus, though the individual may feel close to God and not sense a spiritual need cognitively, he or she may still wrestle with a compulsion to go forward. The compulsion in this case would not be "conviction by God" but rather a conditioned response.

The solution for such negative associations may not involve psychotherapy, but rather require that the person ignore the feelings. Repeated exposure to invitational music without making the response can result in extinction of the feeling and "compulsion." I suspect many have achieved the extinction of such conditioning, yet may have felt less spiritual because of the need to overlook the desire to respond. This is easily misidentified as "resisting the Spirit." From a Christian perspective, the "unlearning" of a response is no less spiritual than the earlier conditioning of that response. The most important issue is the cognitive and behavioral responses required by God, not the responses requested by speakers.

While considering the issue of emotional response to music, the question may be asked if certain music forms predispose one to certain emotional reactions. For example, does a slow hymn tend to result in a sense of awe and reverence? Likewise, does a fast tempo tend to produce feelings of exuberant praise? Due to the subjectiveness of such feelings, and the long-term conditioning undoubtedly behind such forms, it is difficult and perhaps impossible to arrive at a conclusion. The possibility exists that there is no inherent emotional response to a particular music form, although most people's experience would contraindicate such a conclusion. For example, it is difficult for most to consider the possibility that a fast paced rock song would produce feelings of quiet reverence, although some might suggest the possibility that it could produce exuberant praise. Likewise, given consistent conditioning from early childhood, could a slow hymn elicit excitement bordering on the ecstatic? Possibly is the best tentative conclusion. Ira Sankey and D.L. Moody were criticized for songs such as "The Ninety and Nine"; critics were afraid that such songs would soon have "all the people dancing." Today it is hard to imagine people dancing to such tunes, but then we have different kinds of dances than were popular at that time!

One is reminded of the often repeated yarn about Africans becoming aggressive when exposed to rock music, and in contrast being soothed and calmed by semi-classical styles (Larson, 1972). Though the story is loved by anti-rock crusaders, the empirical evidence is at best weak and primary literature of scientific quality is probably non-existent. Assuming that something like the story actually occurred, the responses are probably best explained by prior conditioning of the Africans rather than appeal to inherent biological responses to certain musical forms. Perhaps the strong beat of the

rock music was similar to the beat of an enemy tribe or perhaps even their own "call to arms." Other versions of the story have the Africans saying that the music is related to Satan worship or demonic forces. But again, can we assume they were free from prior conditioning? Or free from contamination of the data by the missionaries? Could missionaries have inadvertently signalled a negative response set by their own negative reactions to the music? The "noble savage" who is free from society's influence does not exist; even those in the bush have learned their associations from prior experiences and they are not necessarily more knowledgeable of Satanic activities. One suspects that a narrow ethnocentrism (if not racism) lies behind such accounts, rather than scientific reliability.

Lyrics

Another facet of Christian music to be considered is the lyrics accompanying specific tunes. Perhaps the analysis of the words of Christian music is less mysterious and elusive. The writer is reminded of a Freudian colleague who once noted the many sensual, even bordering on erotic, terms in Gospel music. A good example of such terminology is the song "He Touched Me," although dozens of such examples could be named. Is an unconscious sublimation of sexuality expressed in such songs?

A more likely explanation is that the feelings associated with affection for others on the human level are easily generalized to God. Thus love for God (a strong biblical concept) is described in terms usually reserved for human expressions of love and affection. One might criticize the lack of cognitive depth of some Gospel music, but rarely if ever does it have explicitly sexual overtones.

While considering possible emotional conditioning of music, I recall a choral conductor who once mentioned a tendency for congregations to give more emotional expressions following songs about heaven. He described the greater likelihood of crying, raising hands, and "Amens" following songs on this topic, particularly among the elderly. Another choral conductor from an entirely different denominational background also noted this effect. Often there was little or no such response until songs about heaven were sung.

One is tempted to assume that the old folks were just longing for "the next land," and perhaps so. But conditioning may also play a part in causing responses that are obviously topic discriminating. Perhaps such individuals learned to discriminate emotional responses according to topic by modeling saints of a former era who also had such reactions. Those of the former era may have conceptualized heaven as a huge negative reinforcer; a means of escape from an uncomfortable, rather aversive present life. Again, we can only conjecture at this point, but apparently some form of stimulus discrimination has occurred.

While discussing the lyrics of music, the topic of lyric/music congruity should be mentioned. Past associations with certain styles of music tend to produce expectations of content, e.g., a military tune is not congruous with lyrics about love. Likewise, certain forms of hard rock would appear to be inconsistent with Christian lyrics. An apt example was an early 1970's combination of a tune called "House of the Rising Sun" (apparently about a house of prostitution) and the lyrics of "Amazing Grace." In the quest for relevancy, the two messages might produce inner tension in the individual.

Yet church music historians are quick to point out that many beloved hymns and songs of the church began as tunes borrowed from taverns. With the addition of Christian lyrics, perhaps past associations are quickly extinguished. Or perhaps the tavern songs were a popular part of the folk heritage at the time, unlike today's secular rock that is oriented away from America's folk heritage. Perhaps popular rock tunes with Christian lyrics might be used for certain limited evangelistic purposes, such as reaching those within the rock culture, but they seem to be most inappropriate for church.

Contemporary Christian Music

Having introduced the topic of rock music and the church, a brief consideration of contemporary Christian music is in order. Considerable hostility has been expressed in some religious groups regarding newer music forms, causing one to question why such reactions occur. An explanation should consider the vast literature about conformity and how groups react to deviancy from a group's norms. Another factor to consider is the association many church people make between liberal theology and modern music forms. While some Christians merely lack positive association with contemporary music forms, many more have received aversive conditioning to contemporary music. Pictures of rock concerts on television, widely publicized accounts of disrespect by rock musicians, and associations with countercultures may arouse powerful feelings of fear and/or hatred that generalize to the music form. Likewise, regular battles between youth and parents—largely arising from the eternal generation conflicts—may perpetuate such conditioned responses.

Conversely, many young people have made altogether different associations with rock music. Peer acceptance and general association with peers, highly valued goals for teens, are regularly paired with rock music played in the background. In addition, such music is associated with the positive emotions felt during dating experiences. The words to many rock songs are conducive to the latter kind of conditioning, as they deal with the topics of love, affection, and sexuality.

Because of such differences in conditioning, it should not be surprising that conflicts between youth and adults occur regarding rock music. Resolving such differences is rarely easy and requires tolerance and understanding by both, goals that may in part be furthered by examining the past conditioning of one another. Adults need to understand the link between positive emotions and rock music among young people, and that this link is not unlike their own conditioning to music forms popular when the adults were young. Likewise, young people need to realize the pervasiveness of past conditioning experiences of adults, as well as the possibility of subliminal influence from the lyrics of rock music.

Social psychology has documented the subliminal influences of stimuli, even though the stimuli are not consciously perceived. For example, in the 1950's phrases such as "eat popcorn" and "drink Coca-Cola" were flashed during movies, which resulted in the increased sales of these items. Additional research found that individuals would respond emotionally, as measured by Galvanic Skin Response, to a word flashed by a tachistoscope, even when the word was flashed too quickly to be recognized (Secord & Backman, 1964).

The possibility of subliminal influence of music has been widely publicized (e.g., Roberts, 1982), and the potential for some such influence is genuine. The most likely subliminal influence is the unconscious or semi-conscious influence of lyrics that are not attended to, such as background music. It is less likely that words that cannot be comprehended due to excessive distortion would influence a person. This is because the subliminal effect exists only when the stimulus is immediately below the threshold of perception; the distortion of rock music is likely to be far from that threshold. Likewise, there is *no* evidence that suggests "backward masking" (words recorded backwards in a song) can have a subliminal influence (Dobson, 1982).

Introducing New Musical Forms

Introducing new forms of music to a given church group must be accomplished gradually with great care. Whether the goal is to add Bach to a church oriented to Gospel music, or to introduce Phil Keaggy to a conservative congregation, behavioral psychology suggests a common methodology for each. New forms of music should be introduced by means of shaping, followed by reinforcement. This involves breaking the change down into small steps, and gradually introducing approximations to the end goal. This would probably occur over several months or even years. For example, a very brief classical piece might be included in Sunday morning worship occasionally, followed by gradually increasing the length of time given to classical forms. If introducing contemporary music, one might begin with an occasional modern piece performed without drums and perhaps with less rhythm. Later, additional facets of contemporary music might be gradually added. It is most important that during each step of the shaping process, innovations be followed by reinforcement via familiar accepted styles, preferably by the same musicians. In some cases, direct praise for acceptance of the different style may act as a reinforcer. Helping a congregation in studying the different music form can be helpful, making the change cognitive rather than emotional. During the shaping process, the church group will also be desensitized to the new music. In contrast, an abrupt change such as a complete service of classical music or bringing in a hard rock group will probably alienate and make the potential for change much less.

Another consideration of Christian music from a psychological perspective is that of objectives. Behavioral psychology has particularly been concerned with demonstrable outcomes as the result of teaching, usually described in terms of observable behavior. Christian musicians need to ask themselves why they perform music, and specifically what they wish to accomplish.

Don Hustad (1981) approaches this issue by suggesting that church music is a functional art. Among the purposes of church music, says Hustad, are: (1) enjoyment, (2) expression of emotion, (3) persuasion ("ethos"), (4) expression of God, and (5) reinforcement of evangelical church life. Stating such broad purposes as objectives involves specifying a particular behavior or attitude to be changed in a given context, such as additional evangelism by church members or spending more time in prayer, both of which fall under Hustad's third purpose. Dozens of objectives could be developed from the general purposes listed. Regardless of the objective, it is crucial that some measurement of effectiveness be made, otherwise musical efforts may be ineffective or even contradict the goals intended. Objectives of a musical performance need to be considered carefully, and some means of measurement should be used at least occasionally to determine if objectives are being met.

Perhaps through the psychological analysis of music we can begin to understand why different individuals find various styles of Christian music interesting, exciting, boring, or revolting. We need to ask whether conditioning adequately accounts for responses to music, or whether there is an intrinsic response to music forms. Also, to what extent does music go beyond emotions and affect personality and will?

Is Psychological Assessment of Christian Music Threatening?

Some might feel threatened by the assessment of psychological factors in Christian music. If music can be fully understood in terms of conditioning (or other psychological theories), does this negate the spiritual impact? MacKay (1979) has suggested different levels of understanding phenomena and that a complete analysis at any one level does not preclude explanation at another level. In other words, even if psychological theory can account for all behavioral and emotional reactions to music, such does not rule out another level of analysis, such as the spiritual or theological level. Even if the powerful impact of music could be fully explained by conditioning, we still would have a worthy medium for the Gospel. One might consider the similarity of music, in this respect, to an automobile. A mechanical understanding of how an automobile functions in no way limits it as a resource that Christians may use, even for promoting the Gospel message. Likewise, music exhaustively understood from a psychological viewpoint (if this ever occurs) is still a worthy medium for the Gospel message. There will always remain the mystery of how the Holy Spirit can empower the product of the human vocal apparatus—in speech or song—and use it to produce conviction, salvation, or growth. The spiritual transcends the mechanical.

This survey of Christian music from a psychological view is at best preliminary. These and other aspects of music need to be explored for possible relationships that will aid a fuller understanding of an important art form. This area is also in need of careful research to explore the interface between music, the church, and psychology. Hopefully, this essay will act as a catalyst for further study in this most interesting field.

Dobson, James. "Focus on the Family" (radio program), October 12, 1982.
Hoult, Thomas. *Sociology for a New Day*, 2nd. ed. New York: Random House, 1979.
Hustad, Donald. *Jubilate!: Church Music in the Evangelical Tradition*. Carol Stream, Ill.: Hope Publishing Co., 1981.
Larson, Bob. *The Day the Music Died*. Carol Stream, Ill.: Creation House, 1972.
MacKay, Donald. *Human Science and Human Dignity*. Downers Grove, Ill: Inter-Varsity Press, 1979.
Roberts, Dennis. "Rock Music: Stairway to Heaven or Highway to Hell?". *Moody Monthly*, September, 1982.
Secord, Paul, and Backman, Carl. *Social Psychology*. New York: McGraw-Hill Book Company, 1964.

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A World is Not Made to Last Forever: The Bioethics of C. S. Lewis

This paper is based on three assumptions. The first is that bioethics is important. I define bioethics as:

> A study of the ethical questions posed by the application of man's knowledge to his own body, and of the ethical questions posed by our relationship to other organisms.

In other words, bioethics considers some aspects of the question of man's place in Nature.

The second assumption is that the working out of man's place in Nature is not merely, or even mostly, a scientific question, but is, in part, a literary one. It is not a literary question in the sense that a search of literary works will provide a definitive answer. However, it is a literary question in the sense that answers we have already produced to this question about our place are built into literature, and that we get answers for the future partly from our literature.

Thus, a search of literature for answers to the question illuminates the assumptions and presuppositions of our own present and recent past, and also predicts what presuppositions and assumptions people will have in the future, since the literature of today will shape the minds of tomorrow.

The third assumption is that C. S. Lewis was an important Christian writer.

Based on these three assumptions, I have chosen to examine the writings of Lewis for bioethical insights, overt or implied. His works are particularly appropriate for such an examination for two reasons. The first is that he wrote a considerable amount of material explaining and defending his world-view. The second is that he wrote ten books of fantastic fiction that are especially valuable for gaining insight into his viewpoint. Some kinds of assumptions and presuppositions are closer to the surface in such fiction. For example, there are often alien beings, whose presence means that certain bioethical questions must be dealt with, as they must not in a historical romance. Would there be immediate mutual empathy between humans and aliens, or gradual growth in understanding, or eternal mutual incomprehensibility? What is the difference between being an alien and being a human being? What, if anything, makes a human being unique? How would we treat rational non-humans?

Not only are there alien beings, but also alien landscapes in fantastic literature. Again, the question of our place in nature emerges. Would new worlds and landscapes be harsh and forbidding? Would they bring unearthly joy? What is our relationship to the land, and to non-rational creatures? How do we treat the land, flora and fauna?

Specific Bioethical Questions

First, what does Lewis think makes an entity a person? What organisms are to be afforded the same rights as people? Part of Lewis' answer is given in *Out of the Silent Planet*.

Ransom, the central figure of the so-called space trilogy, (*Out of the Silent Planet, Perelandra, That Hideous Strength*) begins those books by going on a walking-tour of rural England. He soon encounters Harry, who is described by his mother as "a little simple." He also encounters Weston and Devine, who clearly do not speak for Lewis. In Weston, Lewis has embodied a philosophy clearly reprehensible to the author. Weston makes the claim that in a civilized country, retardates such as Harry would be automatically given to a laboratory for experimental purposes. Clearly Lewis did not feel that way, and, based on this episode, apparently considered defectives worthy of receiving human rights.

If defectives, what about non-humans? Let us examine Lewis' fictional treatment of non-humans, beginning with *Out of the Silent Planet*. One important detail of this book is Lewis' use of the word *hnau*. Although it is not defined, its frequent use suggests its meaning. It appears to coincide with rational or reasoning. Ransom has any human chauvinism he possesses destroyed by the evident uncertainty of the *Hrossa*, an alien species, about his own *hnau*-ness. Clearly, Lewis was willing to entertain the possibility that there are rational non-humans, and, more important, that they should be afforded the same basic rights as humans. This is obvious not only from his fiction, but from this explicit statement in *Mere Christianity*: "There may be creatures in other worlds that are more like God than man is. . ."[1]

The use of *hnau* is not the only aspect of *Out of the Silent Planet* that indicates that Lewis was willing to concede "human" rights to nonhumans. The episode of Ransom's first encounter with an alien, in which he senses kinship and a desire to communicate, also does. The key portion of the book, Weston's conversation with Oyarsa, the ruling spirit of Mars, through Ransom as interpreter, also indicates this. Lewis uses the device of translation to make the views of Weston seem ridiculous, or even without meaning. One of Weston's views is his version of why he has developed space-travel.

Weston's claim is that he wants to spread human life to other worlds. Oyarsa points out that, in the first place, Weston would have killed a human life (Ransom's) to do this, in the second place, there are other *hnau* besides humans, and, in the third, humanity would have to become physically changed to adapt to other worlds. Weston's reply is:

> If he cannot understand—as apparently you can't either—anything so fundamental as man's loyalty to humanity, I can't make him understand it.[2]

Lewis' point is that Weston's view cannot be understood, because it makes no sense. When discussing *Out of the Silent Planet*, Lewis stated that he wished to combat the "metabiological" heresy, which is:

> . . the belief that the supreme moral end is the perpetuation of our own species, and that this is to be pursued even if, in the process of being fitted for survival, our species has to be stripped of all those things for which we value it.[3]

It should be noted that Lewis recognized the duty to preserve human life.[4] However, he did not see that this duty entitled men to destroy other rational creatures wantonly to achieve this end.

