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Freedom

Marxism

Psychology

Responsibility

Theology

. . . all in this issue!

"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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IS THE ROAD FROM FREEDOM TO RESPONSIBILITY A ONE-WAY STREET?

Freedom proves to be a very elusive concept. There are many different kinds of freedom: personal freedom, political freedom, religious freedom, and economic freedom. There is freedom from; and there is freedom to. Wars have been fought and ringing testimonies made: "Give me liberty or give me death." Still misconceptions seem to multiply concerning what freedom is, how much freedom is available, and how to maintain and preserve freedom. Here I discuss four aspects of freedom: (1) How is freedom related to restraints? (2) What demands does responsibility place upon freedom? (3) Is it possible to increase both responsibility and freedom? (4) Why does compulsion so often replace responsibility in restricting freedom?

Freedom as the Absence of Restraints

The dictionary's first definition for freedom is "the condition of being free of restraints." This general concept of freedom is illustrated in Figure 1. Infinite freedom is achievable by reducing restraints to zero; zero freedom is achievable by increasing restraints to infinity. To be truly and completely free in this picture is to have no restraints; it is an anarchist's view of freedom.

Such a view, if taken literally, appears however to violate what we mean in everyday life by "being free." If we were free of all restraints in the physical world, if there were no gravity, laws of nature etc., we would have physical chaos in which we could not even exist, never mind be free. *Restraints make life possible.* If we were free of all restraints in the social world, if there were no social mores, no courtesy, no consideration for others, we would have social chaos in which our individual freedom would disappear completely. *Restraints make life bearable.* If we were free of all restraints in the spiritual realm, if there were no God, no Ten Commandments, no Lord and Savior, we would have spiritual chaos in which our spiritual freedom would never exist. *Restraints make life meaningful.*

As long as people hold on to the concept that freedom is the absence of all restraints—and this is not at all an uncommon view—they strive for some kind of idealized existence that is incompatible with life in this real created world. If they persist, their final effect can be only to destroy their own freedom and ours as well.

Science and engineering teach us clearly that freedom in this real created universe depends not on our being rid of restraints, but on our understanding and knowing

This is the last of three keynote addresses on the theme, "Choices We Face," presented at the 1979 Annual Meeting of the American Scientific Affiliation at Stanford University, Stanford, California.

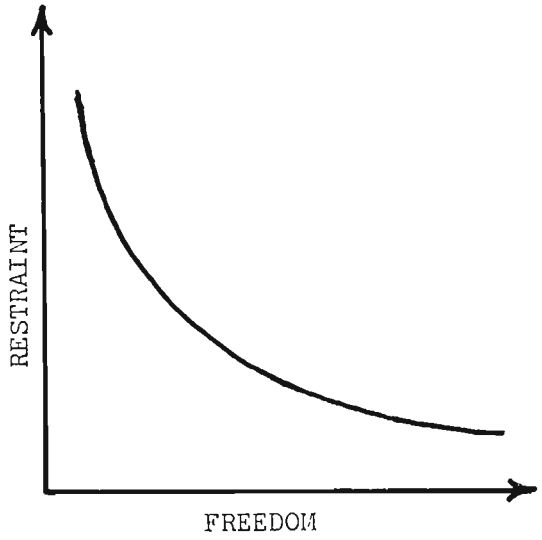

Figure 1. The symbolic relationship between freedom and restraint if it is assumed that freedom is the absence of restraint. Infinite freedom is achieved with zero restraint, and zero freedom is produced by infinite restraint.

what restraints there are, and creatively working within them. If I wish to fly, I must understand the restraints of aerodynamics and work within them, not try to ignore them or do without them. If I wish to make a high efficiency solar cell (and I do!), I must understand the restraints of semiconductor materials and the properties of the solid state and be creative within them, not try to ignore them or act as if they did not exist. Most of my failures result from ignorance of what the restraints are. If I wish to remain free and active, then I must realize the restraints that are imposed upon me; I cannot walk off the top of a tall building, I cannot ingest poison, nor can I lie down in front of a crocodile.

As a Christian, as well as a scientist, I see these same kinds of restraints operating in the interpersonal relationships of the world as well. To be free in the vital dynamic sense of the word in this real world means that I do not demand the absence of restraints on personal selfishness or greed, injustice between persons, or social persecution. Nor do I demand the absence of restraints on killing, hating, stealing, committing adultery, lying, slandering or coveting. To be truly free is to recognize the inbuilt constraints of our created situation and our created nature, and to live within these constraints. I am indeed always just as free to hate as I am to walk off a tall building; the nature of reality does not restrain me by preventing me from exercising my choice, but I am restrained in the sense that the consequences of my choice are sooner or later known if it violates the nature of created reality.

It has been argued that the laws governing the physical universe are different from "religious laws" governing interpersonal relationships because the former are never broken whereas the latter are.[1] But we must be careful what we mean by "broken." Just as physical laws are not broken, but still I may choose to act contrary to them to my own hurt, so interpersonal laws are not broken, but acting contrary to them leads inevitably to judgment and the suffering of the consequences.

We recognize that all in all the representation of Figure 1 is not an adequate one.

Tradeoffs Between Freedom and Responsibility

We turn next to a second way of looking at the question of freedom: as a tradeoff between freedom and responsibility as shown in Figure 2. Here we appreciate that the maximum freedom as well as the maximum responsibility is finite for finite creatures such as we. A transition between two states, indicated by two points on the curve, always corresponds to either a loss of freedom and a gain in responsibility, or to a gain in freedom at the expense of a loss in responsibility.

The increase of contacts between members of a human society inevitably leads to a loss of previously possible individual freedoms in order to face new needs responsibly. The existence of many cars on the road calls for a responsibility in driving, which causes the freedom to drive at any desired speed or in a manner decided upon only by the driver to be lost in order that some positive contribution may be made to preserving lives; the lonely cowboy riding his horse through the unexplored and uninhabited lands of the west a hundred years ago had no need to exercise such responsibility. The existence of many waste-disposing individuals calls for a responsibility in preserving the environment, which causes the freedom to dispose of waste in any convenient way to be curtailed in order that human beings may breathe and live; the lonely country dweller need not be concerned about the droppings of his dog, but the city dweller today is often enforced by law to carry a "pooper-scooper." In many ways there is a sharp contrast between present-day society and earlier days and places when there was a much lower population density; open frontiers lay always ahead, and the ability of the natural ecology to absorb perturbations was sufficient to handle the problems. The shrinking of the world demands a transformation of individual freedoms into corporate responsibility.

The challenge of Christian responsible living is to provide the limitations on our own freedoms so that we may better serve the rest of the world, both our immediate world and our extended world. The classical example of this kind of transformation of freedom voluntarily into responsibility is provided for the Christian by the writings of Paul in Romans 14 and I Corinthians 8. Even when every possible case can be made for the validity of our freedom, still we *choose* not to exercise that freedom if it will prove damaging in any way to someone else. What does it mean to follow Christ by choosing servanthood, except to be willing to lay aside our freedoms in order to live responsibly before God?

Gaining Responsibility and Freedom

There are some very special types of situations in which

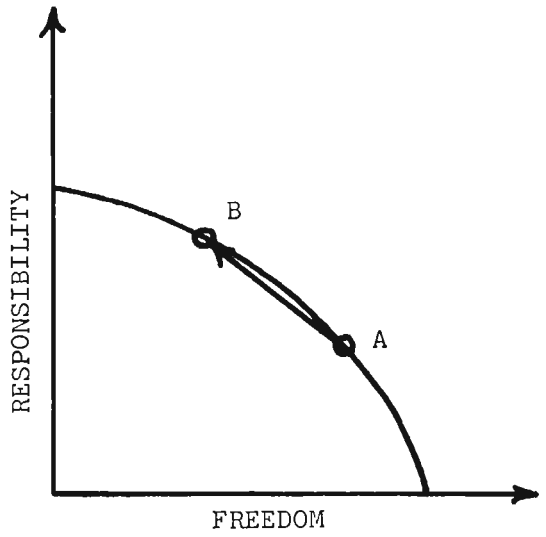

Figure 2. The symbolic tradeoff between freedom and responsibility. A transition from state A to state B automatically involves an increase in responsibility and a decrease in freedom.

it is possible to show more responsibility without losing any freedom, or even with a gain of freedom at the same time. These marvelous situations, one might think, should be under high demand, but curiously such possibilities are singularly low in public acceptance at the present—probably because of a fundamental misunderstanding of the nature of freedom.