As far as I know, Lewis never wrote, or spoke of, his views on killing or exploiting great apes, whales and dolphins. But, based on his fictional presentation of alien rational beings, and on his view of the suffering of non-rational animals, one would expect his view to have been one of outspoken opposition to exploitation or killing.

Although his treatment of aliens is not unique, Lewis was probably in the minority. Much science fiction written at approximately the same time as the space trilogy assumes that all aliens are enemies, or makes the same point in a subtler way by portraying humans as innately superior to rational aliens.

Did Lewis hold that humans are God-franchised exploiters, or part of a democracy of organisms? Lewis was not only a Christian but a medievalist. He documents his personal view of the medieval state of mind in *The Discarded Image*. Lewis was aware of, and accepted as authentically medieval, the "Principle of Plenitude" analyzed in A. O. Lovejoy's *The Great Chain of Being*. Belief in this principle caused the ancients to suppose that the gaps between God and mere inanimate matter were filled with an array of beings of progressively lower rank. The *Narnia* books, and the space trilogy, show signs of this.

In *Out of the Silent Planet*, besides humans, there are four coequal species of *hnau* (one extinct), also *eldila*, and the Martian Oyarsa. In *Perelandra*, besides humans, there are *eldila*, the Venusian Oyarsa, the human-shaped, but not human, Adam and Eve of that planet, the demon inhabiting Weston, apparently intelligent mermen, the inhabitants of underground, and perhaps others.

In the *Narnia* books, the same tendency is evident. There are humans, witches, giants, fauns, dwarves, satyrs, werewolves, and other mythological creatures, plus many species of rational mammals and birds. Lewis apparently made up some additional beings—the inhabitants of Bism, far underground, the marshwiggles, the monopods, and the people from under the Eastern sea.

What does all of this have to with bioethics? My answer is that it exposes Lewis' idea of man's relationship to non-human nature. Humans are members of a hierarchy. We are higher than the animals (even *talking* animals) and the fauns. Only Sons of Adam and Daughters of Eve may sit on the throne of Cair Paravel (*The Lion, the Witch and the Wardrobe*). Talking Badgers and Mice do not wear clothes, nor do Talking Apes, except when they are apostate (*The Last Battle*). But man has responsibilities to these creatures.[5] Humans are not to eat Talking Stag (*The Silver Chair*), and are to remember the proper role of Talking Bears, even when they suck their paws (*Prince Caspian*). Humans are not superior to every entity. The star people, of *The Voyage of the Dawn Treader,* can commit sins that humans cannot imagine. Aslan appears as a Lion, not a man.

Again, although he was not writing explicitly of bioethical matters, the view of C. S. Lewis about the role of humans seems clear and consistent with many Christian thinkers: we are to be responsible stewards.

Vivisection and dealing with pain are important and related bioethical issues. The written views of Lewis on vivisection were deemed sufficiently anti-vivisectionist that they were printed by an anti-vivisectionist society.[6] The only circumstances under which Lewis was willing to concede even the possibility that surgery on animals to advance human medicine might be morally acceptable were quite carefully circumscribed. The experimenter had to be a Christian who was convinced that humans had a real, and divinely ordained, superiority over animals. The work must be done so as to avoid animal suffering as much as possible, and must be motivated by a desire to preserve the best in human life. Even under these conditions, Lewis was not certain he could approve.[7]

The most succinct fictional expression of Lewis' views on animal experimentation is in *The Magician's Nephew,* when Uncle Andrew justifies his use of a guinea pig by stating that he had bought it, and thus he could do anything he wanted to with it. The tone of the passage clearly indicates that Lewis held this attitude in contempt.

As shown by both fictional and non-fictional statements, Lewis held that man inherently has authority over animals. But he held that this authority, even though Divinely given, should be used with great restraint, because in a fallen world it is so likely to be abused.

Pain inflicted on animals by humans was not the only type of animal pain Lewis wrote about. The existence of animal pain was a challenge to his philosophy. He himself was not satisfied with his chapter on animal suffering in *The Problem of Pain.*[8] He did not wish to see animals suffer, and found it difficult to reconcile accidental injury, disease, and predation in animals with his concept of a supremely good creator. Lewis' treatment of *The Problem of Pain* in humans was much more satisfying to him. Pain is not good, but God allows it because the world is fallen, and because we (unlike animals) can make wrong choices. God uses suffering to bring us to Himself. This is the burden of *A Grief Observed.* Fictional examples of this include the cleansing of Eustace in *Voyage of the Dawn Treader* and the scratches administered by Aslan in *The Horse and His Boy.*

A Martian philosopher, basing his perceived philosophy of citizens of this continent on television commercials, might conclude that avoidance of pain was one of our chief ends. Some people's bioethics, or their expectations of what the medical profession should be about, appear to agree. Avoidance of pain is important to us. Lewis didn't like pain any more than any normal person does. But he reminds us over and over again in his philosophical and theological, as well as fictional writing, that pain may be used to make us more Christ-like, and that the world was not designed for our convenience. I can only speculate as to what he might have said about aborting a fetus because it is "subnormal," or shooting someone to put them out of their misery, but the speculation seems based clearly on the expressed beliefs of Lewis. I speculate that he would have been vigorously opposed to either.

As might be expected, since Lewis died nearly twenty years ago, he had little to say on genetic engineering. One passage, however, is directly related:

> . . . what we call man's power over Nature turns out to be a power exercised by some men over other men with Nature as its instrument.
>
> It is, of course, a commonplace to complain that men have hitherto used badly, and against their fellows, the powers that science has given them. But that is not the point I am trying to make. I am not speaking of particular corruptions and abuses which an increase of moral virtue would cure: I am considering what the thing called 'Man's power over Nature' must always and essentially be . . . All long-term exercises of power, especially in breeding, must mean the power of earlier generations over later ones.[9]

It seems clear from this that Lewis would have opposed cloning, sperm banks, and *in vitro* fertilization, among other things.

The preceding quotation leads to the consideration of two final bioethical topics: conservation/preservation and birth control in general.

I am not aware of any coherent statement on conservation *per se* in any of Lewis' writing. However, the above statement makes it clear that Lewis didn't trust absolutely any of our activity toward nature. Another attitude that is obvious from his fiction is that Lewis *liked* nature. Fictional passages that show this include the descriptions of the marsh and the caves in *The Silver Chair,* Ransom's view of the mountains in *Out of the Silent Planet,* much of *Perelandra,* and some of the descriptions of mountains in *Till We Have Faces.* He felt that his liking was based on the best possible example. As he put it: "God never meant man to be a purely spiritual creature . . . He likes matter. He invented it."[10]

Besides liking nature, Lewis was concerned about its destruction. In *The Last Battle,* the Calormenes fell the Narnian trees, a development that is clearly meant to fill the reader with indignation. In *That Hideous Strength,* that most repulsive of fictional institutions, N.I.C.E., seems to have the goal of stamping out all organic life:

> In us organic life has produced Mind. It has done its work. After that we want no more of it. We do not want the world any longer furred over with organic life, all sprouting and budding and breeding and decaying. We must get rid of it.[11]

It seems reasonable to assume that Lewis would have had sympathy for preservationists.

The final bioethical question I shall consider, birth control, is linked with preservation in the minds of many. Paul Ehrlich, for example, (*The Population Bomb*) has argued that one aspect of preservation must be a strong program of human population control. Lewis didn't seem to think so.

Birth control is touched in three ways in *That Hideous Strength.* First, it is championed by a repulsive character, Filostrato, described as an "Italian eunuch,"[12] who succinctly states his opposition to copulation and to organic life itself in the context of the preceding block quote.

Secondly, Merlin, a Christian, roused from his medieval slumber, queries Ransom about the moon. Ransom replies that an accursed people, full of pride and lust, dwell there, and rather than using

normal sexual relations, couples mate with images of each other, fabricating children by "vile arts." Thirdly, Merlin nearly kills the heroine because she and her husband have not produced a child who would have protected England, being barren of their own will.

I have been able to find only two nonfictional statements by Lewis concerning birth control. When he was asked if he thought venereal disease was to be considered just moral punishment, and if this was why the Church of England did not wish prophylactics to be used, Lewis replied that he didn't think the church held that view and that he didn't either.[13] He also wrote that "the biological purpose of sex is children."[14]

Lewis seemed to believe that the fallen state of man may drive us to overpopulate our planet, and perhaps even do the same on others. But, it seems, he would not condone the solution of one evil (the destruction of nature by overpopulation) by what he considered to be another (birth control). As Oyarsa asked Ransom about Weston's scheme: "Does he think Maleldil wants a race to live forever?" and, as Ransom was told: "A world is not made to last forever, much less a race."[15] This is reinforced by Lewis' statement, in a sermon, that "Nature is mortal; we shall outlive her."[16]

The views of C. S. Lewis on population biology were unsophisticated. His *Hrossa* maintained an apparently stable population, but seemingly had a maximum of two offspring per couple. His Narnian Dwarfs seemingly maintained themselves with no females at all, and the populations of Talking Animals were usually so small as to be courting extinction. His apparent belief in reproduction as the exclusive biological purpose for sex is certainly questionable. However, Lewis' grasp of eternal verities transcends a shaky grasp of reproductive mathematics, or a controversial or even wrong belief. The burden of the bioethics implicit in Lewis' writing is that this world is good, but that individuals are not made to last forever in it.

[1]C. S. Lewis, *Mere Christianity* (New York: Macmillan, 1960) p. 139.
[2]Lewis, *Out of the Silent Planet* (New York: Collier Books, 1962) p. 138.
[3]Walter Hooper, ed. *Of Other Worlds: Essays and Stories* (New York: Harcourt Brace Jovanovich, 1966) p. 77.
[4]Lewis, *The Abolition of Man* (New York: Macmillan, 1965) pp. 97–100.
[5]Lewis, *The Weight of Glory* (Grand Rapids: Eerdmans, 1970) p. 16.
[6]Walter Hooper, ed. *God in the Dock: Essays on Theology and Ethics*, by C. S. Lewis (Grand Rapids: Eerdmans, 1970) p. 16.
[7]*God in the Dock*, pp. 224–228.
[8]*God in the Dock*, pp. 166–171.
[9]*Abolition*, p. 69.
[10]*Mere Christianity*, p. 65.
[11]Lewis, *That Hideous Strength* (New York: Collier Books, 1962) p. 173.
[12]*Hideous Strength*, p. 70.
[13]*God in the Dock*, p. 51.
[14]*Mere Christianity*, p. 89.
[15]*Silent Planet*, p. 123, p. 100.
[16]*Weight of Glory*, p. 13.

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The Relationship Between The American Scientific Affiliation and The Creation Research Society

It is important that we consider our brothers and sisters who differ from us in some respects but who agree with us in a large number of areas.

We have heard from Wilbert H. Rusch Sr. concerning the history and aims of the Creation Research Society. I was present at the 5th biennial joint meeting of the Evangelical Society and the American Scientific Affiliation held June 19–21 1963 at Asbury College and Theological Seminary in Wilmore, Kentucky. At the opening session held on Wednesday afternoon I served as the chairman. The two speakers were G. Douglas Young and Robert Fischer. At the final session on Friday afternoon my good friend John R. Howitt had a specially prepared paper on the topic, "Karl Marx as an Evolutionist." I recall that Walter E. Lammerts, who presented a paper on the subject "Discoveries since 1959" was rather vocal in his remarks about some statements made at this meeting. He, together with a number of others, soon after this joint meeting, decided to form another organization devoted almost exclusively to the problem of origins. They chose the title "Creation Research Society" for the new organization. This was done on June 22–23, 1963. Dr. Lammerts served as the first president of the Creation Research Society. He also served for some time as the editor of the *Creation Research Society Quarterly* that was started in 1964.

Each organization has a doctrinal statement. The original statement of the ASA was rather lengthy. In its revised form each new member subscribes to the following: "1. The Holy Scriptures are the inspired Word of God, the only unerring guide of faith and conduct. 2. Jesus Christ is the Son of God and through His Atonement is the one and only mediator between God and man. 3. God is the Creator of the physical universe. Certain laws are discernible in the manner in which God upholds the universe. The scientific approach is capable of giving reliable information about the natural world."

All members of the CRS must subscribe to the following: "1. The Bible is the written Word of God, and because it is inspired throughout, all its assertions are historically and scientifically true in the original autographs. To the student of nature this means that the account of origins in Genesis is a factual presentation of simple historical truths. 2. All basic types of living things, including man, were made by direct creative acts of God during the Creation week described in Genesis. Whatever biological changes have occurred since Creation week have accomplished only changes within the original created kinds. 3. The great Flood described in Genesis, commonly referred to as the Noachian Flood, was an historic event worldwide in its extent and effect. 4. We are an organization of Christian men of science who accept Jesus Christ as our Lord and Savior. The account of the special creation of Adam and Eve as one man and one woman and their subsequent fall into sin is the basis for our belief in the necessity of a savior for all mankind. Therefore, salvation can come only through accepting Jesus Christ as our savior."

Both organizations are composed of Bible-believing men and women who are involved in various scientific disciplines. Many are teachers at the various levels, but others are engineers, physicians, dentists, or those involved in other professions. We are all interested in relating God's Word and God's world. As followers of Jesus Christ we are interested in the propagation of the Christian Gospel.

From my knowledge of the two groups I believe that all members of the ASA and the CRS would subscribe to the following:

1. God is the creator of the entire universe and by his power he holds it together.
2. The physical universe is real.

3. Jesus Christ is the only savior.
4. The Holy Spirit is present within us and is willing to guide us into all truth.
5. The Bible is the inspired Word of God and should be diligently studied by all Christians.
6. Jesus Christ lived a perfect life.
7. Miraculous events have occurred in the past and continue to occur.
8. Heaven will be the home of all born-again Christians.
9. The devil is a real person, the enemy of all who are serving God.
10. Hell will be the abode of all those who do not accept Jesus Christ as savior.
11. All persons inherit an evil nature.
12. All persons need a savior.
13. Daily prayer is essential for Christian growth.
14. Fellowship with other Christians is essential for all.
15. The Christian Church is composed of those who believe in the Lord Jesus Christ.
16. As Christians, our highest duty is to God rather than to men.
17. The study of science is useful and important.
18. Many changes have occurred in the material universe since creation.
19. Science is continually changing.
20. All scientific laws are man-made.
21. Scientific theories are tentative but useful.
22. Most people tend to be dogmatic in their beliefs.
23. Repentance for sins committed is necessary on the part of all Christians.
24. Love is the most important attribute of the Christian.

Although the members of both the ASA and CRS share so many common beliefs, yet it is true that there are a number of differences both in belief and organization on the part of its members. Whereas the ASA is interested in all aspects of the relationship between the Bible and science, the CRS is principally interested in the problem of origins. Since one aspect of the subject of evolution is that of the origin of the universe, the origin of life, and the origin of the human race, it follows that the CRS deals with this subject more than does the ASA. Members of the CRS tend to take statements in the Bible more literally than do those of the ASA.

Closely related to the subject of evolution is that of the age of the earth and of the universe. Most members of the CRS believe that the age of the earth is not more than 10,000 years, though some may allow 100,000 years. Members of the ASA exhibit a wide spectrum with respect to the age of the earth. Some hold to the 10,000 year belief, while many others believe that scientific evidence shows that the earth is from four to five billion years old.

The flood of Noah is another point in which the ASA differs from the CRS. All members of the latter group are required to sign a statement affirming that the Noachian flood was world wide. This implies that much of the geological structure of the earth is a direct result of the flood. No such affirmation is required on the part of ASA members.

The subject of scientific creationism is another subject that appears to divide these two groups of scientists. This is evident in the program of the 1982 annual meeting. Norman L. Geisler has produced a paper entitled, "Creationism as Science or Religion." This would never appear as an article in the *Creation Research Quarterly* since most members of the CRS are firmly convinced that creationism is scientific. In fact, Henry M. Morris, former president of the Creation Research Society, has written a book with the title *Scientific Creationism*. In the Foreword to this book Dr. Morris states that

> Scientific Creationism deals with all the important aspects of the creation-evolution question from a strictly scientific point of view, attempting to evaluate the physical evidence from the relevant scientific fields without reference to the Bible or other religious literature. It demonstrates that the real evidence dealing with origins and ancient history support creationism rather than evolution.

It is very interesting that the subject of scientific creationism has been so much discussed in recent scientific journals as well as in many other publications. A leading article in *Science* Vol. 215, 8 January 1982 has the title, "Where is the Science in Creation Science?" In this article my good friend Duane T. Gish, Assistant Director of the Institute for Creation Research, is quoted as saying, "We do not know how the creator created, what processes He used, for He used processes which are not now operating anywhere in the natural universe. This is why we refer to creation as special creation. We cannot discuss by scientific investigation anything about the creative process used by the creator." This article grew out of the recent Creationism Trial in Little Rock, Arkansas.

In the same issue of *Science* the editor Philip H. Abelson, in an editorial entitled "Creationism and the Age of the Earth," states the following:

> The Creationists state that the age of the earth is between 6,000 and 10,000 years. In taking this stance they are in conflict with data from astronomy, astrophysics, nuclear physics, geology, geochemistry, and geophysics. . . . Substantial evidence indicates that the age of the solar system is about 4.5 billion years. . . . Data from geology, geochemistry, and geophysics all testify that the age of the earth is much greater than 10,000 years. . . . The efforts of the tens of thousands of scientists who have produced data relevant to the age of the earth or the universe have been motivated by a search for truth. If the age of the earth were 10,000 years or less, that result would have been proclaimed by many and accepted by all.

It seems to me that there exists a deep underlying reason for the fact that members of the CRS reject the theory of evolution. That involves the heart of the Gospel message. If evolution is true in all of its aspects, including the origin of the universe, the origin of life, the origin of species, and the origin of man with gradual development from inanimate matter to the most complex forms of life, including man, then why a savior? Does man need a savior from sin if he is but a link in a long chain of chance events? However, since we have a corrupt nature and are in need of a savior, there must be a big mistake in a theory which indicates that everything evolves and becomes better and better. Thus we can see why the members of the CRS have a deep interest in the subject of origins including evolution.

Organizationally the two groups differ in that the ASA has a paid Executive Director with a full time secretary while the CRS has no paid officers. Thus they are able to direct their energies to research and publication. Furthermore the CRS does not hold meetings for the presentation of papers. They do hold an annual meeting of the Board of Directors to conduct business. It should be pointed out that a number of CRS members do present papers at the meetings of the Bible-Science Association. This is mainly a layman's organization to promote the teaching of Creationism in public and private schools. Their next meeting is scheduled for August 10–13, 1983 in the Minneapolis-St. Paul area. This is called the National Creation Conference and papers are being solicited in all fields of natural science, life science, social science, as well as theology. Papers will not be accepted if they endorse uniformitarianism or evolutionist principles. This organization publishes a monthly *Newsletter*. The address is 2911 East 42nd Street, Minneapolis, MN 55408. A number of us are members of both the American Scientific Affiliation and of the Creation Research Society. Some ASA members present papers at meetings of the Bible-Science Association. I have had the privilege of attending a number of such meetings.

I close with a plea for close cooperation between the ASA and the CRS. I know that some will say that this is impossible and others that it is not desirable. I am convinced that we need each other in a world where secular humanism seems to be everywhere. We need to show to the world that Christians trained in science are interested in spreading the good news that Jesus Christ is the only savior. What an opportunity lies before us.

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A paper presented at the annual meeting of the American Scientific Affiliation at Calvin College, Grand Rapids, Michigan, on August 16, 1982.

A Model for Discussion of Science and Christianity in the Public School

Over the past several decades the public school has been embroiled in a continuing set of controversies ranging from student body composition to questions involving censorship of literature and the arts. Often evangelicals have been found on the battle lines—usually in the role of critic. This is all too evident in the current debate over the teaching of origins. I have observed this situation with an increasing sense of frustration—not so much because of the (often justified) critique—but with a concern that the Christian seems unable to contribute constructively to science education within the constraints established by the courts and local practice relative to the place of religion in the public school. It would appear that science-religion discussions, if they occur at all, seem to focus on areas of conflict. The Christian teacher in the public domain is often torn between a desire to express his faith in the context of his discipline and the necessity to conform to locally established principles.

I have found a historical approach to be helpful in overcoming some of these limitations. The secular historian of science has some surprising things to say about the relation between science and Christianity that have been largely ignored. These ideas are appropriate in setting forth the social and intellectual climate from which modern science was born and came to dominance in western culture. A historical overview of the changing relation between science and Christianity through the past three centuries to the current concern for "morality" in science can provide several benefits to the student. First, he can be encouraged to look to his religious roots to bring meaning to science and his personal life. He can also gain a perspective on the sources of conflict between science and religion and ways to deal with future questions. This broader view provides a means for gaining a deeper understanding of the nature and limitations of science (and religion) as they are brought to bear on particular issues.

My approach has generally involved a broad sketch of western intellectual history from the time of Francis Bacon to the present, particularly as it deals with the relation between science and Christianity. This history may be separated into three periods.

The first segment covers the 17th Century, a time when science developed into modern form in a culture largely dominated by Christianity. Theism and science were seen as compatible and this period saw many scientist-Christians who found motivation for their work in their Christian faith. These scientists often joined their religion and science in philosophical statements that may seem obscure to the modern reader; yet they contain the foundation upon which we construct our present integrative strategies. Intellectuals of that time found no major conflict between the ideas of science and the major tenets of Christianity, nor was there the dichotomy between the two that was to emerge later. It is important to note that the development of science in non-western cultures may have been impeded by religious world views that saw nature as irrational, capricious or not worthy of serious study. The Christian picture, however, provided a combination of presuppositions stemming from the concept of God as creator and omnipotent ruler over nature—his rationality, steadiness, faithfulness and regularity—which were compatible with scientific thinking.

The second time period extends from the early 19th century through World War II. Here science and technology flourished and came ultimately to cultural dominance while Christianity was relegated to one's private life. The achievements of science in understanding and harnessing nature through a method that emphasized rational and objective thought provided an authority that Christianity under attack from all quarters was unable to counter, especially where the two areas of thought came into conflict. The high religious seriousness of the seventeenth century passed into the scepticism and worldliness of the nineteenth, not only through the pen of the philosopher and the successes of the scientists but through the loss of credibility of Christianity, increasingly weakened by denominational differences, and attacks on the authority of Scripture by an emerging liberalism which came to carry the day. The smoke stack rather than the steeple came to dominate the landscape and the gap between science and Christianity appeared unbridgable.

However, the period following World War II has seen a remarkably rapid change in public attitude toward science and technology even though scientific progress has continued unabated. Although the vision of Frankenstein has long been a hallowed part of folklore, the first major crack in the image of scientific infallibility came with the intense discussion over nuclear warfare by those who had been involved in producing the first atomic bombs. Their journal, *The Bulletin of the Atomic Scientists,* became a forum for discussing this concern and mobilizing political action regarding the "ultimate weapon." In the early 1950's Rachel Carson's *Silent Spring* and the emerging ecology movement raised questions about man's relation with "nature." Pollution of air, land, and water, overpopulation, the energy crisis, a high-tech war, nuclear power, waste disposal and biotechnology became front page issues. Science was seen as moving too far too fast.

As public confidence in science waned, some observers began to ask if the emperor had any clothes—was he able to distinguish right from wrong or make moral judgments in a matrix of conflicting solutions? Increasingly, theologians were asked to join the discussion as questions arose. The National Science Foundation initiated a program that supports ethics projects. Scientists and an increasing number of people outside the science community have begun to look to religion for help in evaluating technology, an approach that would not have been possible in the last generation. The dichotomy between science and religion has diminished. One should be under no illusion that there is a romance between the two, but a link has been forged in the area of ethics and even more broadly, as society recognizes the limitations of science and scientism and looks at other ways of knowing and finding man's place in the cosmic drama.

I have given lectures based on these ideas in over two dozen public schools and at a state teacher's convention. The positive response on the part of students and teachers suggest that this approach may be appropriate for others who wish to counter the negative image of evangelical response to science in the public school. There are, however, certain dangers in historical analysis. One is tempted to revise history to fit preconceived notions or gloss over problems in order to present a tight case. Also, one must be careful to get the facts straight. In spite of these problems, there is real satisfaction in sorting out the literature and matching one's opinion with that of the author. The Annotated Bibliography provides a variety of useful sources toward this end.

Barbour, Ian G., *Issues in Science and Religion*. Englewood Cliffs: Prentice Hall, 1966. An excellent review of the 17th to 20th centuries.

Dillenberger, John, *Protestant Thought and Natural Science*. Nashville: Abingdon Press (paper), 1960. Perhaps the best discussion of the entire period.

Hooykass, R., *Religion and the Rise of Modern Science*. Grand Rapids: Eerdmans Publishing Co., 1972. This work builds a strong (but not universally accepted) case for the contribution of Protestants to the development of science in the 16th and 17th centuries.

Jaki, S. L., *The Road of Science and the Ways to God*. Chicago: University of Chicago Press, 1978. A fascinating view of the philosophical and theological insights of a wide range of physical scientists who have been significant in the development of science.

Klaaren, E. M., *Origins of Modern Science*. Grand Rapids: Eerdmans Publishing Co., 1977. A more balanced view of the 16th and 17th centuries.

Raven, Charles E., *Science and Religion*. Cambridge: University Press, 1953. An older but still valuable study of the 17th through 19th centuries.

Isis, Journal of the History of Ideas, Zygon, and the *Journal of the American Scientific Affiliation* regularly contain articles dealing with historical aspects of science and Christianity.

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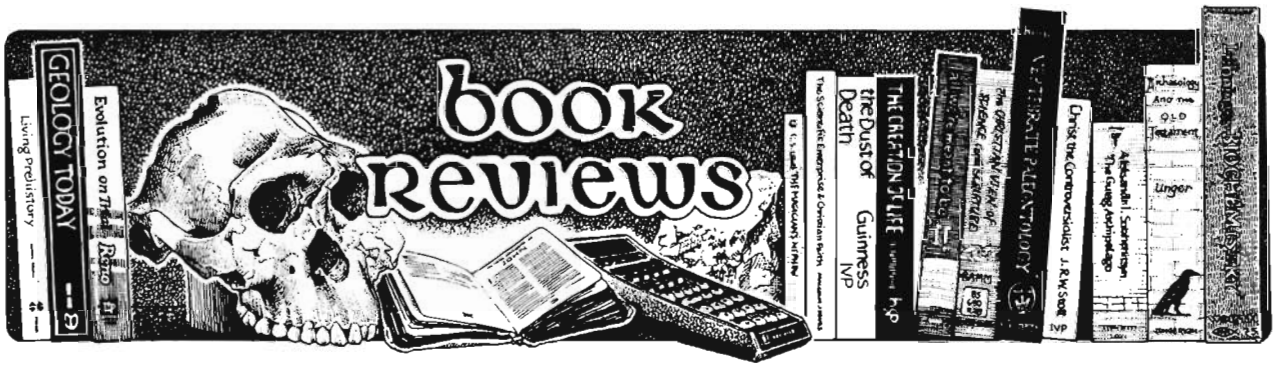

THE TRANSLATION DEBATE, WHAT MAKES A BIBLE TRANSLATION GOOD?

by Eugene N. Glassman. Downers Grove, Illinois: Intervarsity Press, 1981, $4.25

The Christian of today, and the general public for that matter, is being deluged by a steady flow of new translations of the Bible. This is particularly true of one who reads English, either as a first or second language. It constitutes a ready market that is not available in most other language groups. Obviously some of these serve individual and collective needs better than others. Faced with such an onslaught, certain criteria of evaluation must be established. This is what Glassman has set out to set down and define for his readers. He asks, "What makes a Bible translation good?" To come up with a translation that is truly good he concedes is difficult; however, he is quick to point out that the science of translation in general owes more to bible translators than to any other definable group so engaged.

He proceeds in good academic fashion to define his terms, such as "translate," "interpret," and "paraphrase." He observes that translation and paraphrase are complementary—two sides of the same coin. Examples are given in connection with the Bible itself as noted in the Greek of the Septuagint as compared to the Masoretic Text and points out that some paraphrase is inevitable, regardless of how literal the translator wishes to be. Some translators are form-oriented, with concentration on the Hebrew and Greek texts, and try to make the text of the receptor language conform as closely as possible. The second type is content-oriented, which concentrates on the receptor language and the vocabulary and syntax that is most appropriate for the targeted readership.

Some of the technical means of translation are given in a readable manner for the non-specialist. Glassman then takes appropriate note of the help given by missionaries to the task. Due attention is given to the quarterly journal, *The Bible Translator*, published in England by the United Bible Societies since 1950. This covers a wide range of materials both for the translator knowledgeable in Hebrew and Greek, as well as practical articles for the man in the field. Abundant quotations are given from Eugene A. Nida of the American Bible Society throughout the book. Suitable recognition is likewise given such authors as Adolf Deissmann, John Beekman, Kathleen Callow and others contributing to present-day translation theory and practice. He gives emphasis to the need for continued translation. His reason for this can be summarized as follows, "Unfortunately, near the end of the second century of the modern missionary movement, many people around the world have only some literal translation of the Bible—and still do not know what we are talking about."

(p. 207) He is most adamant in his feeling that God's Word should be available to people in language they can understand and so can respond to its message accordingly.

In this book there is much general and specific information given on how to make the Bible meaningful to the intended reader. Abundant examples are included. Nevertheless, with all its good points, there is a certain lack of focus on certain basics that must lie behind any translation if it is to be good, regardless of the level of readership for which it is intended. For example, is the best Greek text available being used for the New Testament? A translation can be no better than the text lying behind it. The one best meeting text-critical criteria and published in a format that is readily available for translators of the New Testament is the United Bible Societies, 3rd Edition and the Nestle-Aland 26th Edition which have been brought together into one text with each having its own critical apparatus. This text unfortunately is not always used.

For any translator to resort to the old Textus Receptus of the 16th Century is to ignore over 200 years of constructive text-critical scholarship. Others use some English or other version as a text. Both of these situations are unfortunate and should have been noted as weaknesses by the author in clear, emphatic language. Other tools that should be used by the translator are mentioned lightly or not at all. They are necessary in order to do a proper job. One of major importance is the Arndt and Gingrich Greek lexicon, a translation of *Wörterbuch zum Neuen Testament* by Walter Bauer. This is footnoted only once after casual mention. It is too important to the translator for such cursory treatment. The accompanying volume, Index to the Bauer/Arndt and Gingrich Greek Lexicon by John R. Alsop receives no mention at all. This lists the Greek words by verse, gives a simple translation, and notes the proper page and paragraph under the Greek word in Arndt and Gingrich. Likewise not mentioned is the United Bible Societies Publication, *A Textual Commentary on the Greek New Testament* by Bruce M. Metzger. This is important for textual decisions a translator may have to make.

This reviewer remembers a discussion with a certain man translating the bible into one of the Indian languages of South America. The reference materials that he was using were 27 Spanish versions. He was shown a copy of Arndt and Gingrich and was sent by mail later a copy of the Alsop *Index*. About two years later the *Index* was mailed back and when opened it was completely unused. The explanation given was, "This is beyond me." In another instance where it was introduced to a man making a common language translation into Marathi spoken near Bombay, India, there were indications that he was happy to learn of it.

In all of this then, there are basic factors that make a translation good. If they are not there, the superstructure built upon them will be correspondingly poor. A book such as this should include the means for deciding whether such a work meets minimal standards of New Testament textual and lexical scholarship. Obviously, the first example given above did not. In the meantime, the translation into that language has been completed finally, and a Bible made available that could have been much better if a knowledgeable person had been in the director's seat.

For this reason, this book would have served a better purpose if it had included and updated such information as found in *A Guide to Modern Versions to the New Testament*, by Herbert Dennett, now deceased (Moody, 1965). Especially pertinent are pp. 113–123. Such critiera must be included that determine whether the translator has made use of the tools essential for doing a top-level job. This includes the text, vocabulary and syntax. While comments have concentrated on the New Testament, other such comparable sources should be used by the Old Testament translator. This area is the one major deficiency of this book. The reader evaluating a new translation should know about it.

In summary, this book is excellent in pointing out what is needed in a modern dynamic equivalent translation and in reflecting the philosophy of Eugene A. Nida. Its weakness is downgrading or not mentioning certain scholarly areas that are basic and foundational for any good translation, regardless of the potential readership or level of language. They are disciplines which are just too important to ignore or slide over in the evaluation of Bible translations.