This type of situation is illustrated in Figure 3. The symbolic curve linking freedom and responsibility such as is shown in Figure 2 represents the possibilities *within the context of a given set of relationships*. Another set of relationships, however, might well be represented by another freedom/responsibility curve. In this way there are opened possibilities for increasing responsibility without loss of freedom, or even of increasing both responsibility and freedom together, by making a transformation from one set of relationships to the other.

What are some examples of such relationship-transforming potentialities? I suggest just two that are well known: marriage and Christian conversion.

In at least the traditional Christian view of marriage,[2] this relationship consists of a unity formed from the mutual lifelong love commitment of two individuals, who are willing to trust each other and God, and therefore are willing to entrust themselves to one another. "Therefore shall a man leave his father and mother and cleave to his wife and they shall become one flesh." Certain individual freedoms are willingly surrendered but only so as to receive the much greater freedoms of the marriage relationship. Modern efforts to make of marriage a 50-50 partnership instead of an organic union, violate these conditions and minimize the opportunities to genuinely exceed the freedom/responsibility tradeoff. Insofar as the movement toward contract marriages is a premarital accommodation to a lack of willingness on the part of the participants to entrust themselves wholly to each other, it breaks down the relationship transformation that is most fruitful in making new potentialities possible. Concerted attempts to preserve individual rights and identities in marriage *at the expense of organic union* also move marriage from the marvelous institution it can be to something much less. Here we see enacted, "Whoever would keep his/her freedom will lose it, and whoever will give up his/her freedom for the sake of the marriage will find it." This is the dynamics that govern the kind of relationship that transforms the freedom/responsibility curve.

We are, of course, as Christians familiar with the original statement from which the above statement was borrowed: "He who will save his life will lose it, but he who loses his life for My sake will save it." The biblical picture of Christian conversion is rich with images that emphasize the increase in both freedom and responsibility that come with Christian conversion. We who were slaves of sin, and hence not free at all, becomes slaves of Christ, and hence truly free. By Christian conversion we move deeper into the warp and woof of the nature of the created universe, and so we move more and more within the constraints of that universe as new creatures, children of God, and members of the household of faith. Before Christian conversion we were not free to be responsible; after conversion we are responsible as an expression of our freedom. We understand the meaning and the power of Jesus' words, when he said, "For this reason the Father loves me, because I lay down my life, that I may take it again. No one takes it from me, but I lay it down of my own accord. I have power to lay it down, and I have power

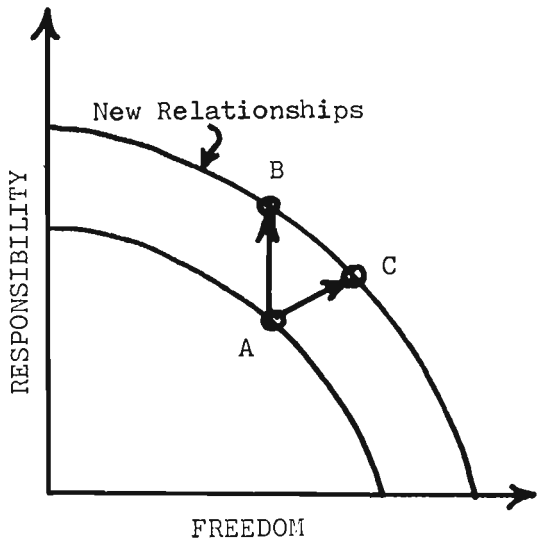

Figure 3. The potentialities introduced by new relationships in the tradeoff between freedom and responsibility. By entering into new relationships, a transition from state A to state B may involve an increase in responsibility without a loss in freedom, and a transition from state A to state C involves an increase in both responsibility and freedom.

As long as people hold on to the concept that freedom is the absence of all restraints, they strive for some kind of idealized existence that is incompatible with life in this real created world.

to take it again." (John 10:17, 18)

There are possibilities, therefore, of opening new opportunities through new relationships as we consider the exchange of freedom and responsibility.

Responsibility vs Compulsion

The reader may by this time be increasingly restless: all this talk of freedom and responsibility is very well, but it doesn't characterize much of the real world we live in. Opportunities for responsibility have been largely taken over by the demands of compulsion.

Figure 4 expresses this dimension of our actual situation. We can give up freedom in two ways: because we choose to (responsibility), or because we have to (compulsion). There is an axis of compulsion that runs orthogonal to both freedom and responsibility; we can lose our freedom and gain nothing in responsibility if our actions are compelled by fear of punishment or loss. We must realize at once that compulsion is *not* responsibility (either unenforced or enforced); a large portion of the world today speaks glibly of social responsibility, but what they really mean is social compulsion. They may indicate that such compulsion is only a temporary necessity on the way to true responsibility, but historical examples of getting past this step are hardly common.

We have for this case again some biblical analogies. When we restrict our freedoms solely out of fear of the law, we lose both freedom and responsibility. So Paul speaks of the law: "Now before faith came, we were confined under the law, kept under restraint until faith should be revealed. So that the law was our custodian (schoolmaster, *KJV*) until Christ came, that we might be justified by faith. But now that faith has come, we are no longer under a custodian; for in Christ Jesus you are all sons of God, through faith." (Gal. 3:23-26) Therefore the Christian is called to do responsibly out of love for God what under the law was a matter of compulsion: by entering into the new relationship in Christ compulsion is transformed into responsibility. The same issues constantly arise again; every resort to legalism rather than to responsible discipleship is an attempt to substitute compulsion for responsibility. Such a substitution seems quite appealing: certainly it is both safer and easier to have a strict legal code that can be followed without thought or choice rather than leaving individual choices to the personal responsibility; this is not, however, the kind of Christian maturity to which Christ has called us. Note that this framework avoids extremes: we cannot live responsibly without the law, for it shows us what living responsibly means; but if we attempt to settle all the issues of living by construction of a legalistic code, we have destroyed the opportunity for responsibility.

If we examine the structure of our social life today, we quickly find that to an extreme degree compulsion has been substituted for responsibility. The best of motives, e.g., to aid the poor and sick, becomes the foundation for a bureaucratic system of compulsion that all too often fails the goal for which it was conceived, while at the same time taking away the incentives for any individual voluntary choices. So we see a desire to strengthen the power to act resulting in the transfer of power from local to federal levels, a desire to insure industrial safety resulting in the sometime excesses of OSHA, a desire to give financial aid to the poor resulting in the welfare system, a desire to insure responsible accounting of public funds resulting in roadblocks of red tape that paralyze progress, a desire for tax relief (California's Proposition 13, for example) resulting in an effective transfer of funds from the community to the federal government, a desire for fair practices in employment resulting in such a conglomeration of requirements that unfairness is as likely to be promoted as fairness, and a desire to eliminate discrimination resulting in an absolutization of those extraneous factors that perpetuate the environment for discrimination.

The justification for this process goes something like this. (1) Here is a genuine human need. (2) This need is not being met by voluntary choices. (3) People *ought* to respond voluntarily to such needs. (4) People would respond voluntarily to such needs if they were properly informed and motivated. (5) "Education" about the needs sometimes then leads to compulsion to fulfil them, or frustration with people not voluntarily doing what they ought to leads to compulsion so that the need may not go unattended. (6) Therefore it is right and good to force people to do what they ought to voluntarily but don't.

If human beings were intrinsically altruistic and unselfish, then one could make a case for removing compulsion in order that responsible living might be able to express itself. One could argue that the very existence of compulsion makes responsible living impossible. I had a discussion with distinguished faculty in the commencement line at the time of Proposition 13 in California. They were certain that if real estate taxes were lowered, the outpouring of voluntary giving would more than make up for it to continue all worthwhile and needed services. I do not think there is more than a token of empirical evidence to back up that hope since then.

But we must also keep in mind the immensity of the task. I pay (by compulsion) about 1/3 of my salary in taxes; a high degree of altruism would have to be present to keep me doing that if taxation stopped, and I would certainly demand a much better accounting of how my money was being spent. 40% of my direct salary (in a private university) is paid by taxpayers who are under compulsion to do so; another 40% of my general support comes from these same taxpayers. Assuming that we believe that my type of job is worthwhile, could we rely on the altruism, vision and generosity of human beings to voluntarily maintain such support?

In this framework, *taxation becomes a necessary evil* in a complex and sinful world. One may argue with the libertarians that taxation for such purposes is an improper activity of the state, and should be left to voluntary actions of the individual citizens; but it is highly unlikely that enough citizens would sacrifice voluntarily to meet the need if they were not forced to. As usual the rich would make out all right, and the poor would suffer even more. Or one may argue with the welfare statists that no responsible human being can stand by and watch others suffer because of people's ignorance or indifference; surely taxation is both necessary and an inducement to moral action by people unlikely to take it on their own. But it seems that such a choice makes it less and less likely that people will make any voluntary responsible choices, for they have so little left to make them with!

The strength of the Christian church in those situations where it is supported by the free and voluntary gifts of its members, appears at least partially to derive from this voluntary method of support when compared with the state churches supported by universal taxation; these state churches all too often generate a dead religion: a society that is Christian in name, but without the commitment or the faith of true followers of Jesus Christ.

Rights and the Christian

Today we see more and more another phenomenon generated by this state of affairs. Sensing that their freedoms are being stripped by more and more compulsion, and desiring to hang onto a sense of freedom and responsibility, people are raising an essentially legalistic outcry to translate freedoms into *rights*. The demand is made for the exchange of freedoms that depend on the goodhearted voluntary cooperation of all into hard legal realities that stifle responsibility (since they no longer must be earned) and invoke compulsion in the name of freedom.

There are some very special types of situations in which it is possible to show more responsibility' without losing any freedom, or even with a gain of freedom at the same time.

In such a day when "obtaining one's rights" and "fighting for one's rights" is viewed as the battlecry of enlightened humanity, the Christian faces a peculiar challenge indeed. For the Christian is, in some sense, a person without rights. We are called upon to follow our Lord Jesus Christ, whose whole existence is summed up by his renunciation of the rights he had as the eternal Son of God in order to become incarnate as man. Christians are indeed

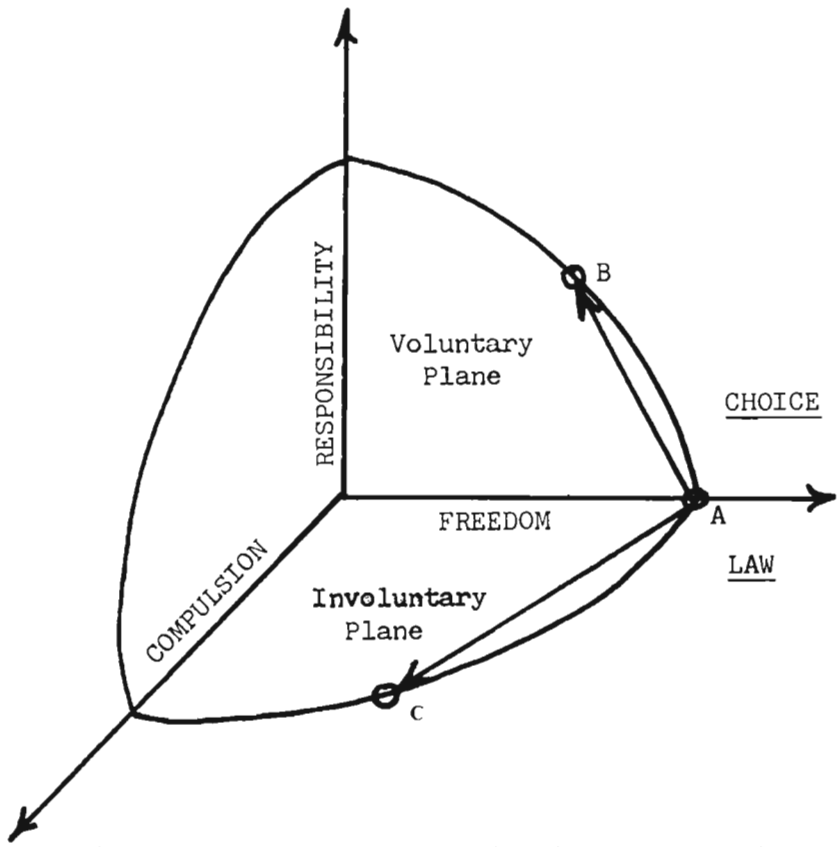

Figure 4. The symbolic representation of compulsion as orthogonal to the freedom/responsibility plane. Transitions from state A to states B and C involve the loss of the same amount of freedom, but the transition to state B brings a tradeoff of freedom for responsibility due to choice, whereas the transition to state C yields no responsibility since the transition was made by compulsion.

Look down the lists of the countless "rights" movements and you will find very little talk of "Why not rather suffer wrong?" or "Why not rather be defrauded?"

called upon to work for the justice and fair treatment of all people, but this is quite different from insisting on "my own rights." Paul laid it on the line when he heard that Christians in Corinth were suing one another in order to get their "rights": "To have lawsuits at all with one another is defeat for you. Why not rather suffer wrong? Why not rather be defrauded?" (I Cor. 6:7) How alien this approach is today! Look down the lists of the countless "rights" movements and you will find very little talk of "Why not rather suffer wrong?" or "Why not rather be defrauded?" There is indeed the problem of discriminating between demanding one's rights and being a doormat for the world, but I do not think there is much question about which direction we err in most of the time.

Conclusions

In this fairly general treatment of the subject of freedom and responsibility, we have tried to make the following points.

1. Freedom does not arise from the absence of all restraints, but by recognizing the restraints that are present and acting creatively within these restraints.

2. To live responsibly in a world with increasing limitations and interactions, voluntary restrictions on freedom are necessary.

3. There are possibilities for entering into new types of relationships in which both freedom and responsibility can be expanded. Marriage, friendship, and Christian conversion are examples of such possibilities.

4. When the solutions to needs are not taken voluntarily by responsible choices by which one limits one's own freedom, concern for the welfare of all leads in a complex and sinful world to the need for compulsion. There are always great dangers in this direction, since compulsion removes freedom without increasing responsibility. Unfortunately the removal of compulsion, on the premise that we live in a world of intrinsically altruistic and self-giving individuals, leads to just as destructive a corruption of human welfare, as does the overdevelopment of compulsion on the premise that individuals must be programmed by a super-intelligence for their own welfare.

Perhaps seeing these distinctions and problems a little more clearly provides a first step for the Christian in seeking applications and significance in his or her own life.[3] At the very least, the value of the opportunity to express responsibility should be upheld against a fairly universal tendency to use compulsion in any and every avenue of social interaction.

REFERENCES

[1]See Dan McLachlan, Letters, *Physics Today*, January (1979); and Richard H. Bube, Letters, *Physics Today*, April (1979)

[2]See Richard H. Bube, "Human Sexuality," *Journal ASA*, June and September (1979)

[3]Sometimes this can be done at a very elementary level; the challenge to the Christian of properly regarding his/her "rights" can be faced when someone cuts ahead of you in a waiting line or when someone starts from a Stop sign when it was your turn.

Richard H. Bube

Department of Materials Science and Engineering

Stanford University

Stanford, California 94305

Marxism and Christianity: Their Images of Man

CHARLES E. FAUPEL

Department of Sociology

University of Delaware

Newark, Delaware 19711

Any social science must be predicated upon certain assumptions regarding human nature. These presuppositions will have a profound impact on the subsequent social philosophy which emerges from that science. Because of the recent upswing in the popularity of "radical" or "Marxist" sociology, we have found it necessary to once again reconsider the presuppositions of Marx regarding man's nature, and to counterpose them with the Christian view of the same. While Marxism and Christianity can be discussed within the same conceptual "molds", in fact, the two perspectives share little in common. The paper discusses the Marxist and Christian perspectives in terms of the vantage point from which they view human nature, and the implication this has for the subsequent image of man held by each.

"The history of modern culture is . . . the story of a running debate between those who interpret man as reason and those who seek to explain him in terms of his relation to nature."[1] Any sociology seeking to understand the meaning of history and social reality must have as its starting point some notion regarding the nature of man. (In this paper the terms "man" and "his" are used for semantic simplicity to refer to all of humankind and are without sexual significance.) More often than not, this notion is implicit, but it is still there, and the form of that sociology is largely dependent on the conception of man that it holds. By broadly delineating the Classical and Romantic notions regarding human nature as a vantage point from which to discuss Marx's image of man, we counter-pose the Christian conception of man, particularly as formulated by Reinhold Niebuhr, who has written one of the classic statements concerning this issue reflecting a Christian position.

The Classical View of Man

The early Greeks (particularly Aristotle and Plato) held a dualistic view of man. The two elements of this dualism were man's rational faculties and his physical being. What was unique about man for these thinkers was his rational element. Man's biological drives were recognized, but at the same level as that of the animals, and hence, it was his rational faculties, transcending these drives, which were unique to man. Somewhat paradoxically, man's mind—his essential nature—is identified with the divine. For the Classicists, man's *individuality* is identified with his physical body, which he seeks to transcend. The body is that which is essentially evil, and it is the mind, through reason, which is able to transcend the body. Thus, all that is reason is good.

The Classical position has many variations. However, its characteristic feature throughout is this mind-body dualism in which the mind, representing that which is essentially good, and the body, representing that which is essentially evil, are in conflict with each other.