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THE INTERRUPTION OF ETERNITY: MODERN GNOSTICISM AND THE ORIGINS OF THE NEW RELIGIOUS CONSCIOUSNESS by Carl A. Raschke, Chicago: Nelson-Hall, 1980, 271 pp., $18.95.

In sharp contrast to books like Elaine Pagels' *The Gnostic Gospels* that have treated Gnosticism sympathetically, Carl A. Raschke, Professor of Religious Studies at the University of Denver, subjects modern "Gnostic" movements to sharp criticism. He judges severely man's many attempts to rebel against and to escape from history.

This highly readable work has both weaknesses and strengths. The author's knowledge of ancient Gnosticism is somewhat superficial. His comments on the contributions of Zoroastrianism to apocalypticism (p. 17), on the origins of Gnosticism (p. 20), and on the nature of Hermeticism (p. 29) betray erroneous concepts. He has relied upon Robert Grant's theory about the origins of Gnosticism from the failure of Jewish apocalypticism (pp. 37, 229), though Grant has since 1973 repudiated his own theory. On these matters see my "The Gnostics and History," *Journal of the Evangelical Theological Society*, 14 (1971), 29–40; *Pre-Christian Gnosticism* (Grand Rapids: Eerdmans, 1973); "The Descent of Ishtar, The Fall of Sophia, and the Jewish Roots of Gnosticism," *Tyndale Bulletin*, 29 (1978), 143–75.

The author consciously uses the term "Gnostic" in a much broader sense (p. x) than is customary for the ancient period. He singles out the following criteria: (1)"a preference for

'cosmic insight,';" (2) "a rejection of all providential myths of redemption;" (3) "an unabashed antiquarianism which looks to the occult wisdom of the past;" and (4) "a prepossession with the evil of the existing order, with the fatality of life in the present" (p. 24).

Within the broadened bounds of this definition the author with skillful analysis and apt quotations examines an astonishing variety of thinkers such as: Johann Herder, Friedrich Schiller, Wolfgang Goethe, William Blake, Johann Fichte, Thomas Carlyle, Arthur Schopenhauer, Friedrich Nietzsche, Emmanuel Swedenborg, William Butler Yeats, Rudolf Steiner, Hermann Hesse, Mary Baker Eddy, Madame Blavatsky, Jack Kerouac, Alan Watts, and Timothy Leary.

One may well wonder at the elasticity of a definition of "Gnosticism" that can encompass on the one hand New England Transcendentalists (pp. 176–84), and on the other hand Naziism (pp. 161–170).

Most of the writers thus classified would not have been conscious of their alleged affinity to Gnosticism. Raschke's best section deals with Carl Jung, who was explicitly attuned to the Gnostics. In a letter of 1932 Jung wrote, "I am on the best way to delivering up the Christian concept of the spirit to the chaos of Gnosis again" (p. 145). Jung also declared, "It is clear beyond a doubt that many of the Gnostics were nothing other than psychologists" (p. 148).

It is therefore a pity that Raschke was unaware of the purchase of a Nag Hammadi Gnostic codex by Gilles Quispel in 1952 as a birthday gift for Jung. Raschke could also have made good use of Quispel's important monograph, *Gnosis als Weltreligion* (Zürich: Origo, 1951).

If we can suspend our questions about the divergences of these different "Gnostic" writers, we do find that there are certain striking parallels: (1) They are all in rebellion against orthodox Christianity. Like the ancient Gnostic Cainites, both Lord Byron and Hermann Hesse's Demian, for example, upheld Cain as the hero rather than as the villain (pp. 39, 77, 154–55). (2) Like the ancient Valentinians who believed that only they were the elect "spirituals," there is commonly a streak of elitism and disdain for the masses (p. 242). (3) Like the ancient Docetists condemned by I John and by Ignatius, latter-day "Gnostics" have been so self-preoccupied that they have had no social conscience (p. 238).

With a colorfully mixed metaphor the author sounds a warning against such delusive attempts to escape history:

> The Gnostic does not reach out, but tucks himself away like a mollusk against the battering tides of history. He finds happiness as he luxuriates in the glow of his own consciousness, which may however turn out to be reflected light from the fire that is burning his own house down (p. 238).

Reviewed by Edwin M. Yamauchi, Professor, Department of History, Miami University, Oxford, Ohio 45056.

GROWING EDGES IN THE PSYCHOLOGY OF RELIGION by J.R. Tisdale, editor. Nelso-Hall, Chicago, Illinois 1980. 350 pp. $21.95 cloth; $10.95 paper.

This is another entry in the college textbook market for courses in the psychology of religion. The book consists of edited down versions of 25 papers, along with the editor's summary conclusions for each section. The book is arranged in four sections: Part One—Definition and Measurement of Religious Variables; Part Two—Religious Development; Part Three—Mysticism and Altered States of Consciousness; Part Four—Religion, Deviant Behavior, and Therapy.

As a book of readings, it contains some interesting and often historically seminal articles, admixed with some very routine and mundane chapters containing truisms and simply outdated materials. The original publication dates range from 1964 to 1971, making most of the material technically and conceptually dated. Further, most of the articles come from either *The Review of Religious Research* or the *Journal for the Scientific Study of Religion*, both strongly traditional psychological journals. There are no good psycho-anthropologic, psycho-social, or psycho-historical materials.

More importantly, the article sampling procedure of the editor left huge lacunae of untouched topics, or poor selection on a given topic. For example, the best section is the first on definition and measurement. Here the major psychometric work of the 70's emanating from the Berkeley group of Glock, Stark, and particularly Wuthnow is sorely missed. The second section on religious development misses the whole cult phenomena of the 60's and 70's and the considerable work on cult recruitment and conversion, as in the work by Galanter, Levine, Richardson, etc. The third section on mysticism and consciousness is the weakest, marred by out-dated speculative articles. The recent work on ego psychology by Loevinger and on hypnosis and trance by Hilgard would be critical. Finally, the fourth section on religion and deviant behavior and therapy is a disparate klatch of interesting but unrelated topics. Deviancy is confused with mental illness and their inter-correlations. The superb work on religion and psychotherapy by Allen Bergin would be appreciated here. No behaviorism or learning theory shows up here either.

In a word, the most salient and robust work on the psychology of religion is missing from this volume.

My final problem with these readings as a textbook is that it often offers answers, not questions. What are the major issues to be addressed in the psychology of religion? Answers fade with time, while questions endure. In this vein, one of the best textbooks in the psychology of religion is still the 1901 edition of *Principles of Psychology* (2 vols.) by William James. He posed great questions!

Reviewed by E. Mansell Pattison, M.D., Professor and Chairman, Department of Psychiatry, Medical College of Georgia, Augusta, Georgia 30912.

BLAMING TECHNOLOGY: THE IRRATIONAL SEARCH FOR SCAPEGOATS by Samuel C. Florman, St. Martin's Press, New York (1981) xi + 207 pp. $12.95.

Every story has two sides and it is necessary for a wise person to hear both of them. A practicing engineer and Vice President of a construction company, Samuel C. Florman has taken it upon himself to make sure that extreme mythologies hostile to engineering and technology receive their comeuppance. His 1975 book *The Existential Pleasures of Engineering* and a series of articles in *Harper's* between 1976 and 1980 have confirmed his position as a leading defender of technology. Although at times Florman may merely develop his own mythology, he speaks enough fundamental good sense that it would be a foolish student of technology and its relevancy to Christian thought and life who would not balance Ellul with Florman.

Florman believes that "technological creativity is a wondrous manifestation of the human spirit," and rejecting both optimistic and pessimistic views of the future of technology, adopts instead what he calls a "tragic" view. By this he means to ally himself "with those who, aware of the dangers and without foolish illusions about what can be accomplished, still want to move on, actively seeking to realize our constantly changing vision of a more satisfactory society." This "tragic" view recognizes the existence of evil in the world, but also recognizes that a good share of the trouble resulting from technology is the consequence, not of evil men with evil intentions, but of good men with good intentions, who did not understand the full effects of their activity. Thus the "tragic" view shuns blame, but does not forsake responsibility.

Florman is at least partially successful in making the following arguments: technology does not have a mind and power of its own but reflects the mind and desires of people; there is no such thing as a technocratic elite since those with technical knowledge usually have the least political and economic power; small is not always beautiful because often the problems to be attacked are large; the feminism movement's antipathy toward engineering as a vocation bodes ill for the future unless the movement realizes that women must contribute to the building of society, not just to the running of it; grand social designs for the future that are based almost completely upon a major change in human nature are illusions we cannot afford to follow.

In his fundamental faith in "the human spirit," Florman comes close to developing his own illusions. In respect to the future of nuclear power, he says, "I am satisfied that many citizens together—blending sense and instinct, boldness and caution—are making the choices that must be made." With respect to the basic "stuff" of the universe as represented by today's science, he says, "However we conceive of it, *it is what it is*, essentially vital and virtually limitless in potential." He wishes to affirm the worth of values even if they are totally relative as he believes modern science has rendered them, even to the extent of labelling something as absolute evil in a cosmos indifferent to our values. His perspective often borders on social Darwinism: "The struggle for markets and profits creates a jungle in which the fittest technologies are likely to survive." His emphasis on the possible rather than the just, on competition as the source of cooperation, on self-interest as the only viable motiviation, and on the engineer fulfilling his function rather than being involved in the ethics of his activity, all seem, if carried to their rational conclusion, fraught with ultimate dangers.

As is often the case, it is the middle ground that needs to be walked. Insofar as Florman plays a role in calling us back to it, he performs a vital function.

Reviewed by Richard H. Bube, Chairman and Professor, Department of Materials Science and Engineering, Stanford University, Stanford, California 94305.

This review was originally published in Eternity, *October 1982.*

CHRISTIANITY AND THE AGE OF THE EARTH by Davis A. Young, Zondervan (1982) Paperback. 188 p.

In the last couple of years Davis A. Young has become the champion of an authentic scientific view of the world within a highly conservative theological framework. Trained in geology at Princeton, Pennsylvania State and Brown Universities, Dr. Young has had extensive field experience in geology in the United States, the Dominican Republic and Canada. He has been on the faculty at New York University and the University of North Carolina, and is currently Associate Professor of Geology at Calvin College. His previous book *Creation and the Flood* began his confrontation of "scientific creationism" with the inputs of modern geological science, a confrontation that is continued in the present book. Because of his standing in the orthodox evangelical community, his refutations of "creationism" with its creed of a young earth, *fiat* creation in six twenty-four hour days a few thousand years ago, and the Flood as the physical mechanism accounting for all apparent geological findings, are particularly significant. Because he knows his geological science and is a person of impeccable integrity, what he has to say is of extreme importance for every Christian attempting to deal with these issues, particularly those involved in education.

The present book is separated into three parts: considerations of the age of the earth in past history, scientific considerations of the age of the earth, and philosophical and apologetic considerations.

In the first part of the book, Young traces ideas concerning the age of the earth from early Greek views before Christ through developments of the present century. He points out that "the almost universal view of the Christian world until the eighteenth century was that the Earth was only a few thousand years old. Not until the development of modern scientific investigation of the Earth itself would this view be called into question within the church." Young provides an excellent overview of the historical development of the ideas concerning the age of the earth, indicating considerable knowledge of historical geology. In the present day, Young himself is concerned that scientific understanding be harmonzied with biblical interpretation and lists himself among those who prefer the day-age hypothesis concerning the

interpretation of Genesis, although he does mention the "framework theory" with some favor in which Genesis 1 is interpreted as giving a topical rather than a chronological description. He explains the rise of modern "creationism" as a reaction against the connection between geology and organic evolution, between the theory of evolution and philosophical evolutionism, and between evolutionism and a threat to Christianity. Young does not commit himself on the theory of organic evolution itself, but he is adamant that "the doctrine of the evolution of man is unscriptural and should be opposed." Thus Young's unique position: a knowledgeable scientist, not at all commited to evolution in any form and opposing it in the area of human origins, yet committed to geological evidence for an aged earth.

In the second part of this book, Young points out that "creationists" challenge acceptance of an aged earth for philosophical, hermeneutical and scientific reasons. He devotes one chapter to showing that those who oppose an aged earth because they supposedly reject a uniformitarian perspective, are in fact just as uniformitarian in their approach and therefore cannot genuinely raise philosophical objections. His response to the claim that Genesis 1 must be interpreted literally has already been given in *Creation and the Flood* and is not repeated in any length here. Most of Young's concern is with the scientific evidence and particularly with supposedly scientific arguments raised against an aged earth. He treats areas of stratigraphy, fossil graveyards, preservation of fossils, polystrate trees, and evidences of slow deposition such as coral reefs, evaporite deposits, and sedimentary environments. Young provides next an excellent treatment of radiometric dating in order to refute common "creationist" statements that all radiometric dating is worthless. He discusses the principal experimental concerns in such dating methods and the nature of the main radioactive decay systems used, including potassium-argon, rubidium-strontium, and uranium-thorium-lead. He considers one of the most popular and apparently compelling arguments for a young earth based upon measurements of the decay of the earth's magnetic field and shows how the argument fails by not considering data over a wide enough time range. Finally he considers arguments from the absence of meteorites and tektites in the sedimentary rock record, nickel content of the crust, and sediment volumes, and shows in each case how the supposedly unanswerable argument for a young earth can be readily answered.

Young's refutation of the young-earth advocates is total and unyielding. "I must conclude that the creationist, flood catastrophists are, for some reason, unwilling to read the totality of the available geological evidence," he writes in one place. Or again, "These so-called scientific evidences are based on incomplete information, wishful thinking, ignorance of real geological situations, selective use of data to support the favored hypothesis, and faulty reasoning."

Apologetically Young is concerned because "creationism and flood geology have put a serious roadblock in the way of unbelieving scientists." He sees no necessary conflict between acceptance of an aged earth and of the infallibility and inerrancy of Scripture. His own resolution of the issue is by way of the day-age hypothesis and an advocacy of progressive creation.

Young's own theological commitments become evident when he argues at some length in the final chapter that "the question of the length of the days of Genesis 1 must be decided by the text of Scripture and the analogy of Scripture. It cannot be decided by information from nature." Or again he states that hypotheses that are interpretations of Scripture, such as the day-age hypothesis, are "independent of the facts of nature." In view of the fact that for seventeen hundred years people believed the proper biblical interpretation was for a young earth, and that it was only after scientific information was supplied that this interpretation was gradually abandoned, it seems unduly sophisticated to attempt an argument that would make our interpretations of Scripture independent of our scientific understanding. It seems perhaps more realistic to admit that we do not know how to interpret in detail some of the Scriptural passages (e.g., Psalm 93:1) and that legitimate application of scientific understanding can help guide us in that scriptural interpretation. The assumption that all scriptural questions can be answered from within Scripture alone seems unduly restrictive. This is not a case of "forcing" interpretations on Scripture as Young implies, but rather an application of his own belief in the unity of God's revelation in the world and the Bible. Also the assumption that it is proper to believe that science and biblical interpretation of Genesis 1, for example, must be *harmonized*, is in itself an assumption that is not essential for the acceptance of an inspired, authoritative Word, as is illustrated to some extent by the "framework hypothesis."

Young's contribution in this book is a critical one for the conservative Christian community today. The realization that an authentic defense of faith cannot be based upon a rejection of authentic science is absolutely crucial. The book deserves to be in every pastor's study, every church library, and every Christian's bookshelf.

Finally, however, I cannot avoid the personal reflection that "progressive creation" appears to me to be an unstable waystation. Young *knows* the details of authentic geological science, and he is convinced that "creationists" are unjustified in their non-geological interpretation of Scripture. At the same time, he is convinced that a non-biological interpretation of human origins is the only consistent view compatible with Scripture. Isn't it possible that a thoroughgoing knowledge of authentic biological science might lead someone else to a different conclusion, even to the conclusion that evolutionary origins for human beings might be considered compatible with the scriptural revelation and quite unrelated to anti-Christian evolutionism?

Reviewed by Richard H. Bube, Chairman and Professor, Department of Materials Science and Engineering, Stanford University, Stanford, California 94305.