The Romantic View of Man

The Enlightenment brought with it a reaction to classical thought. Man came to be defined differently by what

is now called Romanticism. The Romanticists rejected the idea that human reason was the ordering principle of life. Rather, nature itself is conceived to be harmonious, and anything that interferes with this harmony is suspect. The vitality of nature and natural impulses is cheered by the Romanticists, and man is most human as these vitalities are given free reign. Adam Smith represents this notion quite clearly when he argues for a "laissez-faire" market:

> This division of labor, from which so many advantages are derived, is not originally the effect of any human wisdom, which foresees and intends that general opulence to which it gives occasion. It is the necessary. . . propensity in human nature. . . to truck, barter, and exchange one thing for another.[2]

For Smith, human nature is oriented toward a self-interest, which, if given free reign, leads to an harmonious division of labor. What is important here is that these are natural "impulses" (i.e., self interest) which must not be tampered with by reason (or, for Smith, by government).

A variant of this "naturalistic" conception of man is the "tabula rasa" man expounded by such Enlightenment thinkers as Rousseau. According to this view, nature is still the ordering principle of life, but the role of man is quite different from that of the naturalists. This view conceives of a totally passive individual, whose nature resembles a blank tablet at birth. His nature takes on form as, in the course of his development, his environment writes upon this blank tablet. Thus, from this perspective, man is totally the product of his environment.

Marx's Conception of Man

Much like the Romanticist view which must be understood as a reaction to the Classical notion, Marx's formulation of the nature of man can best be understood as a reaction to Hegel. For Hegel, as for the Classicists, reality has its essence in the realm of thought and reason. The world and history are to be understood in terms of reason.

> . . . The only thought that philosophy brings along is the very simple thought of reason, namely that reason rules the world and that things have happened reasonably (according to reason) in world history . . . (In) philosophy speculative knowledge proves that reason . . . is the substance as well as the infinite power, that it is the infinite stuff of all natural and spiritual life as well as the infinite form, the activation of this being its content. It is the substance that through which and in which all actual reality has its being and existence.[3]

While Hegel spends a great deal of time addressing the rational process of history, his position addresses itself to the level of human nature as well:

> The will contains first the element of pure indeterminacy or the pure reflection of the ego in itself by which every kind of limitation. . . is dissolved, be such content given by nature, needs, passions, impulses or immediately present. This indeterminacy is the limitless infinity of absolute abstraction or generality, the pure thought of itself.[4]

Hegel does conceive of the will as being determined by impulses, etc., which are a function of the ego. However, the ego is not *determined* by these impulses, but rather,

> . . . determines itself in so far as it is the relation of the negation to itself. Being this relationship to itself, the ego is indifferent toward this determinacy, knows it as its own and as ideal, as a mere potentiality by which it is not bound, but in which it is merely because it posits itself in this determinacy.[5]

Marx rejects any notion of the transcendence of reason over natural forces. In this regard Marx takes a position diametrically opposed to Hegel, which becomes quite clear as he discusses the essence of man. Marx points out that Hegel viewed the essence of man as "self-consciousness," and that which could be tangibly appreciated was nothing more than an expression of man's essence. Marx, however, flips this logic and argues that what is in fact real is the concrete individual, and that his self-consciousness is but a manifestation of this reality.[6] In this regard, Marx is squarely in the camp of the Romanticists, and it is upon this basis that he develops his argument of the process of history.

> The first premise of all human history is, of course, the existence of living human individuals. Thus, the first fact to be established is the physical organization of these individuals and their consequent relation to the rest of nature.[7]

What is central to Marx is this notion of concrete individuals expressing themselves in relation to nature and each other. This concrete individual must be understood both as he stands outside of history and as he is modified by history. Natural man—i.e., man as he exists independently of history—are those elements of man which are shared with all other living creatures. For example, man feels hunger, cold, and thirst. Through these impulses man is able to realize his "natural" powers. Thus, man realizes the power of eating through hunger.[8]

However, the main thrust of Marx's writings are based upon his conception of what he terms man as "species being".

> In creating an objective world by his practical activity, in working-up inorganic nature, man proves himself a conscious species being, i.e., as a being that treats the species as its own essential being or that treats itself as a species being.[9]

Man as species being is a direct function of his ability to produce his own means of subsistence. Not only does man produce for his own immediate needs, however, but he produces for future needs as well as for the needs of others and their future needs. It is through this process of production, conditioned by physical organization, that man's life takes on expression. It is what makes him uniquely human. Thus, for Marx, it is the material forces governing and determining this production upon which the (species) nature of man depends.[10]

Man is not, however, simply a passive recipient of these material forces. Man is active in shaping the very forces which in turn shape him. It is in this process of dialectical intercourse with his environment that man's nature emerges and evolves.

Adam Schaff argues that Marx holds a conception of species man which is two-fold in nature.[11] First, there is "true" man: that aspect of man which is both uniquely and universally man. This, as we have said, is productive man. Second, "real" man is man as he has been modified by his historical environment. It is in this sense that Schaff says of Marx's image:

> Man is not born with any innate ideas about the world and certainly not with any inborn moral ideas . . . Men are born with certain possibilities of development and these depend on their historically formed psycho-social structure.[12]

It is this aspect of man which is central to Marx's understanding of alienated man.

These two aspects of man must be seen in a dialectical relationship. That is, man is actively involved in the creation of that history which in turn shapes and molds him. Man produces because he is man; this is a uniquely human characteristic. In so doing, he takes an active part in the creation of his world. However, his product, in turn, shapes and molds him, even to the point of shaping his very nature. From here, Marx discusses the way in which a capitalist system divorces man from his labor and the fruit of his labor. This results in a "real" man who is alienated, not only from his labor and product, but from himself as well, since it is as a productive being that man is uniquely man.

The impact of Romanticism on Marx's thought is quite clear, although not direct. While Marx recognizes biological impulse as the expression of man's natural power, this is not lauded nor attributed the prominence that it is with the Romantics; for Marx holds that this is a property characteristic of lower order animals as well. What Marx recognizes as the essential characteristic of man, rather, is his productive capacity. Since his productive capacity is contingent upon some form of social organization, human drives are interpreted, not primarily in terms of biological drives of individuals, but rather in terms of the drives of social classes.[13] Likewise, what determines man as "real" man is not found at a biological level; rather, it is found in historically specific social organization.

> The propulsive power (of history) lies in the dynamics of historical economic relations. Reduced to biological proportions, that would mean in the impulse of hunger. But significantly Marxism does not reduce the vitality of human history to such proportions. It is never simply the hunger impulse, but some organization of society, designed to satisfy it which determines human thought.[14]

Marx's affinity to Romanticism lies in their mutual rejection of the notion of the transcendent "reason" in which reality is ultimately to be found. Marx makes his case quite poignantly when he writes, "Philosophy is to the investigation of the real world what masturbation is to sexual love."[15] In reacting to Hegel in this way, Marx is also joining the Romantic thinkers in reacting against the glorification of reason.

Also, if we view material and social drives as compatible with natural drives (they are compatible in the sense that they both react to Classicism), we find Marx expressing both the vital and the tabula rasa conception of human nature in his dialectical image of man. These two conceptions are roughly expressed in Schaff's "true" and "real" man respectively. "True" man is productive man, and as such, active man. He is active in shaping his environment, both materially and socially. However, this activity is never raw or pure, but is molded and determined by the very material and social elements it is acting upon. This is "real" man, and to the extent that man is shaped by these elements, Marx's notion of man resembles the tabula rasa image.

Christianity takes as its point of departure not reason, as do the Classicists, nor the concrete individual, as do the Romanticists, but rather Creator God who is both transcendent over and imminent in history.

To equate the two is, of course, a distortion; for the tabula rasa notion of man conceives of a passive individual, which must be qualitatively distinguished from the dialectical notion held by Marx. Nevertheless, it should be quite clear that Marx is heavily indebted to Romanticism as he formulates his image of man. A recognition of this is crucial to an understanding of the logic behind Marx's subsequent writings, particularly his critique of capitalist society and the alternative with which he seeks to replace it. For without accepting this image of man, these subsequent arguments do not ring with the same conviction of validity.

The Christian Conception of Man

Christianity takes as its point of departure not reason, as do the Classicists, nor the concrete individual, as do the Romanticists, but rather Creator God who is both transcendent over and imminent in history. According to the Christian world view, God has revealed Himself through creation, through Scripture, and ultimately in the person of Jesus Christ. The God of the Christian faith, as revealed in these three forms is not simply a "mind" who in some way "reasoned" form into the previous void; nor did He create man as two separate entities, soul and body. The Bible knows nothing of this sort of dualistic man, and hence, knows nothing of a mind or soul which is good and a body which is evil.

However, neither is man defined in terms of his affinity to nature, or, in Marx's case, his affinity to material and social forces. Rather, man is defined in terms of his relationship to God. This is most clear in the Genesis 1 account of creation: man is creature—God is creator.

It is a mistake to equate evilness with creatureliness. Once again, referring to Genesis 1, we read that man is created in the image of God, and that God looked upon His creation and saw that it was good. Man, as the image of God, has a special place in God's creation. Just what the implications are for man as the image of God is unclear; however, at least, it means that man is created with a moral capacity, a capacity for standing outside himself, for viewing himself as an object, and to recognize his creatureliness. Paradoxically, however, it is this very capacity which allows man to rebel against his creatureliness and his relationship to God. It is this capacity which finds expression in the Fall, and consequently man finds himself in a predicament in which he is incapable of recognizing and experiencing his creatureliness, but rather sets himself at the throne of his world. Niebuhr makes this case quite clearly:

> The high estimate of human stature implied in the concept of "image of God" stands in paradoxical juxtaposition to the low estimate of human virtue in Christian thought. Man is a sinner. His sin is defined as rebellion against God. The Christian estimate of human evil is so serious precisely because it places evil at the very center of human personality: in the will. This evil cannot be regarded complacently as the inevitable consequence of his finiteness or the fruit of his involvement in the contingencies and necessities of nature. Sin is occasioned precisely by the fact that man refuses to admit his "creatureliness" and to acknowledge himself as merely a member of the total unity of life. He pretends to be more than he is.[16]

Niebuhr continues:

> Human self-consciousness is a high tower looking upon a large and inclusive world. It vainly imagines that it is the large world which it beholds and not a narrow tower insecurely erected amidst the shifting sands of the world.[17]

Since man's moral character is grounded in his relationship to God, his rebellion against his creatureliness leaves him a moral cripple, and with a perverted view of reality. If man is to recognize, and in a positive sense, to realize his creatureliness, God's initiative is required. There are many biblical accounts of this action, culminating in the Christ—His birth, life, death, and resurrection.

For the Christian, then, man is judged by God rather than by some aspect of himself. Thus, the first man was not good just because he was man, or because he was yet untainted by reason; he was good because God saw that he was good. Likewise, man's sinfulness does not lie in his natural impulses or his rational faculties, but in the fact that he has rebelled against his relationship to God. His sinfulness lies at the very core of his being. It is his alienation from God which is the source of his malady.

Since man's sin stems from his rebellion, and since, in this rebellion, man sets himself as his own ultimate, it is necessary that God break into man's world and "renew his mind". (This is a paraphrase of the apostle Paul. If we are to view it in context with other statements Paul has made concerning this process, we must interpret this as the renewing of one's total being, i.e., the mind is not viewed here as one aspect of a dualist nature.) This process is also referred to as the "rebirth", and while at the very center of the Christian faith, it is sufficient here to note that it is a process initiated and completed by God, and that it must occur at an individual level. This is not to say that it does not have social implications; however, the rebirth process can occur only as God breaks into the lives of individuals.

The fact that man is viewed as a sinner is not to say that he is viewed as having no worth. Man is of infinite worth. However, his worth is not the result of any human virtue. Rather, man's worth stems from the fact that he is God's creation, and that he is loved by God.

The rebirth in no way implies becoming morally superior. The predicament of sin still plagues the individual. The apostle Paul most aptly depicts this problem when he speaks of his "old man" and his "new man" constantly waging war with each other. What is implied rather, is that man is confronted with his sin and made to recognize his rebellion and self-idolatry. At the same time he is reoriented in such a way that he affirms his creatureliness and God's sovereignty. But again, this does not reflect his own virtue; it is rather expressive of the creative act of God.

A Comparison of Marxist and Christian Conceptions

Christianity and Marxism share one thing in common with regard to their views of human nature: they both reject the classical conception of a mind-body dualism in which the mind is exalted as the essence of man. Beyond this, however, there is little that can be said regarding their commonality. There are, however, significant points at which they differ.

They have different vantage points from which they view man. For Marx, man is the ultimate unto himself, and his humanness is expressed in his ability to produce. We have previously quoted Marx as saying that "(the) first premise of all human history is. . . the existence of human individuals. . ." and their organization. Marx goes on to say,

> They themselves begin to distinguish themselves from animals as soon as they begin to produce their means of subsistence, a step which is conditioned by their physical organization.[18]

It is, of course, reasonable to assert that the first premise of human history is the existence of human individuals. However, this assertion entails a presupposition concerning the vantage point from which man is viewed. Insofar as his humanity is derived from his own capacities (i.e., his ability to produce) man is defined in terms of himself, which is to say that man is ultimate unto himself.

Christianity, on the other hand, views man from the vantage point of a God Who exists independently of man.

> The second important characteristic of the Christian view of man is that he is understood primarily from the standpoint of God. . . He is made in the "image of God."[19]

These presuppositions have profound implications for the way in which man is conceived. Because man is defined by his productive capacity, historical man (or "real" man) is determined by his relationship to the mode of production. In capitalist societies, not all men are related to the mode of production in the same way. Marx argues that there are essentially two ways in which men can relate to the productive process. Either they own the means of production or they do not. This relationship forms the basis for the two great classes in capitalist society, the bourgeoisie and the proletariat respectively. The bourgeoisie is seen as that class which exploits the proletariat. It is quite evident that this is a propensity which has been woven into the very fabric of bourgeois nature, for it is to the proletariat that Marx looks to bring about a recontructed society. The proletariat, on the other hand, is an alienated class. By virtue of the fact that it is alienated from the mode of production, it is alienated from its "true" nature. As he extends his argument, Marx pits man against man in the form of class conflict.

The biblical conception of man is one that begins with the presupposition of man's creatureliness and finiteness in relation to an infinite Creator God. Man's sinfulness,

however, is not a function of his creatureliness; it is rather a function of his denial of his creatureliness, resulting in his self-conception as the ultimate. Ironically, what is affirmed by Marx to be the first premise of humanity is regarded by Christianity to be the Fall of man, and the source of his sinfulness. Because of its affirmation of man the ultimate and its focus upon the production process as the source of the historical nature of man, Marxism fails to realize that the propensity toward self-interest is a spiritual predicament in which all of humanity finds itself, regardless of the economic and social mileau in which it is located.

> This fact (self interest) which in Christian theology is regarded as the element of inevitable dishonesty in original sin, becomes in Marxism a tool of class conflict. It is used to transvalue the values of the dominant class and destroy their prestige. Marxism thus tentatively discovers and finally dissipates a valuable insight into human nature. It dissipates the insight because it fails to recognize that there is an ideological element in all human rational processes which reveals itself not only in the spirituality of the dominant bourgeois class, and not only in the rationalization of economic interest, but which expresses itself in all classes and uses every circumstance, geographic, economic, and political, as an occasion for man's assertion of universal significance for his particular values. This defect in human life is too constitutional to be eliminated by a reorganization of society; a fact which constitutes the basic refutation of the utopian dreams of Marxism.[20]

Brown makes this same point with somewhat less effort:

> Selfishness and the tendency to exploit others are not confined to any one segment of mankind. Eliminating a class will not eliminate injustice, because men in general, not a particular class of men, are responsible for injustice.[21]

Because the bourgeois class is caricatured as the source of exploitation, and because it is driven by an economic self-interest, Marx is forced to look to the proletariat as the savior of humanity. Yet this becomes problemmatical, for the proletariat is asked to bring about a social order which is contrary to its own nature. By virtue of the fact that man's nature is determined by his relationship to the mode of production and that the proletariat is alienated from this process, the proletariat is also alienated from itself. It is to this vexing problem that Alfred Meyer directs his attention when he asks, "How can the industrial working class, being so thoroughly alienated from its own human nature have it within itself to achieve its own emancipation?"[22] This question also has implications for the freedom claimed by Christianity. Man is a sinner, alienated from himself and God. What is the source of his freedom? Christianity rejects any notion of man being able to free himself. He cannot free himself for by nature he rebels against his relationship to God, which is the essence of his freedom. Indeed, man does not free himself, but is freed by the initative of God. Man's predicament is constitutional in nature, and his sinfulness is expressed in every dimension of his life. Only through the activity of an infinite, yet imminent God, is man (more properly, "are men") made free.

Many conceptual associations can be made between Marxism and Christianity. For example, both have some concept of the fall of man; both have a two-fold image of man (not a Classical dualist image); both focus upon the predicament of alienated man; and both propose an answer to this predicament. We have shown, however, that the way in which these conceptualizations take expression in reality, finds Marxism and Christianity sharing little in common.