This review was originally published in The Reformed Journal, *October 1982.*

COSMOS AND CREATOR by Stanley L. Jaki, Scottish Academic Press, Edinburgh, 1980, 168 pp. (paperback)

What role did the Christian doctrine of creation play in the birth and rise of modern science? What basic presuppositions, derivable from Christianity make scientific work possible? As modern science reveals the universe to be a cosmos and not a chaos, what role does the concept of beauty play in the physical sciences? Is our modern understanding of the origin and evolution of the universe devoid of all meaning and purpose? Does the universe have a necessary and exclusive character that can be derived in *a priori* fashion so that eventually all scientific truth will be known, i.e., does scientific truth have a closed rather than an open-ended structure? Can a Christian perspective help to provide a balanced approach to the renewed interest in mankind's search for extra-terrestrial life?

These are some of the significant questions that Stanley L. Jaki explores in his new book, *Cosmos and Creator*, which brings together and unifies the results of Dr. Jaki's extensive scholarship in the history and philosophy of science. The book must be read in full to appreciate the validity and completeness of Jaki's arguments with respect to the dependence of science on Christian presuppositions and the fruitfulness of such interactions. *Cosmos and Creator* is highly recommended to all interested in the constructive relationships between the Christian faith and science.

Why did scientific effort die out in many ancient cultures after undergoing a promising beginning? Jaki considers that question as central to understanding the origins of modern science. He considers the insight of Needham with respect to Chinese culture's failure to develop a self-sustaining scientific outlook as quite suggestive: "It was not that there was no order in Nature for the Chinese, but rather that it was not an order sustained by a rational personal being, and hence there was no conviction that rational personal beings would be able to spell out in their lesser earthly languages the divine code of laws which he had decreed aforetime."[1] As Jaki points out:

> . . . It was only within Christianity as a social matrix, that there arose the broadly shared conviction that existence, cosmic and human, was not a trap, precisely because the universe could be viewed as a home once Creator and creation were in full view.[2]

What must we assume about the physical universe to make scientific exploration of it possible? To quote Jaki:

> First, the material entities observed by science must be real, that is, existing independently of the observer. . . . Second, the material entities must have a coherent rationality. They must be governed by laws which can be formulated in a quantitative framework, and they must have a validity which transcends the limits of any particular time and location. Third, those entities, because they are governed by consistent laws, must form a coherent whole, that is, must be subject to a consistent interaction. . . . Fourth, the form in which that coherent wholeness or universe does exist, cannot be considered, partly in view of Gödel's theorem, a necessary form of existence. It is only one among countless others that are conceivable. As to the question why such a universe does in fact exist, science has no answer. It cannot even answer the far less deep question whether the duration of that world is infinite or not.[3]

And as Jaki forcefully points out, these presuppositions which envision the universe as a unified whole follow naturally from the Christian dogma of creation.

As one acquires a better comprehension of modern concepts of the universe one cannot but be impressed by the great unity that has been found in the variety of nature; i.e., our modern view of physical reality is truly beautiful in the sense defined by Coleridge.[4] Jaki first points out that the very word *cosmos* implies beauty "as coined by the Greeks of old. For them it stood for the universe as the most encompassing form of beauty. Of course they had spoken of the world as cosmos long before they had begun its scientific study. But they did not feel that an injustice was done to the colorful beauty of heaven and earth as they discerned colorless, abstract, that is, scientific features in it."[5] These features were geometrical and mathematical and throughout the history of science, geometry and mathematics have become essential tools of the scientist in discovering beauty in nature. Jaki points out that a great work of Greek art, the Parthenon, is beautiful because of the subtleness of its geometric design.

> No different is the case with the beauty of pyramids, suspension bridges, and airplanes. All appear beautiful because they all embody in various ways proportion and symmetry which transpire through almost all propositions of geometry.[6]

What does modern science say about the universe: its origins, physical character, ultimate meaningfulness, and the possibility of its structure being necessary and derivable from *a priori* postulates so that scientific truth will eventually form a closed system? After an extensive and beautiful summary of our present understanding of the universe's origins and evolution Jaki addresses these questions from the standpoint of science, philosophy, and theology.

A last question that the book tackles is the current great interest in the search for extraterrestrial intelligence (ETI), which is probably due in part to the crusading zeal of popularizers of scientism like Carl Sagan. Jaki addresses this question with realism and wisdom:

> A theist, and only a theist, can therefore look forward with confidence to an eventual encounter with intellects from other solar systems, because the encounter will be between two sides, both of which, though possibly in a different degree, will know something of a universal brotherhood based on common dependence on the Creator. . . . Only a theist, for whom intellects are a special creation of God, can look at the question of ETI as a truly open question which cannot be prejudged scientifically. Clearly, no one can prescribe to God to create intellects everywhere or to limit His power to do so.[7]

[1] p. 138.
[2] pp. 138–139.
[3] pp. 54–55.
[4] Jacob Bronowski, *Science and Human Values*, Harper & Row, New York, 1965, p. 16.
[5] p. 27.
[6] pp. 27–28.
[7] pp. 122–125.

Reviewed by Jim Neidhardt, Physics Department, New Jersey Institute of Technology, Newark, New Jersey.

THEOLOGY ENCOUNTERS REVOLUTION by J. Andrew Kirk, Downers Grove: Inter-Varsity Press, 1980

Revolution has always been a matter of vital religious concern. J. Andrew Kirk, the Director of St. Paul's Institute for Christian Mission in London and formerly a theological educator in Argentina for ten years, explores a maze of recent theologies of revolution. As he analyzes the hermeneutical orientations in contemporary political theology, Kirk assembles the framework for a biblical outlook on revolution.

The Christian message of salvation proclaims liberation from sin and the effects of sin that enslave humanity. But in the setting of today's turbulent world how can we contextualize this message which was received some 2,000 years ago? This is the question that is addressed in an illuminating manner by Kirk's *Theology Encounters Revolution.*

Before reading very far, one surmises that the author resonates with the prophetic tone of revolutionary theology. Kirk defines revolution in terms which prove conducive to a biblical application. Revolution is "the arrival of a qualitatively new factor in human history which challenges the future direction of a people who already possess a long tradition from the past" (p. 19). Contrary to those theologies which embrace ideology or praxis as their ultimate concern, Kirk's agenda involves the promotion of a theological revolution in which "Christians manage to bring together in theory and practice the biblical understanding of man and contemporary insights into the historical forces which have shaped his present society" (p. 72).

Certain recurring ideas surface from Kirk's survey. All of the theologians concur in asserting that theological reflection must be forged out of the concrete situation of social involvement. No longer may the church blunt its witness by sponsoring the method of academic detachment that is characteristic of Western philosophy and ecclesiastical dogmatism. Instead theology will lead the way in proclaiming a gospel primarily addressed to the poor and oppressed, thus reclaiming the church's heritage as a minority group in society. By basing its message and action upon an ideology of resistance to the powers that be, the church will draw upon its praxis as the new hermeneutical key for interpreting and applying the Bible in a fashion not chained to the vested interests of the existing order.

Theology Encounters Revolution implies that the theological affirmation of human ability to change history in the direction of the kingdom of God is "pure speculation" that is just as untenable as Marx's "iron laws of history" (p. 129). Too often the theologies of revolution acquiesce in the legitimation of violence, says Kirk, by transposing the logic of the just war theory into an argument for the just revolt. After carefully refuting the just war theory, Kirk argues that real justice, equality and reconciliation will be achieved only when Christians shape their political ideals and action according to the norm of the new age of Christ's resurrection life. This means opting for non-violence on the basis that in Christ God transformed human existence, imparting the power and reality of a new order through the resurrection. Christians still live in expectation of the consummation of the new creation, but they recognize that the future of God intends the replacing of old structures with new ones. This hope "influences every ethical problem facing the church, from the authority of the state to its attitude toward the poor, and makes radical demands for a wholly new life-style" (p. 176).

Theology Encounters Revolution presents a solidly reasoned theological argument for radical changes in our methods of theological reflection. We are shown that the theologians of revolution are correct in contending that theology needs to emerge out of the church's concrete struggle with evil in the world. Kirk's summons to a relevant hermeneutic may render us uncomfortable, but it is the discomfort that comes from an authentic confrontation with the gospel. Indeed if the church is to embody a new factor in history and project a genuine outlook on revolution, Christ's disciples will above all exposit the Bible "from the praxis of the cross and resurrection" (p. 183).

Reviewed by Eric Newberg, 275 Robin Rd., Hillsborough, California 94010.

THE CHALLENGE OF MARXISM: A CHRISTIAN RESPONSE by Klaus Bockmuehl, Downers Grove: Inter-Varsity Press, 1980.

Beginning with the assumption that Christianity and Marxism constitute rival world views, Klaus Bockmuehl casts his comparative study in an apologetic, yet not arrogant mold. The purpose of *The Challenge of Marxism* is to induce a confrontation in which Christians will honestly and constructively face up to the intellectual gauntlet thrown down by Marxism. As the author carefully appraises the Marxist perspective on religion, ethics, and human transformation, he self-critically points to weaknesses within the church that hinder her from fulfilling our Lord's commission.

Even though the most significant conflict between Marxism and Christianity pertains to the genesis of human transformation, Bockmuehl claims that next in importance is Marx's atheism. The premise of atheism logically proceeds to a materialistic conception of history, a relativistic system of ethics, and the self elevation of humankind as its own ultimate concern. Bockmuehl advises Christians to refute this web of false claims stemming from the Marxist criticism of religion by seeking "... God's healing presence in our personal and social lives" (p. 81).

Indeed the potency of Marxism is due to the contrast between its apparent compassion for suffering, oppressed humanity and the alleged neglect of Christians. Bockmuehl is wise in arguing that the most convincing argument for Christianity will be for Christians to make the reality of Jesus Christ visible in the cause of bettering humanity (p. 80).

The author correctly admonishes Christians that cooperation with Marxists is beset with dangers, particularly the danger of accommodating the truth of the gospel. Bockmuehl concludes that Marxism demands that Christians respond to

human suffering with a social ethics which not only addresses the concrete realities of life, but also maintains an inner consistency between the kingdom of God and the missionary aim of the church.

Lastly, Bockmuehl considers the concept of the New Man in Marxism. He acknowledges that the Marxist hope of changing human nature by means of changing the social structure is a "splendid ideal, but it will not be realized by human means alone" (p. 152). At its center Marxism is flawed by fundamental self-contradiction, which is ". . . the fact that a materialistic and Darwinist concept of the genesis and development of the world cannot be reconciled with the demand for brotherliness and solidarity" (p. 153). In short *The Challenge of Marxism* concludes that the liberation from the deep-seated egotism of original sin can be secured only through the birth of a new person by faith in Jesus Christ. When this rebirth transforms human relationships, then the renewal of society is a real possibility.

The strength of Bockmuehl's critical appraisal of Marxism is his balanced appreciation of the Marxist vision of the new humanity, which he allows to honestly critique the church and inspire a Christian response. Two minor defects of the book are the author's precarious identification of the church with the kingdom of God (p. 115) and his inadequate clarification of the relationship of creation and kingdom ethics in the biblical perspective (p. 119). Nevertheless *The Challenge of Marxism* does an effective job of unmasking the presuppositions of Marxism and calling Christians back to take responsibility for society.

Reviewed by Eric Newberg, 275 Robin Rd., Hillsborough, California 94010.

GOD'S PEOPLE IN GOD'S WORLD by John Gladwin, Leicester, England: Inter-Varsity Press, 1979

The famous revivalist, Dwight L. Moody, once declared, "God has given me a lifeboat and said to me, 'Moody, save all you can.' " John Gladwin, the current Director of the Shaftesbury Project, presents a perspective wholly different from Moody's often quoted remark. Gladwin's *God's People in God's World* rightly challenges the unfortunate propensity within evangelical Protestantism to overshadow the social implications of the gospel by stressing individualistic evangelism.

Gladwin argues that ". . . we cannot present the gospel simply as a matter of the rescue of the few out of the wicked and demon-controlled world" (p. 49). He constructs a theology of social involvement upon the foundation of Christ's incarnation and atonement. The basic theme of *God's People in God's World* is that God's reconciling action in Christ ". . . breaks into all of our life, transforming our values and concerns, and so our relationships and actions" (pp. 103–104). The gospel demands direct social involvement because the incarnation has bestowed dignity upon human life and because at the cross Jesus Christ has overcome the corporate power of evil. Salvation is more than "the removal of individual sins through forgiveness. It is fundamentally the salvation of the world from the powers that held it captive" (p. 114).

A thread of paradox is weaved throughout this author's understanding of the kingdom of God. On one level the Christian is a citizen in the world, submitting to the requirements of citizenship and working to preserve order within the present political realities. Beyond this level the Christian challenges the corruption of the prevailing political system by giving witness to new values and a transformed pattern of life which arises from a relationship to Christ. This paradox means that as Christians we live in light of the kingdom within the confines of the created order, facing squarely the dilemma of being in but not of the world.

Our social witness is complicated by the fact that social institutions are not neutral, because the fabric of order created by God has been marred by the fall. Gladwin wisely observes that since corruption has seeped into the power structure and cultural environment, the Christian's political involvement must be provisional. We should not expect transformation from any political program, since only Christ's suffering is redemptive. It is an error to baptize any particular political theory, party, or institution by calling it "Christian." Our commitment to work for God's justice is predicated upon a refusal to ascribe absolute value to any form of social and cultural life.

Gladwin's careful theologizing provides us with a positive corrective to the zealous politics of certain elements within the evangelical community. On one hand his hinting at the gnostic overtones within many separationist Christian schools that strive to avoid social involvement constitutes a timely admonition. On the other hand Gladwin's caution against marrying Christian faith to the norms of culture points to a current danger facing evangelicalism. When Christianity is uncritically identified with the established values of the patriarchal family, growth economics, the American dream, racist policies in South Africa, and Marxist visions in the Third World, the cutting edge of the gospel is blunted by conformity. A careful reading of Gladwin's book convinces me that if Christians were to follow the biblical guidelines he espouses, our social involvement would call attention to the love and care of God for all of life.

Reviewed by Eric Newberg, 275 Robin Rd., Hillsborough, California 94010

FAITH AND ITS COUNTERFEITS by Donald G. Bloesch. Inter-Varsity Press, 1981. 123 pp.

The purpose of this book is to describe "true religion," i.e., biblical Christianity, as opposed to six counterfeits: legalism, formalism, humanitarianism, enthusiasm, eclecticism, and heroism. In every case the author shows how living Christocentric faith is God's true religion, while the "isms" are found wanting.

The style of the book is pleasing. In each chapter there are appropriate quotations from Christian leaders; these quotations alone, organized as they are, are worth the price of the book.

Those who look for a technical work on false religion will not be satisfied with Bloesch's treatment. But those who want a direct and almost devotional treatment of the theme with copious Scripture references and moving illustrations from church history, will enjoy reading and sharing this volume.

Reviewed by Joseph M. Martin, Professor of Missions, Edward Lane Bible Institute, Brazil, South America.

CONTEMPORARY PHILOSOPHY OF RELIGION

by Stephen M. Cahn and David Shatz, ed. Oxford 1982, paperback 310 pp, $8.95

Twenty-one articles: all reprints except two! The advertisement claims that the authors are "many of the most distinguished philosophers of religion," but unfortunately fails to indicate any professional fields or positions. The editors fail to give any basis for their selection, but note without any specific information that "some are sympathetic to religion, others sharply critical." The first part (eight articles) concerns "The Attributes of God." Instead of emphasizing the current aspects of major questions such as the existence of God and the language of religious discourse, the editors present minor points such as a neglected argument with respect to Swinburne's theodicy, and a novel questioning of God's moral obligation to make human existence better. Much of the discussion involves formulating definitions (straw men) to meet foregone conclusions, e.g., distinguishing almighty and omnipotent so as to conclude that God is almighty, but not omnipotent. The editors note that the purpose of their selection is to "illustrate the challenge of providing a coherent, convincing account of the nature of God."

Scientists might expect Part 2 on "God and Human Experience" (seven articles) to be more relevant to their interests, but there is no mention at all of the perennial problem of the philosophy of science and the philosophy of religion. The nearest approach is the article on "Miracles," which concludes, "To call an event a miracle is to claim that it is the result of supernatural intervention into the natural course of events"—the usual dictionary definition. These essays, which are supposed to "highlight ways in which religious belief can affect one's understanding of human experience," merely lead to the editors' conclusion that they "make clear (?) how believers and nonbelievers differ in their interpretations of human experience"—hardly new.

The third part (six essays) deals with "Faith, Rationality, and World Religions." The article on "Pascal's Wager" is typical of the argumentation. The author attempts to prove that Pascal failed to persuade the Skeptics; accordingly, he reformulates it "creatively." Actually Pascal had no such lofty ambition; he was merely trying to entice libertine gamblers to take a chance—the bet was by no means a sure thing. The value of such a collection for scientists is at best doubtful—even for professional philosophers it is problematic.

Reviewed by Raymond J. Seeger (NSF retired), Bethesda, Maryland.

EMERGING ISSUES IN RELIGIOUS EDUCATION

by Gloria Durka and Joanmarie Smith, ed., NY: Paulist, 1976. Pages 211 plus v. $7.95 pb.

Emerging Issues is composed of sixteen essays that attempt to create a number of models for conceptualizing the challenges and potentially productive strategies facing religious education today. It is a treatment of theory as well as practice. Durka is director of the Institute for the Study of Religious Education and Service at Boston College. Her co-editor chairs the Department of Philosophy at St. Josephs College in Brooklyn. They have collaborated previously in the publication of several professional journal articles and on a book entitled *Modeling God: Religious Education for Tomorrow.*

A number of chapters are especially good, even profound, and certainly of lasting value. Richard P. McBrien wrote the chapter on a systematic exploration of ethics, and James W. Fowler of Harvard is responsible for the final essay on "Faith Development Theory and the Aims of Religious Socialization." These two are likely the most seminal, scholarly, and permanent. McBrien treats rather thoroughly definition in ethics, grounding ethical principles, and connecting ethical thinking with religion and theology. He handles the lack of coherence and unity in the field of religious ethics and the special problems with religious ethics in Catholicism. He did not have access to Langdon Gilkey's *Naming the Whirlwind* and so does not have its assistance in the problem of religious language. The hinges of the issue for McBrien are a sound awareness of sin, sacramental life, and divine grace as the power and freedom to new possibilities.

Fowler's chapter is a delight. He locates the problem of religious socialization in the human need for standards by which members of a tradition can evaluate their goals and norms. He presents six emerging structures of faith development and suggests that they are both descriptive and normative. While these norms are presented as universally valid he also suggests that they may be the source of reform and renewal within the individual traditions. Leaning heavily upon the work in liturgy and education of John Westerhoff, Fowler contends that refocusing the concerns of religious education on religious socialization has deepened and broadened our understanding of the ways selves form and are formed religiously. Growth, learning, and development are closely connected. The crucial insights that constitute the underpinnings of the enterprise of education are anthropological and psychological. Taking these seriously we can design intentional religious socialization. Central to this intentionality is the function of faith as transmitted to a child.

The book really ought to get more attention than it has so far, so this is a fine opportunity to call attention to it once again. It presents a brief but highly useful bibliography, very articulate notes with each chapter, but to my great chagrin, no index.

Reviewed by Dr. J. Harold Ellens, Executive Director, CAPS International, Farmington Hills, Michigan 48018.

THE LANGUAGE OF CANAAN AND THE GRAMMAR OF FEMINISM, by Vernard Eller, William B. Eerdmans Publishing Company, Grand Rapids, Michigan, 1982, xiv & 56 pages. Paperback.

In this little book the author's only concern is to explicate, with the help of Wittgenstein's language levels, biblical anthropology as enunciated primarily in the creation stories of Genesis. His thesis is twofold. First that biblical authors perceived God to be Father, Bridegroom, or King always in relationship to the people whom they perceived to be Children, Bride, or Subject. The masculinity of God was never the magnification of this or that male or even of the male role. Rather God was seen to be masculine only in relationship to all of the people, male and female, who were perceived to be feminine.

Secondly, the human race was created not atomistically as males or females but molecularly as man who is both male and female. The image of God is not male or female alone no more than man is male alone. God created man male and female. The author of Genesis wrote, "So God created man in his own image, in the image of God created he him; male and female created he them." (Gen. 1:27)

To correct what some see as the sexist language of the bible is to discard the anthropology of the bible. According to that anthropology man and woman are created in relationship to each other and only as such image God. To call God arbitrarily Mother is at worst to eliminate and at best to reformulate all of the rich imagery in Hosea and Ephesians which portrays God as the bridegroom who loves, forgives, suffers, and dies for his bride who is both male and female.

The brevity of Eller's book is both its weakness and its strength. He foresaw his views on feminism would be prejudged and points out that this is not the issue. But surely feminists will ask legitimately why male theologians never raised the question of biblical anthropology against a male ministry based in part on Paul the Apostle's prohibition of women speaking in Church (I Cor. 14:35). Also if that anthropology is the pattern according to which we humans have been created, divorce must surely be as serious a violation as feminist rhetoric. Jesus said as much (Mt. 19:4 ff). Eller adverts to the point but moves on quickly. The Kinsey research on homosexuality would appear to be as serious a challenge to the language of Canaan as the grammar of feminism. And finally a discussion of biblical anthropology must have something to say about Jesus Christ in whom we live and move and have our being.

Eller's little book doesn't enlighten us on everything but only on one point. The clarity, precision, and good humor with which he writes all combine to make the reading of his book enjoyable and enlightening.

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

THE RELIGIOUS RIGHT AND CHRISTIAN FAITH by Gabriel Fackre. Grand Rapids, Michigan: William B. Eerdmans Publishing Co., 1982, 121 pp. cloth, $8.95.

"Basic theological assumptions underlie the Religious Right's political positions," writes Gabriel Fackre, who is well qualified to examine the points of view as Abbott Professor of Christian Theology of Andover-Newton Theological School. The Religious Right is the Moral Majority, and a wider constituency within the "video church" and similar movements that seek to register Christian votes, alter science textbooks in public school, oppose ratification of the Equal Rights Amendment to the U.S. Constitution and liberalized access to abortion, support the development of nuclear power and the restoration of capital punishment, and map events in the Middle East against an apocalyptic reading of biblical prophecy." The Religious Right's chief opponent is "secular humanism" which Fackre defines as "an anthropocentrism which makes finite human judgment, derived from secular experience, definitive of ultimate truth, and as such sets humanity in the place of deity."

After listing political leaders and para-political organizers and organizations, the author mentions single-issue movements and soft and hard radicals as members of the Religious Right. These indict defense and foreign policy, sexual immorality, and organize for removal of a resistance to any government restraint on making a profit and exploiting natural resources, using weapons, police power, executing criminals. Mainstream churches receive a sharp attack.

The Religious Right descends from Calvin's Geneva and New England Puritanism. The sources and norms of authority are in Scripture and in a "functional *perspective* drawn from human experience, routed through one segment of church life and tradition, and making selective use of Scripture to validate its secular *source* and sectarian *resource*." Much familiar commendation is given to the Religious Right in its correct views, so I shall concentrate on the objections Fackre has to Rightist ideas and views.

Evolution makes inordinate claims but Christians should relate the best scientific thought "to the ancient themes of Christian doctrine." Public school teachers should not teach theology; the Department of Interior's environmental programs are based on a wrong view of Genesis; women are made subservient to man in the home, world, and church; the Fall means we are all sinners and no one group should be so confident it is to wield power. Its understanding of Scripture leads the Right to "accept uncritically many of the views and practices of ancient Israel." The eye-for-an-eye ethic persists

in "many of its attitudes ranging from criminal justice to war-making." "The functional elevation of America to the place of a chosen nation adds to the Christian story a chapter which is not in the Book."

"Two features of the Religious Right aggravate the dangers of the sect spirit." One is the independent churches and the video independent preachers not related to the larger Christian community. The other is status in church membership being determined by political opinions. In many congregations, "the vesting of nearly absolute power in the person and office of the pastor is as wrong within the church as it is in the world of the industrial baron and political autocrat."

In addition to the need for new birth for salvation there should be awareness of need for growth in grace and awareness of sin even after conversion. "A 'give to get' motif runs through the appeals of many television preachers." "The Religious Right's contemporary flirtation with salvation by works is an act of faithlessness to its own Reformation heritage and another example of the intrusion of worldliness into its professions of Christian piety."

"When the apocalyptic of the Religious Right attempts to identify events in history as eschatology, a form of secular forecasting is substituted for the eschatology of a transformed creation, which puts an end to the secular realm as such." So its confidence in its interpretations "breeds the arrogance and intolerance which mark many single issue groups whose constituencies are members of the Religious Right."

The quality of the rigorous righteousness of God is stressed but little room is left for redemptive love. Sometimes a political opponent is identified with Satan.

In his conclusion Fackre writes, "In every doctrinal area we have seen loyalty to important aspects of classical Christian conviction. At the same time, each of the chapters of the Christian story has told of basis distortions. . . ."

Reviewed by Russell L. Mixter, Professor Emeritus of Zoology, Wheaton College, Wheaton, Illinois.

KNOW YOUR CHRISTIAN LIFE by Sinclair B. Ferguson, Downers Grove, Illinois: Intervarsity Press, 1981, 179 pp., $5.95.

This book is written to present Christian doctrine as the basis for Christian living. It is based upon the assumption that biblical teaching precedes and provides the basis for experience. A maxim expresses the thought well: first the creed and then the deed.

With this perspective, the studies included in this volume are "unashamedly doctrinal." They are intended to reveal the greatness of salvation and prevent "that common inferiority-complex Christian mentality which thinks that the experience of being a Christian is a very mundane and ordinary thing."

Biblical topics expounded include sin, grace, salvation, election, perseverance, and death. Doctrinally the reader is carried from justification to glorification with discussion of crucial themes along the way.

The writing is lucid, the coverage adequate, and the theology conservative. While there are pertinent and interesting quotes throughout, there are few illustrations. For those interested in a theology of the Christian life in a compact format, this book will serve the purpose.

Sinclair Ferguson, the author, is a minister in Scotland. He received a doctorate from the University of Aberdeen. J. I. Packer of Regent College wrote the foreword.

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

FACING UP TO NUCLEAR POWER, RISKS AND POTENTIALITIES OF THE LARGE-SCALE USE OF NUCLEAR ENERGY by John Francis and Paul Albrecht, ed. Philadelphia: Westminister, 1976. Pages 244 plus x. $3.95.

The time has come to go back and take another look at one of the seminal books in research regarding the theology and ethics of the dominating issue of the present age: nuclear power. Francis and Albrecht have given us the opportunity to do so. In 1974 the World Council of Churches Conference on "Science and Technology for Human Development" in Bucharest posed the question around which this symposium book is developed. It starts out with a quote attributed to Rosenstock-Huessy, "Every new invention expands space, shortens time, and destroys community." That sets the tone for this work. It is none-the-less a surprisingly objective and considered piece, mainly devoid of the fuzzy emotionality and ethereal triumphalism churchmen usually produce when they attack an issue like nuclear power or most of the other things that really count in this world. Perhaps the moderation and lack of obscene grandiosity is due to the fact that most of the contributors are not clergymen but professionals in the fields of the exact and social sciences. Seven are physicists or work in related fields. Two are theologians. One is a church administrator and research person. One is an economist. One is occupied with energy. Moreover, it is good fortune that the two theologians are the theological ethicist, Roger Shinn, whose no-nonsense work in Christian ethics, sometimes with the tough fighter Everett Parker (Tangled World Video Series), has impressed the world of concerned scholarship for two decades or more; and Strasbourg University Dogmatics professor, Gerard Siegwalt.

The book treats The Nuclear Option, Alternative Energy Sources, Social Ethics of Nuclear Power, Ecumenical Hearing on Nuclear Energy, and A Step Forward. This work is not a diatribe against nuclear weapons. It does not even focus primarily upon them. It treats the issue of the relative desirability of nuclear energy. . . . It sets forth the potential

benefits and the risks of the large-scale use of nuclear energy in a clear and concise way. The team of expert authors is from international sources and represent the perspective of the international community. The book treats the economic, ecological, physical, ethical, and political issues. It includes the famous and controversial report on the "Ecumenical Hearing on Nuclear Energy" as the jumping off point for the document. The book concludes that there are fantastic benefits to be reaped but that there are such high risks that they may well prove to be unacceptable.

This book *must* be read by all thoughtful and concerned persons everywhere. It does not give the final answers but it surely helped me get the questions straight.

The book has no index or bibliography, an unforgivable sin, but it has an extensive and most helpful glossary. It concludes with a nearly too poignant observation.

> The question governing the world of tomorrow may continue to be the one we have in mind today, that is "Who guards the guardians?" (*Quis custodiet ipsos custodes?*). In all humility and in a spirit of true repentance, we cannot escape the uncertainty of our response.
>
> "Who sees with equal eye, as God of all,
> A hero perish, or a sparrow fall,
> Atoms or systems into ruin hurled,
> And now a bubble burst, and now a world."
> Alexander Pope, *An Essay on Man*.

Reviewed by Dr. J. Harold Ellens, Executive Director, CAPS International, Farmington Hills, Michigan 48018.

THE CREATOR IN THE CLASSROOM by Norman L. Geisler, in collaboration with A. F. Brooke, II and Mark J. Keough, Mott Media, 1982, x + 242 pp.

The Arkansas creation-science trial is obviously a matter of considerable interest to readers of this journal. Geisler, an ASA member, who was a religious/philosophical witness for the State (the losing side) has produced a very helpful book about this trial. It makes no pretense at being a scholarly book and does not have extensive footnotes and bibliography. Neither is the book an example of dispassionate, unbiased reporting. Nonetheless, it is a good book, well-written and timely, especially valuable because of its documentary material. Included are: texts of the law in question; the text of the Louisiana law presently in litigation; synopses of the testimony of all religious, philosophical and scientific witnesses; verbatim extracts from the legal briefs of both sides; a copy of Judge Overton's ruling (he declared the law requiring "balanced treatment," whenever origins was a topic of study in the public schools of Arkansas, to be unconstitutional); and excerpts from print coverage of the trial. Having established that this is a valuable book, several issues need to be raised.

Let us consider the question of whether "We saw the Creator go to court and 'lose' " (p. x). In the first place, Geisler himself doesn't seem certain of this. "Few creationists were ultimately disappointed that the decision was not appealed" (p. 194). Secondly, a lot of other Evangelicals are not convinced that the Arkansas decision was bad, principally because of the wording of Act 590. To discuss that matter, it is first necessary to look at the law itself:

> Creation-science includes the scientific evidences and related inferences that indicate: (1) Sudden creation of the universe, energy, and life from nothing; (2) The insufficiency of mutation and natural selection in bringing about development of all living kinds from a single organism; (3) Changes only within fixed limits of originally created kinds of plants and animals; (4) Separate ancestry for man and apes; (5) Explanation of the earth's geology by catastrophism, including the occurrence of a worldwide flood; and (6) A relatively recent inception of the earth and living kinds. . . . Evolution-science includes the scientific evidences and related inferences that indicate: (1) Emergence by naturalistic processes of the universe from disordered matter and emergence of life from nonlife; (2) The sufficiency of mutation and natural selection in bringing about the development of present living kinds from simple earlier kinds; (3) Emergence by mutation and natural selection of present living kinds from simple earlier kinds; (4) Emergence of man from a common ancestor with apes; (5) Explanation of the earth's geology and the evolutionary sequence by uniformitarianism; (6) An inception several billion years ago of the earth and somewhat later of life. (Act 590, as quoted on pp. 5–6 of Geisler)

In a presentation to the August, 1982 ASA meeting, Geisler pointed out that the two models, as presented in the law, are composed of mutually exclusive alternatives, and one could choose sometimes an alternative from the creation-science model and sometimes one from the evolution-science model. Geisler personally accepts the last point of the evolution-science model. Furthermore, the alternatives are such that there are no other possibilities (either we have a common ancestry with apes or we don't). However, the Act itself was not as open-minded as Geisler—it reads: ". . . balanced treatment to creation-science and to evolution-science. Balanced treatment to these two models shall be given . . ." (p. 4 of *The Creator in the Courtroom*). This language seems to treat the sets of mutually exclusive alternatives as two indivisible units. So does: "Treatment of either evolution-science or creation-science shall be limited to scientific evidences for each model . . ." (p. 5) and so does: "This Act . . . permits some lectures to present evolution-science and other lectures to present creation-science." (p. 6) True, there may be some recognition of the possibility of mixing models. The law would have prohibited discrimination against a student (but not a teacher) who ". . . accepts or rejects either model in whole or in part." (p. 5) It also spoke of ". . . alternative scientific models of origins . . ." (p. 7) but then went on to mention only one of them, creation-science, which it had previously defined as above.