Christianity and Marxism share one thing in common with regard to their views of human nature: they both reject the classical conception of a mind-body dualism in which the mind is exalted as the essence of man.

Conclusion

It is a difficult task to determine the compatibility of two perspectives such as Marxism and Christianity, for one is operating at an economic and political plane, and the other at a theological plane. However any social science must affirm, either explicitly or implicitly, some notion regarding human nature. Marx recognizes this and deals with it quite explicitly. It is at this level that the issue must be joined. This is a crucial issue, for it should be evident that the image of man one holds has certain implications for the extension of his thought. I am struck by the fact that it is often the case that those who seek to wed Marxism and Christianity fail to deal with this important issue. It is toward this end that we must first begin.

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Conservative Christians and Anthropologists: A Clash of Worldviews

CHARLES H. KRAFT

School of World Mission

Fuller Theological Seminary

Pasadena, California 91101

Anthropologists and missionaries as human beings are pervasively conditioned by the values of the cultures of which they are a part. Western anthropologists and western missionaries, as members of the same broad cultural stream, share many of the same values. Similarities in these worldview values, the result of similar cultural conditioning, explains some very basic common concerns and approaches. Among these common concerns is the felt need for both groups to attempt to transcend their own cultural conditioning, at least in cross-cultural contexts. There are, however, differences between the two groups in the ways in which each group attempts to transcend its culture. These differences are seen as differences in basic value orientations, here labeled worldviews. Several aspects of the differing worldviews are dealt with below.

The motivation for this paper stems from the felt need on the part of myself and others who attempt to be both missionaries and anthropologists to explain our understanding of how this is possible both to ourselves and to others. I attempt to do this first by outlining what I observe to be several areas of conflict between the worldviews of the two groups and then by making certain suggestions concerning the possibility for constructing an integrated perspective.

The historical and contemporary intracultural tensions between those who gravitate toward the opposite positions to be described are artifacts of the similarities and differences between the worldviews of the two groups. The influence of the cultural conditioning of the two groups is such, however, that neither is neutral toward the answers that the other group prefers. Historically, for example, western culture has moved from a theocentric worldview to an anthropocentric worldview. Given the deeply rooted assumption within the western worldview that any such major change is to be considered progress, it is understandable that those whose worldview is anthropocentric evaluate those whose worldview is theocentric as outdated. Thus, anthropologists tend to see missionaries as behind the times. Missionaries, for their part, tend to see the preferred answers of anthropologists as anti-Christian. The result tends to be a closed-mindedness on the part of each group toward (1) the options chosen by the other group, (2) tolerance of the persons who choose those options, and (3) the possibility of any integration of anthropological and Christian presuppositions into a single worldview.

In addition to the pervasiveness of the distinction between theocenteredness and anthropocenteredness is the fact that missionaries have ordinarily been influenced by the understandings of reality available through the study of the humanities, especially philosophy and history employed for theological purposes. Within these disciplines, especially as they are applied by conservative Christians, the "naive realism" perspective,[1] now being questioned and abandoned by philosophers of science, has continued to be very influential. Anthropologists, however, have been primarily influenced by a disciplinary perspective that is largely in revolt against at least certain of the major emphases of the humanities. In this revolt contemporary anthropologists have largely turned against naive realism.[2] It is understandable that missionaries, and conservative Christians in general, should regard any perspective other than that of naive realism as a grave threat to their core values.

Related to this conflict of worldviews between the older academic disciplines that have influenced the theo-

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logical perspectives of missionaries and the younger behavioral sciences is the fact that devotees of alternative worldviews often come across to each other as devotees of different religions. The devotion of many anthropologists (and other behavioral scientists) to their man- and science-oriented worldview seems often to be of the same nature as the devotion of missionaries to their theocentric worldview. It is well known in conservative Christian circles that many of the advocates of the behavioral sciences have attempted to promote their cause at the expense of supernaturalistic religion (e.g., Freud, Skinner). Such a fact led William James to contend that the supreme commandment of scientism is, "Thou shalt not be a theist" (James 1904:131). The fact that theological liberals often have virtually abandoned a supernaturalistic perspective in favor of a man-centered concern (often that of sociology) has also tended to turn conservative Christians against the behavioral sciences. Man-centeredness with its concomitant emphasis on cultural, social and psychological relativities has appeared antithetical to a perspective that attempts to focus on God and God-given attributes.

What missionaries, and other conservative Christians, often overlook is the man-madeness and consequent fallibility of every academic discipline, including those on the basis of which Christian theologians have made their interpretations of the Christian Scriptures. Even if, as missionaries contend, the data of the Christian Scriptures are sacred, the perspectives in terms of which they are interpreted are human. A recognition of this fact opens the possibility that even data that are regarded as sacred may fruitfully be analyzed from the perspectives of disciplines other than those traditionally employed.

Are the kinds of polarization discussed below between the concerns of Christian missionaries and those of behavioral scientists a necessary concomitant of the incompatibility of evangelical faith with naturalistic scientism? Or is it simply an artifact of the inability of such competing perspectives to overcome the pressure of western culture to push persons and disciplines to absolutize their specialized insights? One could, for example, infer that in areas of concern to both groups each polarizes in reaction against the other group's position. Anthropologists and other behavioral scientists, of course, do not ordinarily move to their positions in reaction to missionaries—their tendency is not to take missionaries quite that seriously. Their reaction, I believe, has its roots in the overall reaction against the theocentric worldview that our culture as a whole has abandoned except within the groups that produce missionaries. Missionaries, however, often react consciously to behavioral science perspectives by moving more firmly into the extreme positions characteristic of their groups.

The Polarization Outlined

Though there is a fair measure of variation within each group, the variations tend to cluster around the pole preferred by the group.

1. The first problem is that of *ultimate authority*. To conservative Protestants (including missionaries), God has been the source of ultimate authority. But, due to the tendency of western culture to absolutize one or the other of two alternatives, conservative theologians have tended to exalt God's authority while demeaning, largely ignoring, or, at best, only vaguely outlining that of human beings. Their treatments in this area often lack balance. Anthropologists, for their part, have been even more guilty of polarization since they have, in reaction, turned completely to human experience as the source of authority. This is, of course, in keeping with the naturalistic humanistic worldview that western science espouses.

Even if, as missionaries contend, the data of the Christian Scriptures are sacred, the perspectives in terms of which they are interpreted are human.

2. The second area where these groups differ is in *how to arrive at truth*. Conservative Christians have focused on revelation from God as the source of at least the most important truths, whereas anthropology looks to scientific discovery via empirical research as the source of truth. To conservative Christians (under the influence of their theological tradition) truth tends to be primarily a cognitive, propositional kind of thing, derived from faithful interpretation of the once-for-all revelation given in the Scriptures. For anthropology, on the other hand, the key to finding truth is a never-ending process of sense perception leading to theory building, testing and modification.

3. A third problem of concern to both groups is that of *determinism and free will*. Conservative Christian theorists have seen man as circumscribed by God. And those theologians who have gone to the determinist extreme have seen him as absolutely determined by God. In reaction against such theological determinism, other Christian theorists have focused on human freedom. Both Christian groups have, however, tended to deal rather imprecisely with the circumscribing, sometimes determining, effects of culture. Anthropology, has, of course, tended to ignore the possibility of divine limitation and focused on the interaction between human beings and culture.

4. A fourth concern pertains to the matter of *what (if anything) is absolute and what is relative*. Conservative Christians consider it essential that their perspectives be firmly based upon and give strong witness to theological absolutes. They seek to discern from the Bible divinely ordained absolute truths that are applicable to all humans at all times. Naturalistic anthropology, in reaction, has made the culturally relative aspects of human existence its primary focus. Anthropologists have been quick to criticize conservative Christians for regarding as absolute certain aspects of western culture. And many Christians have fallen into a kind of "worldview shock" by being forced to admit the validity of at least certain of these contentions.

5. Closely related to the opposing emphases with respect to absolutes and relativities is a polarization over

whether to be primarily concerned with *human commonality or with human diversity*. Conservative Christians, interested in discovering the "once for all" verities with respect to God have focused likewise on that which is regarded as the same for all human beings. Differences stemming from culture and/or psychology have often been noted but either minimized or condemned as heretical. Behavioral scientists, while retaining a commitment to basic human commonality, have tended to react against both (1) what they see as a naive overemphasis on the extent of such similarity and (2) the ethnocentric basis on which many of the generalizations concerning similarities are based. Within anthropology, then, there has developed a rather total peroccupation with cultural diversity on the part of many (though not all). At one extreme, many conservative Christians overestimate the number of similarities between "human nature" and basic western values. At the other, many behavioral scientists and many liberal Christians seem to have "sold out" to a relativistic perspective, acting as if nearly everything about peoples of different cultures is totally different. Many conservative Christians have blamed the behavioral sciences for such liberal perspectives as "situation ethics" (see Fletcher 1966). This has further alienated the conservative Christians from the insights of the behavioral sciences.