It appeared to me, to most or all of the reporters covering the trial, to Judge Overton, and to the defense attorneys (Geisler's side) that "The purpose of Act 590 is to ensure a neutral presentation of *two* scientific models of origins . . . its purpose is to assure that if *either model* of origins is discussed in the public school classroom, the *alternative model* will also be taught," (p. 47 of Geisler, ". . . taken verbatim from Defense Attorney's pretrial document . . . ," emphasis added). There are Bible-believing Christians, including Norman Geisler, who do not fully accept either of these models as they are delineated in Act 590, and many of them will have difficulty supporting similar laws in the future.

Another objection to Act 590 was that it would force

teachers who are opposed to a belief in creation to teach it anyway. (Presumably most teachers who are on the other side are already teaching some version of evolution.) Geisler deals with that objection, and finds it invalid.

The Creator in the Courtroom considers media coverage. It should have come as no surprise to anyone that most daily newspapers sensationalized and distorted the happenings at the trial. It came as a surprise to me that apparently *Moody Monthly* (which did not send a reporter) also badly mangled coverage, if Geisler is correct. Also, he points out that neither *Christianity Today* nor *Eternity* had representatives at the trial.

Another matter covered by Geisler is the question of the competence of the state's attorneys, and the role/non-role of Creation Science Legal Defense Fund attorneys Wendell Bird and John Whitehead. There is interesting and controversial material here for those interested—little analysis, but documents written by both sides are presented.

Since we are a Scientific Affiliation, something should be said about the science testimony. My previous knowledge of this came from *Science*, (January 8, 1982, pp. 142–146), "Where is the Science in Creation Science?" which ended by indicating that there wasn't much. In fact, reading only what testimony is quoted in that article, one would conclude that there wasn't any. Reading *The Creator in the Classroom*, it is difficult to believe that the book and the article were about the same trial, possibly because the *Science* article quoted brief, particularly damaging bits of the cross-examination, while Geisler summarized the entire testimonies.

The final, and most important issue I shall consider is the appropriateness of the verdict. Geisler uses pages 24–40, more pages than are used for analysis of any other matter, to deal with this. He begins by giving eight evidences that Overton was biased against creationism. This is followed by ten errors of fact in the ruling, ten logical fallacies committed by Overton, and an analysis of the First Amendment implications. The section concludes by maintaining that Overton's ruling actually establishes, or continues a previous establishment, of Secular Humanism, which is a self-proclaimed religion, whether Overton believes so or not. A related matter is the religious persuasion of the witnesses. Although not all of the state's witnesses were fundamentalists, or even Christians, the *Science* article, the ACLU attorneys, and apparently the Judge made much of the fact that many creationists have arrived at their scientific beliefs because of their religious ones. *The Creator in the Courtroom* points out, using testimony of an ACLU witness, that creationists are not the only persons whose religious beliefs compel them to accept a particular view of origins. Although neither Geisler or myself is a lawyer, (the former apparently would have made a good one) it appears, after reading Geisler's analysis, that the ruling did indeed leave something to be desired. The outcome of the Arkansas case remains of considerable interest.

The Creator in the Courtroom is an interesting, useful, and readable book about an important issue. If a bit sensationalized in spots, and a bit personal in others, it is still hard to imagine a more useful and interesting volume about the case. Even if many ASA members disagree with its principal author about beliefs and/or strategy, we should be gratified that it was written by one of us, and should individually read it.

Reviewed by Martin LaBar, Visiting Professor, Bryan College, Dayton, Tennessee 37321.

GOD IS: A SCIENTIST SHOWS WHY IT MAKES SENSE TO BELIEVE IN GOD by Alan Hayward. Nashville: Thomas Nelson Publishers, 1978, 221 pp. paperback $4.95.

It was Arthur Holly Compton, Nobel Prize winner in physics who wrote, "The argument from design, though trite, has never been adequately refuted." This book gives detailed examples of the argument for the general reader and material that experts in any field of science can appreciate, as well as carefully chosen quotations to emphasize the author's points.

Alan Hayward is Research and Development Adviser with Redwood International Ltd. in England and was principle scientific officer in a government research laboratory. He explodes the myth that there is something . . . "new about a world in which some people believe in a Creator and others do not," mentioning some Greek and Jewish writers who were unbelievers. Modern science has "hardly affected the balance of the arguments" and "has also provided a great many new reasons for belief." He disagrees with both evolutionists and extreme fundamentalists and, after viewing the various Christian views of creation, gives his own successive creation theory, "that God created what Genesis calls the various 'kinds' of living things successively, over a vast period of time, while minor variations occurred naturally within all the 'kinds'."

Evidence from the expanding universe, its running down, microscopic building blocks, energy stored in phosphorus bonds, properties of water, the right sort of sun, distance from it, right size and rotation of earth, its right materials and sea, absence of wrong materials and the right atmosphere all point to a Creator. How life began reveals "that the simplest living cell is an assembled mechanism, an artefact, a created thing." Gaps galore exist in the paleontological record. The riddle of instinct and the miracle of migration suggest a great Power to create them. Marvels of the bombardier beetle, conifer sawfly, daredevil flies on the backs of spiders, and sex are summoned as witnesses to creation, and especially the genius of mankind.

The chapter on "Interlude—Is God Unfair" deals with the problems of doubt, evil, human perversity and free will, and evaluates the theory of determinism. Hayward concludes that God is not behaving unfairly but "on the contrary, it suggests that He is dealing with an extraordinarily difficult problem (to wit, us) in a very profound manner." Evolutionary ethics are discussed. "As Bertrand Russell put it: 'If evolutionary ethics were sound, we ought to be entirely indifferent as to

what the course of evolution may be'." So the author concludes "unless there is a God, life just does not make sense."

Christianity and Judaism are the only religions in the world that can defend themselves by logical argument. The survival of the Jews is evidence of God's work, prophecy proclaims a God who can foretell the future, and the return of Israel and the distress of nations mentioned in Luke 21 have already occurred. And only Christianity, through Christ, has the remedy for sin.

You will profit by reading the detail that supports these topics mentioned.

Reviewed by Russell L. Mixter, Visiting Professor of Biology, Judson College, Elgin, Illinois.

HUMAN SEXUALITY, NEW DIRECTIONS IN AMERICAN CATHOLIC THOUGHT by Anthony Kosnik, et al, NY: Paulist Press, 1977. Pages 322 plus xvi. $8.50.

Sufficient time has now passed for an objective evaluation of the watershed volume in Roman Catholic Theological Ethics, *Human Sexuality*. It is authored by an impressive collection of authorities.

This book deals honestly, openly, and imaginatively with the profound changes that have in fact taken place in the sexual attitudes and practices of todays' society and in the community of the faithful in the Roman Catholic Church itself. These changes have raised serious questions about the adequacy of the traditional formulations for a responsible sexual life presented by the historic Roman Catholic Church. This book is a thorough, balanced, and insightful study, done with the highest quality of scholarship. It was commissioned by the Catholic Theological Society of America. It was anticipated that this book would certainly shape the discussion of sexuality for years to come. The solid biblical hermeneutics and exegesis upon which it is founded, the comprehensive attention it pays to the history of Catholic philosophical theology and canon law, the thorough honestry with which it deals with sound contemporary psychological understanding of humanness, and the passionate pastoral tone with which the material is presented is sufficient grounds for the expectation that it would play a definitive role in giving an emerging wholesome catholic morality a solid basis in science and theology.

Unfortunately, the book has not had that impact and is now virtually ignored. The reason is that it arrived at the apogee of post-Vatican II progress toward openness and revitalization in the Roman Catholic Church. The swift reentrenchment of traditional practice and conservative perspectives in Roman Catholic practice, especially in matters related to sexuality, marriage and the family, celibacy, birth control, abortion, and the like, has rendered the book and its authors suspect. At least three of them endured significant professional jeopardy arising out of issues related to the matter of this book. All of that is a tragedy, less for the authors, and more for the progress of responsible ideas in contemporary Catholicism.

In the biblical study which forms the central material of this book, the authors made a special effort to separate out the revealed and lasting message of Scripture from the culturally conditioned and historically limited matrix of Scripture. Similarly, they have treated Catholic tradition in a solidly historical way, distinguishing constant values from changing historical and cultural influences, which have frequently colored Catholic attitudes. Data from a wide range of empirical scientists and experts is summarized and evaluated. Then the worlds of Scripture, history, and science are brought together in a theological synthesis that depends appropriately upon anthropology and psychology. The hermeneutical techniques or principles employed throughout are clearly stated and adhered to.

This is a refreshing work, remarkably well written, that will gratify professional scholar and interested lay reader, Protestant or Roman Catholic. It is imperative that this book be read by all persons who have any professional or paraprofessional interest in pastoring, mental health, Scripture, church history, ethics, practical theology, and human sexuality. It will survive. It will resurge in its influence, at least in Protestantism. It is a watershed volume, a milestone in the theology of human sexuality.

Reviewed by Dr. J. Harold Ellens, Executive Director, CAPS International, Farmington Hills, Michigan 48018.

LETTERS FROM MY FRIEND TEILHARD DE CHARDIN by Pierre Leroy, New York, Paulist Press, 1980, 216 pp., $6.95.

Teilhard de Chardin! Saint? or Sinner? Among those who know about him, the name conjures up thoughts of deep admiration and respect, of a great synthesizer of science and religion, or else the reaction is the negative image of a deceptive mystic who propounded a pseudo-Christian philosophy without redeeming scientific merit. Few seem to be neutral. Although many find Teilhard hard to understand and his ideas very difficult to grasp, here is a quite readable, very personal insight into the last years of the life of this enigmatic priest-scientist.

This book is a collection of letters that Teilhard wrote to his close friend Pierre Leroy, with whom he had shared Japanese internment in Peking during the war years of 1940–1945. The letters span the time from 1948 to his death in 1955. Leroy includes background material to make the whole a readable story. Originally written in French, this English translation is the work of Mary Lucas, Teilhard's biographer.

In *Letters from my Friend* we gain insight into the life of a man who has influenced the science-faith discussion more than his critics like to admit. We feel something of the inner struggle of one who had a great personal commitment to

Christ and to His Church, as well as a commitment to science. He was fully convinced that both were paths to truth. He was a man with a vision, yet a man on a collision course with tradition. He realized that it is simply impossible to wed an essentially medieval view of the world and of religion with a modern understanding of nature.

His burden stems from his concern that the church take into account the scientific vision of the universe, instead of the rather limited view it was accustomed to. The Church tended to emphasize a rejection of the physical world in the pursuit of the spiritual life, while Teilhard found himself "... dominated by a sort of profound 'feeling' for the organic reality of the world." Thus in his vision of Christianity, as Leroy explains, he saw the "... risen Christ at the center and summit of creation." He sought "... an enlargement of the primacy of Christ to include the 'entire universe'." He saw Christianity as the proper center of human activities.

He held two basic assumptions. To understand man, one must study him in his totality. One cannot study the human race only from a scientific perspective, while ignoring the spiritual dimension and expect to really understand people. Secondly he was convinced of the necessity of an evolutionary approach to the study of man. Although his view of creation was evolutionary, his vision of Christ was Cosmic. He has frequently been misunderstood as holding a view of God that was pantheistic, but the insights of these letters show instead a man of faith concerned that people recognize the greatness of Jesus Christ, and the relevance of Christ in the understanding of reality. He writes, "Never has Christ seemed more real, more personal, or more immense to me." Teilhard's insistence that the appearance of human life on earth was a phenomenon of an entirely different order from that of animals provided a challenge to agnostic evolutionism. The fact that people are capable of reflection marks the advent of what he termed the "noosphere," a level above that of the mere biosphere, which sets apart human beings from the rest of creation.

During much of the time since the experience in China during the war, he was afflicted with a form of nervous depression, which at times made his work very difficult. In these situations we see a very human, yet deeply spiritual side of Teilhard. He writes, "... I pray that God will fortify me from within."

Perhaps hardest to understand was Teilhard's submission to the Church, which he considered submission in a sense to Christ. There are many of us in the ASA who surely can identify with such a conflict. We too have experienced the discord as we try to be loyal to our convictions, Christian as well as scientific. The reader of *Letters to my Friend* may find it hard not to put himself in Teilhard's place in his struggles with his Church, who seemed unwilling to even listen to what he was saying. During his lifetime he was forbidden to publish any of his philosophical works. He mentions someone who had said, "Thinking freely in the Church these days means going underground," to which Teilhard adds, "Come to think of it, that's what I have been doing for thirty years." Apparently during the forties and fifties, the Catholic Church was going through many of the same turmoils that keep evangelicals embroiled today.

The book is partly history, partly science, partly the struggles with a traditional Church of a man with ideas many considered to be far ahead of his time. The book is also intensely personal, even devotional, as the reader gains insight into the life and mind of a man whose ideas are becoming more and more appreciated as time goes on.

The book is certainly to be recommended, especially to those who have some background of understanding of Teilhard's ideas. Although it is not difficult reading, many of the allusions and references would not be comprehendable to one who had no understanding of Teilhard's thinking. Although not a good introduction to Teilhard's concepts, it could be read as an introduction to Teilhard himself. One should certainly begin with the reading of *The Phenomenon of Man*, and perhaps a good evaluation of Teilhard's ideas, such as that by D. Gareth Jones, before attempting this book.

Reviewed by Frank H. Roberts, Chairman, Dept. of Science, Delaware County Christian School, Newtown Square, Pennsylvania 19073.

ASKING QUESTIONS—A CLASSROOM MODEL FOR TEACHING THE BIBLE by D. Bruce Lockerbie. Mott Media, Milford, Michigan 1980, $4.95, 150 pp.

Asking Questions is a book geared for the classroom teacher, who, with little experience, can teach the Bible and make it come alive today. Three basic questions; "What does it say?" "What does it mean?" and "How does this apply to me?" are the keystone to any investigation of Scripture. This format is sure and proven over many years. These three questions take Scripture from the objective to the personal and make it come alive.

D. Bruce Lockerbie, argues what we all should know: that Christ himself, was a master teacher and used techniques every classroom teacher should be using. He follows up with sample lessons that can be used in any circumstance. These lessons, after being taught from the perspective prescribed leave the teacher with a sound technique that can be used again and again.

Lockerbie uses a style that was ingrained into me as a young child. I don't say this condescendingly, because it is a valued way of looking at Scripture that has evangelical flavor and truly personalizes God's message to man. Lockerbie, I think, wants to leave us with that thought, lest we as Christians take our devotions or teaching into the same category as academy. This often has undesirable effects on the person to whom God is trying to speak.

Reviewed by Mike Hoyer, Quinte Christian High School, Belleville, Ontario Canada.

MEN OF SCIENCE, MEN OF GOD by Henry M. Morris, Creation-Life Publishers, San Diego, California, 128 pp.

The author is President of the Institute for Creation Research who gives us this volume "because no book has yet been written collecting the biographical testimonies of the great scientists of the past who could be included among the founding fathers of modern science and who were also men who believed the Bible and the basic doctrines of Christianity." Sixty great scientists of varied denominations who believed in the inspiration and authority of the Bible and creation have their contributions briefly described in the body of the book and their significant accomplishments tabulated in the appendices.

After discussing biblical origins of modern science and that believing scientists "have evaluated the scientific perspective and statements of Scripture in terms of the known data of their own and other scientific fields" and "have personally submitted their hearts and minds to Christ in faith, making a direct empirical test of the promises of His Word," Dr. Morris gives the reason each scientist is honored and his confession of faith. Thirteen portraits are included. (Who was the artist?)

The selection begins with Leonardo da Vinci and ends with Wernher von Braun with representatives from the founders of modern science, the age of Newton, just before and just after Darwin, and the modern period. The author mentions those who defended Ussher's chronology, flood geology, fixity of species, and a recent creation, as well as those who allowed for evolution and the long-age conception of geology.

Four societies interested in creation are mentioned, the Creation Research Society, the American Scientific Affiliation, the Bible-Science Association, and the Institute for Creation Research. The Creation Research Society "is undoubtedly the most significant such group," writes Morris, and the American Scientific Affiliation "is now predominantly composed of theistic evolutionists and progressive creationists, but there are still many members who believe in biblical inerrancy and the authority of Christ and the gospel."

Reviewed by Russell L. Mixter, Professor Emeritus of Zoology, Wheaton College, Wheaton, Illinois.

WHAT IS CREATION SCIENCE? by Henry M. Morris and Gary E. Parker. Creation Life Publishers, Inc., San Diego, CA. 1982, 306 pp.

"Creationism is also basic to a number of religions—not only all the denominations of conservative Protestantism, but also traditional Catholicism and Orthodox Judaism, as well as conservative Islam and other monotheistic religions." Thus is designated the subject by Henry M. Morris, President of the Institution for Creation Research and Gary E. Parker, who is Chairman of the Biology Department for the Graduate School. Without using any Scripture quotations the authors defend creation which "maintains that the universe is *not* self-contained, but that it must have been created by processes which are not continuing as natural processes at the present."

DNA and protein are thoroughly described to illustrate the need for explaining their origin by creation; homology is understood best as not the result of common ancestry but creation according to a common design; similarly treated is embryonic development. "One other special feature of creation is so obvious we often fail to notice it: its beauty."

After analyzing the mathematical chances for a series of beneficial mutations to occur, Parker concludes with Ayala, "For each beneficial mutant a species accumulated, the price would be a thousand or more harmful mutations." Since no "hopeful monster" has ever been observed that would produce evolution, such a belief is "a fantastic faith in the future of a theory that the facts have failed." "All we have ever observed is what evolutionists themselves call 'subspeciation" (variation within type), never "transpeciation" (change from one type to others)."

Fossils of ordinary people are found in Tertiary deposits and a human arm bone in strata preceding australopithecine remains. Fossil footprints are mentioned crisscrossing the tracks of dinosaurs. "According to creationists, the geological systems represent different ecological zones, the buried remains of plants and animals that once lived together in the same environment. A walk through the Grand Canyon, then, is not like a walk through evolutionary time; instead it's like a walk from the bottom of the ocean, across the tidal zone, over the shore, across the lowlands, and on into the upland regions." Catastrophism suggests the depositions.

Henry Morris deals with the physical sciences. He analyzes the laws of thermodynamics to conclude that onward and upward evolution is impossible. Because the fossil record reveals no transitional series, evolution is not true. The geologic column is found in only one place. "*That's* in the textbook!" Morris evaluates the principle of superposition, lithologic identification, and recognition of unconformities and concludes, "There seems really no objective reason, therefore, why the entire range of organic life preserved in the fossils could not have been living concurrently in one year."

The final chapter is, How and When Did the World Begin? "Whether the world is ten thousand years old or ten billion years old, these and other such evidences all point to creation, not to evolution, as the best explanations of origins."

The appendices have questions and criticisms published against the creation movement and detailed answers, as well as a list of the considerable literature cited and indexes of authors and subjects.

Reviewed by Russell L. Mixter, Professor Emeritus of Zoology, Wheaton College, Wheaton, Illinois.

THEOLOGY AND SCIENCE IN MUTUAL MODIFICATION, by Harold P. Nebelsick, Oxford University Press, New York. $15.95, 192 pp.

Theology and Science in Mutual Modification documents science's recent influence on theology and encourages a dialogue between theologians and scientists. The book is divided into five chapters of which only two (I and V) will interest most scientists. The writing is dense and difficult to read. Much of the book is a presentation of facts that can be fitted together only on a second or third reading. Thus, while a great deal of information is presented (the footnotes are extensive and informative), interpreting the information is solely at the discretion of the reader who, except for chapters I and V, is aided only slightly by the author.

In the preface the author takes three points as his thesis:

> (1) The present dichotomy between natural science and theology is both debilitating and unnecessary. (2) The history of the development of the two disciplines, especially since the rise of seventeenth century science which eventuated in a closed and self-sufficient understanding of the world, encouraged a bad marriage between science and theology, on the one hand, and a divorce between the two on the other. (3) In view of the new conceptions of world reality brought to light by relativity and quantum physics, we are now entering a time when dialogue and conversation between theology and science are possible and being pursued. (Page 12)

Chaper I—"The Present Perspective"—deals with the dichotomy between natural science and theology. (The dichotomy remains in many schools today where "humanities" look down on the "sciences" and vice versa.) The author correctly states that "only the Babe in the manger created a greater thing than that caused by the emergence of natural science in the seventeenth century" (Pages 17–18) and compares the pervasiveness and dominance of science and technology today with the pervasiveness of Christianity and the church's influence during the Middle Ages. This chapter is well written.

Chapters II, III and IV—"From Natural Theology to Hegelian Idealism", "The Idealization of Protestantism" and "Karl Barth's Break with Enlightenment Theology"—document some of science's influence on theology for the last three to four hundred years. All three chapters are dense, well-documented, and aimed at professional theologians.

In Chapter V—"Crisis and Dialogue"—the author returns to the natural science-theology dichotomy with his best writing. He describes the dangers of theological or technical "isolation," tackles briefly the population explosion and ecological doomsayers, and encourages the dialogue between scientists and theologians begun in Europe by a group of physicists.

Although this book is tedious reading in many places, it contains a great deal of information. My greatest disappointment is not with the style however, but with the content. First, there is little explicit discussion of theology's influence on science; without such a discussion the title, *Theology and Science in Mutual Modification* is a misnomer. Second, the challenge presented by biomedical research with its awesome life-sustaining abilities and potential for genetic manipulation is not addressed. Yet, the issues generated by biomedical research dealing with the definitions of life and humanity are the areas where theology and science must modify and accommodate one another in the coming years.

Theology and Science in Mutual Modification grapples with issues of fundamental importance to all Christians regardless of their vocation or beliefs. However, the book is flawed in style and lacking in breadth. At $15.95, only a few professional theologians and seminary and university libraries will find this volume a worthwhile investment.

Reviewed by John F. Leslie, International Minerals and Chemical Corporation, Terre Haute, Indiana.

Books Received and Available for Review

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

R.S. Anderson, *On Being Human* (Essays in Theological Anthropology) (Eerdmans)

W. Byron, *The Causes of World Hunger* (Paulist)

H. Cox, *Just As I Am* (Journeys In Faith) (Abingdon)

A.S. Dale, *The Outline of Sanity: A Life of G.K. Chesterton* (Eerdmans)

J.W. Drakeford, *The Awesome Power of the Listening Heart* (Zondervan)

C.R. Foster, *Teaching in the Community of Faith* (Abingdon)

R.B. Fowler, *A New Engagement: Evangelical Political Thought, 1966–1976* (Eerdmans)

B. Hill, *Faith at the Blackboard* (Issues Facing the Christian Teacher) (Eerdmans)

Keller, Queen & Thomas, Editors, *Women in New Worlds Vol. II* (Abingdon)

S. Kim, *The Origin of Paul's Gospel* (Eerdmans)

C.H. King, *Fire in My Bones* (Eerdmans)

R.L. Koteskey, *General Psychology for Christian Counselors* (Abingdon)

Lefevre & Hunt, Editors, *The Apocalyptic Premise* (Nuclear Arms Debated) (Ethics and Public Policy Center)

M.W. Martin and R. Schinzinger, *Ethics in Engineering* (McGraw-Hill)

M.E. Moore, *Education for Continuity and Change* (Abingdon)

M. Neusch, *The Sources of Modern Athetsm* (Paulist)

P. Potter, *Life in all its Fullness* (Reflections on the Central Issues of Todays Ecumenical Agenda) (Eerdmans)

P.O.P. Pon, *Evolution—Nature and Scripture in Conflict?* (Zondervan)

R. Ransom, *Steps on the Stairway* (The Eight Essential Steps to Success and Happiness) (Bantam)

D.H.C. Read, *The Faith is Still There* (Abingdon)

R.C. Roberts, *Spirituality and Human Emotion* (Eerdmans)

R.J. Shope, *The Analysis of Knowing* (Princeton)

R. Sperry, *Science and Moral Priority* (Merging Mind, Brain and Human Values) (Columbia)

M.F. Steltenkamp, *The Sacred Vision* (Native American Religion and its Practice Today) (Paulist)

F. Wisse, *The Profile Method for Classifying and Evaluating Manuscript Evidence* (Eerdmans)

J.J. Young (Editor), *Divorce Ministry and the Marriage Tribunal* (Paulist)

Letters

Missed the Mark

I am glad to see that the *Journal* is publishing articles on hunger and development issues (and that the upcoming annual convention has resource use as a theme). However I feel that Spaling ("Land and Life: The Threatened Link," *Journal ASA* 34, December 1982) missed the mark on almost every point.

While Spaling does not make this explicit, I presume that the issue which he wants to face is that of hunger in developing countries. What he actually deals with is the change from active cultivation to other uses of land in the U.S. and Canada. He seems to be saying that increased amounts of land under cultivation will increase agricultural output in the U.S.; that this will produce a surplus which will find its way to less developed countries, thereby eliminating the presumed food deficits; and that with the food supply shortfall eliminated hunger will be substantially reduced. A second claim he makes with which I disagree is that "arable" land from a Christian perspective is productive only when used for agriculture.

It may be true that increasing acreage under plow would increase output, but at the moment (from the viewpoint of American farmers who are struggling with a surfeit of grains) it would take substantial government price supports to convince anyone it is worth their while. More important, in very few cases does hunger seem to be a matter of food unavailability (and this has been documented even in many situations of famine). It is rather that the poor have no means to purchase food, even if stores are overflowing and farmers are going bankrupt from low prices—and U.S. grain surpluses finding their way onto domestic markets of less developed countries may aggravate the latter without helping the poor, which would hurt long-term supply.

Food in fact is not in short supply. Evidence points toward there being a 10% worldwide food surplus, at least in the crude calories vs. population sense, and many countries in which hunger is widespread (such as India) have been increasing their per capita food output for two decades. The possibilities for adding to agricultural productivity through current technology are very substantial, and it is hard to be concerned about any food "crisis" in the forseeable future that originates in a gross supply shortfall. Increasing U.S. agricultural output, or even that in "hungry" countries, will not eliminate starvation, and may not even significantly alleviate it.

The claim that from a Christian perspective the sole use of land is agriculture hardly bears discussion—the psalms proclaim the beauty of the hills, not the "crime" that they are not under plow . . . That

letting it lie fallow (housing, forests, parks) is a sin in the U.S. is contingent upon showing that increased U.S. food output will alleviate hunger, something which unfortunately is not true. Even if it were, I suspect that a Christian consensus would not emerge on this point.

Hunger is rooted in poverty, and poverty is one outcome of man's sinfulness. Eliminating it requires that men change drastically, not that resource use change marginally. Jesus himself stated that the poor (and hunger) will always be with us, and we should not be naive on our ability to change the world. Yet as Christians we also know that the Holy Spirit does renew us individually and corporately. We hope, and act, and know that we do make a difference, even though we cannot effect a final solution. That God has promised to do, and we believe has done (in a way we poorly comprehend) through Christ's death.

The resources available to us in God's creation are manifold, and their uses many. Economists may be able to illuminate the sometimes subtle tradeoffs among various uses. As Christians we must then try to seek God's way in making an informed choice, remembering that people are the fundamental problem. U.S. land may not in many instances be best used for agriculture (though this may change); this does not mean that the alternate uses to which land is being put are proper, and Spaling at least has raised this as an overall issue, whatever other problems his article may have.

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"Naivete in Matters of Scientific Understanding"

Thank you for printing the letters of T. M. Moore and Jerry D. Albert in the September issue of *Journal ASA* (1982). I am writing as an interested reader, not as a scientist or a member of the American Scientific Affiliation, so maybe I will qualify for the "naivete in matters of scientific understanding" that Albert mentions. Moore's letter gives us all a lot of good food for thought.

The Creator Himself was on this earth and did repeat creation situations in many different ways by means of "miracles," observed by thousands of witnesses. . . . It seems to me that He proved His ability to handle any of the original creation situations right there in real-life laboratory conditions, doing it again and again right in front of plenty of witnesses. Surely that gave plenty of chance for creationism to be "falsified" if it is ever going to be. It seems that He was putting His deity, His power over the material things of this universe, and the creation record "as that is explicitly spelled out in the Bible" (quoting from Moore's letter) on the line every time He attempted a miracle. If He were not the Creator, or if things just could not be done that way, it is conceivable that He could have failed some of those times. Several times He put life, and all the mysteries that involves, back into dead bodies. This very closely duplicates what He did at creation when He "breathed" life into Adam and then into Eve. He demonstrated His complete understanding of and power over all the intricasies of the eye, the ear, the mouth, the skeleton, and all the organs of the human body. He did so many things of this nature that John says that it would be impossible to write about all of them (John 21:25). . . .

Even if there are "unanswered questions" in the Genesis record, what is so earth-shaking about that? There are plenty of unanswered questions about evolution. In fact, it seems that new scenarios have to be dreamed up, only to be supplanted by others as time goes by, and that is supposed to be "the only, or at least by far the best, scientific theory to account for origins."

Wayne E. Newquist

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Beautiful Colombia

We are Americans who have made our home in Latin America for seven years. Lately, we are seeing much distorted news about the Americas coming out of the U.S. and would like to set the record straight for *Journal* readers.

When we first moved to Costa Rica bag, baggage, grandmother, teenagers and pets, we spoke no Spanish and knew little about the country. But, soon, our rural neighbors accepted us and graciously taught us their language, culture, and how a city-bred family could enjoy ranch life in a foreign land. Truly, our delightful adventures there merit a book, at least!

My husband's love for the sea (Pearl Harbor survivor, retired Navy), prompted a further move two years ago, to Colombia's Caribbean coast. We found a lovely, old coconut plantation on the Pan American Highway near Santa Marta, the oldest (457 years), most fascinating city in all of the Americas.

Imagine, green palms waving in gentle ocean breezes, blue sea and sky, pounding surf and golden sand and, towering 19,000 feet over all and snow-capped the year 'round, majestic Mount Colombus. We feel we have much . . . incomparable beauty, fine neighbors, perfect climate, a stable, democratic government and a satisfyingly-low cost of living.

Like Colombus, we have discovered a new frontier, with a vast potential and, being human, are driven to tell others about our dream-come-true. If you are interested in the future of the Americas . . . and the Birds . . . write us by international air mail (35¢ a half-ounce). It may take a while, but we promise to answer.

Now, from beautiful Santa Marta, we wish you salud (health), pesetas (wealth), amor (love) and the time to enjoy them all!

Juanita Bird
(Mrs. Lewis Bird)

P.O. Box 5222
Santa Marta
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A closely affiliated organization, the **Canadian Christian and Scientific Affiliation,** was formed in 1973 with a distinctively Canadian orientation. The **CSCA** and the **ASA** share sponsorship of the publication. **CSCA** subscribes to the same statement of faith as the **ASA** and has the same general structure. However, it has its own governing body with a separate annual meeting in Canada.

Members of both organizations endorse the following statement of faith: (1) *The Holy Scriptures are the inspired Word of God, the only unerring guide of faith and conduct.* (2) *Jesus Christ is the Son of God and through His Atonement is the one and only Mediator between God and man.* (3) *God is the Creator of the physical universe. Certain laws are discernible in the manner in which God upholds the universe. The scientific approach is capable of giving reliable information about the natural world.*

Associate Membership is open to anyone with an active interest in their purposes. *Members* hold a degree from a university or college in one of the natural or social sciences, and are currently engaged in scientific work. *Fellows* have a doctoral degree in one of the natural or social sciences, are currently engaged in scientific work, and are elected by the membership. *Dues:* Associate $24.00, Member $30.00, and Fellow $40.00 per year. A member in any of these three categories can take the *special student rate* of $12.00 per year as long as he is a full time student.

INDICES to back issues of the *Journal ASA* are published as follows: Vol. 1-15 (1949–1963), *Journal ASA* 15, 126–132 (1963); Vol. 16-19 (1964–1967), *Journal ASA* 19, 126–128 (1967); Vol. 20-22 (1968–1970), *Journal ASA* 22, 157–160 (1970); Vol. 23-25 (1971–1973), *Journal ASA* 25, 173–176 (1973); Vol. 26-28 (1974–1976), *Journal ASA* 28, 189–192 (1976); Vol. 29–32 (1977–1980), *Journal ASA* 32, 250–255 (1980). Articles appearing in the *Journal ASA* are abstracted and indexed in the CHRISTIAN PERIODICAL INDEX and in RELIGIOUS AND THEOLOGICAL ABSTRACTS. Present and past issues of the *Journal ASA* are available in microfilm at nominal cost. For information write University Microfilms, Inc., 300 North Zeeb Road, Ann Arbor, Michigan 48106.

LOCAL SECTIONS of the American Scientific Affiliation and the Canadian Christian and Scientific Affiliation have been organized to hold meetings and provide an interchange of ideas at the regional level. Membership application forms, publications and other information may be obtained by writing to: AMERICAN SCIENTIFIC AFFILIATION, P.O. BOX J, Ipswich, Massachusetts 01938, or CANADIAN CHRISTIAN AND SCIENTIFIC AFFILIATION, P.O. Box 386, Fergus, Ontario, N1M, 3E2.

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