6. A sixth difference that can be noted relates to what I here call *a preference for "static models" versus a preference for "dynamic models" of reality*. The "once for all" preoccupation of conservative Christians has pushed them toward the adoption of perspectives that have very little room for "give" or growth in them. Behavior is understood as good or bad, black or white. A person is either a Christian or a non-Christian, in or out on the basis of one decision. The dynamic processes tend to be ignored by means of which one becomes a Christian and moves toward maturity or by means of which one changes one's behavior from sub-ideal toward more ideal. The behavioral sciences, though themselves also plagued by static models, have at least lately come to be more concerned with the dynamic processes by means of which changes in human behavior come about.

7. A seventh concern is the problem of *imperfection*. To conservative Christians, the immediate cause of evil is in human nature corrupted by sin. Anthropologists have, however, tended to go to an opposite extreme. They have taken a positive view of human nature. Evil, therefore, has largely been seen as a function of imperfect sociocultural systems rather than of imperfect people.[3]

8. Another area of polarization to be highlighted here involves the *focus on concepts recorded primarily in books versus a focus on people and their behavior*. The academic tradition of which conservative Christian theology is a part conceives of research as book-based and largely centered on thinking behavior. Anthropologists, as a part of the behavioral science reaction against the excessive preoccupation of many with the purely conceptual, have turned to studying the totality of human behavior. The field method called "participant-observation" has been developed by anthropologists in an attempt to serve this aim (see Pelto 1970). Conservative Christianity, minus this ability to study the totality of human behavior in culture, has continued to be concept and book-centered. This concept and book-centeredness has enormously hurt missionaries working in preliterate societies. Their background and training has provided them with no tools by means of which to get inside the hearts and minds of the peoples with whom they work.

9. A ninth area that may be designated is the fact that *both groups are active proselyters*. Conservative Christians, and especially missionaries, are, of course, openly committed to winning people to their point of view. Anthropologists, and other academicians who feel that their discipline has led them into new truth, often appear to be equally "conversionist." I once had to counsel a distraught graduate student who was nearly denied admittance to a doctoral program because, despite otherwise impeccable credentials, his professors questioned his commitment to the discipline.

10. A final point to be considered is the fact that *each group has its own "Golden Rule" that it tends to forget or ignore* when interacting with the other group. For Christians this doctrine is expressed as, "Treat others as you would like them to treat you" (Luke 6:31). For anthropologists there is the equivalent in the doctrine of cultural relativity (or, better, "cultural validity"). We are to respect and take seriously every other cultural way of life just as we respect and take seriously our own culture.

These are a few of the major issues on which the worldview of conservative Protestantism (from which the majority of the missionaries here in view have come) differs from that of anthropologists. The fact that many of the members of each group spend a considerable amount of energy criticizing the perspective of the other group indicates the extent to which the views are seen to be in competition with each other and mutually exclusive. It is not uncommon, for example, to find critical allusions to missionaries in anthropological publications and to find critical allusions to anthropologists (and other behavioral scientists) in statements made by conservative Christians. Not infrequently those of us who attempt to do anthropology on the basis of a conservative Christian ideology are regarded with suspicion by members of both groups. We question, however, whether the polarization that has occurred is necessary. For in so many areas we see the concerns of the two groups to be more conplementary than mutually exclusive, once the tendency to polarize completely at one extreme or the other is overcome. In what follows I seek to outline a possible synthesis of the worldviews in the hope that such a model might suggest a fruitful basis for understanding and, for some at least, for building a new worldview.

Toward a Synthesis

Human beings need some sort of worldview allegiance (or faith). Conflict at the worldview level between missionaries and anthropologists is, therefore, a conflict between faiths—not a conflict between faith and non-faith. The fact that one faith has a supernatural object while the other denies the relevance of that object cannot, I believe, mask the fact that even the anti-supernatural position is

a faith position.

Crucial to the conservative Christian worldview is an allegiance to a supernatural God. This worldview value would be regarded as non-negotiable in any attempt by Christians to take seriously the anthropologically preferred alternatives to the positions traditionally taken by Christians on the above issues. But, I believe, a conservative (better "evangelical") Christian could modify considerably in the direction of the anthropological position and remain true to the essentials of his faith. In fact, I would maintain (as argued elsewhere) that certain of the anthropological positions allow a Christian to be more true to biblical guidelines than do the traditionally held positions.

I further argue that an anthropological perspective does not require an anti-supernaturalistic worldview assumption, and that, therefore, those committed to supernaturalistic worldview assumptions can do valid anthropology. Indeed, given a commitment to the anthropological doctrine of "participant-observation," an anthropologist who is himself committed to supernaturalistic worldview assumptions is likely to be in a better position to study peoples who have supernaturalistic assumptions than is an anthropologist with a naturalistic worldview. A committed Christian (even a missionary) might, therefore, be able to adopt a validly anthropological perspective—but only if he/she adopts an understanding of Christianity that is not bound to the extreme positions outlined above. For example:

1. I believe it is possible to develop a perspective that denies neither the authority of God nor the authority of human beings—a perspective that holds to the ultimate authority of God, without denying either the importance of the delegation of certain authority to humans or the fact that on occasion God limits himself to that human authority. The Psalmist asked, "What is man?" and concluded that we are "but little less than God" (Ps. 8:4,5). Jesus became human and trusted humans (in spite of many good reasons for mistrust) to carry on his work after him. Perhaps the insights of the Science of Man (anthropology) concerning this marvelous creature that Christians believe was created by God are not incompatible with Christian understandings, as long as human authority is not absolutized. Perhaps, further, anthropological insight can assist conservative Christians to overcome their bondage to the so-called "Puritan" negativeness toward human beingness—a negativeness that lies behind much of the antagonism that many missionaries exhibit toward other cultures.

2. Informed Christians are forced to recognize that the search for truth is much more than a matter of receiving revelations from God. Even the study of the Bible, considered to be God's revelation, involves interpretation based on human conceptualization and perception. More Christians are coming to believe that such interpretation can be validly done from a variety of points of view—perhaps even from an anthropological perspective. There is, I believe, room within missionary-minded Christianity for an approach that takes seriously both divine revelation and the human discovery processes by means of which that revelation is made vital to Christians and to the life of the world around them. I am, in this regard, experimenting with an approach that postulates the revelational validity of the biblical data and the interpretational validity of a cross-cultural anthropological perspective applied to the understanding and application of the insights available from the biblical data. The results of this approach are in some respects quite different from those of traditional monocultural theological approaches. Many of the missionaries with whom I interact find the new approach much more promising. So do those with whom they work within other cultures.

An anthropological perspective does not require an anti-supernaturalistic worldview assumption, and therefore those committed to supernaturalistic worldview assumptions can do valid anthropology.

3. Those with a supernaturalistic faith (and especially Christian missionaries) can no longer ignore the mass of anthropological data concerning the influence of culture on human beings. Though committed to a belief that God is in ultimate control, informed Christians can no longer be content to deal with the relationships between human beings and God with only imprecise, passing reference to culture. For it is evident that even if one believes that it is God who ultimately circumscribes human beings, one must accept and try to understand the fact that culture also circumscribes humanity. Furthermore, conservative Christianity maintains that God interacts with human beings in history (=culture). Understanding the nature of that milieu and its relationships both to humans and to God is, therefore, of prime importance to Christians. Anthropology's strength at this point is in an area of one of conservative Christian theology's greatest weaknesses. For anthropology is the discipline that has devoted the most attention to the development of an understanding of culture. Christians can employ anthropological perspectives and methodology just as they have for years employed historical perspectives and methodology without fear of compromising their faith.

4. In the area of absolutes and relativities, we face perhaps the most sensitive issues. Conservative Christians, without the jarring experience of having to really face cross-cultural diversity, have tended to absolutize much more of western culture than even western interpretations of the Bible allow. Missionaries have often been much less ethnocentric. But even those with the most intense exposure to other cultures have often been extremely reluctant to accept the validity of the perspectives of other cultures.

This leaves conservative Christians committed to a faith once clothed in the trappings of a Middle Eastern culture but now pressed into Euro-american cultural forms and taken to the ends of the earth as if inseparable from these forms. Anthropologists and others with a relativistic bias have, I believe, rightly criticized Christians for regarding as absolute certain aspects of western culture. And many

Christians have seen the validity of at least certain of these contentions. Conservative Christians stop short, however, of seeing the essence of Christianity as simply the product of western (or any other) culture and, therfore, devoid of trans-cultural validity.

A committed Christian with an anthropological perspective seeks to distinguish between the relative cultural forms, in terms of which even transculturally valid Christian meanings must be expressed, and those meanings. He adopts and supports from the Bible (cf. Nida 1954:48-52) a "relative cultural relativism" and adds to the list of cultural universals acceptable to naturalistic anthropologists a category of "spiritual universals" or "universally experienced spiritual felt needs" to which he sees essential Christianity speaking. He attempts to learn from anthropology how to become expert in interpreting and applying his non-western source of revelation (the Bible) without sacrificing his supernaturalistic worldview, in such a way that the interpretations he makes are cross-culturally valid rather than ethnocentric. There is much potential conflict in this area between the practice of most anthropologists and that of most conservative Christians. I believe that this is mostly at the surface level, however. The conflict, while the result of the different faith positions as they are actually held does not indicate the impossibility of working out an informed anthropological approach based on a biblical faith.

5. In the area of whether to focus on human commonality or on human diversity, I believe both groups have begun to show more concern for the focus of the other. Anthropologists seem to speak more today of cultural universals while conservative Christians—especially those, like missionaries, who work cross-culturally—speak more acceptingly of cultural diversity. In my judgment, conservative Christianity still has a ways to go toward overcoming its absolutized ethnocentrism. A cross-cultural perspective learned from anthropology but wedded to a supernaturalistic worldview could provide an approach that is both more satisfying and more in tune with the Christian Scriptures.

6. Conservative Christians can and, I believe, must learn from anthropologists and other behavioral scientists concerning the dynamics of human life. It is often at least as important to understand the cultural processes by means of which people move (or are moved) from one state to another as it is to understand the goals toward which one desires that they move. Such understanding is important to an informed interpretation of the Bible. For the Bible shows God accepting people whose belief and who have attained to a particular ideal behavior. He accepts people who are "in process toward," even though not yet having attained God's goals for them. It is the imposition of western cultural models on biblical interpretation that has staticized the conception of what God approves to conform to western "either-or" values. The input of more dynamic anthropological thinking can contribute to freeing essential Christianity from its enslavement to traditional western modes of thought.

7. With respect to the problem of imperfection, biblical Christianity requires a belief that there is something radically wrong with human nature. There is, however, so much to learn from the findings of anthropologists concerning the outworking of evil in socio-cultural systems that Christians dare not ignore its insights. For conservative Christianity needs to deal in an informed way both with the evil in human beings and with its outworking in sociocultural systems.

8. Conservative Christians, especially those who work cross-culturally, can learn from anthropology how to study people and human behavior more effectively and with less dependence on books. This would be of great positive value both to the cause of the missionaries and to the people they seek to reach. It should, furthermore, constitute no threat to the missionaries' worldview.

9. Conflict between proselyters may never be fully reconcilable. But this situation could, perhaps, be rendered more tolerable if it is recognized that the two faiths are not at the same level and are not, therefore, mutually exclusive. Christian faith is an ultimate sort of commitment to a God who exists outside of the historical and cultural milieu within which human beings operate. Anthropological faith, on the other hand, is faith in a perspective in terms of which to view the historical and cultural milieu. If such faith posits a naturalistic or humanistic object or perspective as its ultimate, it is at that point that it conflicts with Christian faith. If, on the other hand, Christians insist that a particular perspective on history and culture is concomitant with their commitment to God, there may be conflict with anthropology at that point.

I would contend, though, that the ultimate faith in God exercised by Christians is combinable with the anthropological perspective (or perspectives) on history and culture. The perspective(s) on history and culture ordinarily associated with conservative Christianity are, I believe, artifacts of the marriage between Christian faith and the western academic perspective traditionally associated with the humanities (especially certain schools of philosophy and history), rather than essential parts of that faith. Likewise, the close association between the anthropological perspective(s) and naturalistic faith is an artifact of the situation that anthropology has been largely developed by those who espouse such a faith. If this is true, it is at least thinkable that another perspective (such as that of anthropology) could be employed by those committed to Christian faith—that those who are committed to an anthropological perspective could legitimately espouse Christian (rather than naturalistic) faith.

Whatever proselyting goes on between these groups should be recognized for what it is and conducted on the proper level. The advocate should understand whether he is seeking to win his hearer(s) to an essential faith or to a new perspective that will, of course, have implications for how one understands his faith but is not mutually exclusive with that faith.

10. With respect to the Golden Rule, perhaps the only thing to say is that one wishes that each group would obey its own version. I have attempted above to provide at least the start toward a rationale that would make toleration and respect between the groups more possible.

Conclusion

I have sought in this paper to make explicit ten areas where anthropologists and conservative (Protestant) Christians share similar concerns but follow different paths in seeking to deal with them. I have suggested that we are dealing here with a matter of similarity and difference between worldview values. The development of differing positions and the concomitant antipathy between the groups is understandable as a normal result of the historical backgrounds of the two groups. Though the focus chosen by each group in each of the ten areas tends to be in opposition to that of the other (in keeping with the differences in their respective worldviews), I maintain that the opposition is not necessary. By recombination (in Barnett's sense—Barnett 1953) of a Christian ultimate faith with a largely anthropological perspective on history and culture one can, I believe, both resolve the majority of the conflicting issues and develop a more satisfying worldview than either alternative has traditionally provided.

NOTES

[1]See I. Barbour (1974:34 ff) who describes this perspective as believing that such concepts as scientific theories are "accurate descriptions of 'the world as it is in itself'. . . Theoretical terms [are] said to denote real things of the same kind as physical objects in the perceived world." This position thus sees virtually a one-to-one relationship between reality (whether physical or spiritual) and the concept of that reality held by the advocate of this postion.

[2]The perspective that Barbour labels "critical realism" is much more in vogue within the behavioral sciences. This perspective, like naive realism, "takes theories to be representations of the world." But, unlike the naive realist, the proponent of critical realism "recognizes the importance of human imagination in the formation of theories. . . [He] thus tries to acknowledge both the creativity of man's mind and the existence of patterns in events not created my man's mind. Descriptions of nature are human constructions but nature is such as to bear descriptions in some ways and not in others" (1974:37).

[3]Anthropologist Walter Goldschmidt (1966:134-136), however, shows a mediating position.

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Apparent Age and its Reception in the 19th Century

DAVID J. KRAUSE

Science Division

Henry Ford Community College

Dearborn, Michigan 48128

Recently the use of "apparent age" as an apologetical tool has enjoyed a remarkable revival among many who argue for a "short" time scale for the earth and universe. Examination of an earlier period, 1800-1858, during which such arguments were utilized as a means of reconciling science and Scripture, reveals that when these ideas became widely known they were quickly and virtually unanimously rejected, and remained essentially unknown for a century thereafter.

Within the last twenty years there has been, in certain circles, a remarkable increase of interest in theories of the origin and development of the natural world that involve a "short" time scale, much shorter than the billions of years generally accepted by scientists today. Among the more interesting features of many such views is the inclusion of a principle of "apparent age," that dates back at least as far as the early 19th century: the belief that the universe or certain of its parts was created with the appearance of an age greater than its actual age. This belief, which is, for example, an integral part of the world-view espoused by Whitcomb and Morris in their influential book of 1961, *The Genesis Flood*,[1] and continues to be advocated by them and others of similar persuasion,[2] is evidently a characteristic of periods when the tension between contemporary scientific theories and a literal interpretation of the early chapters of Genesis is perceived by some as being especially acute. The years from 1800 to 1858 were evidently one such period, but most discussions of this interval include only brief references to the apparent age concept and its prime advocate, Philip Gosse.[3] In view of the resurgence of this belief at the present time, I felt that a closer look at apparent age in the 19th century, and particularly at the nature of its reception, might be illuminating. I have, in large part, allowed the words of the individuals involved to speak for themselves.

Historical Background

The belief that the world and its variety of living things were originally created with essentially the forms that they exhibit today was probably implicit in the thinking of many in the years before 1800. It seems likely, however, that apparent age as an explicit doctrine arose initially as one attempt to understand the nature of fossils. Among the multitude of such attempts during the 18th century were those that attributed fossil remains to the original, direct creative act of God, for various or unknown reasons.[4] Such claims, however, were not at that time part of any consistent, overall world view, but by the beginning of the 19th century Hutton, Playfair, and others had begun to advocate the concept of a vast age for the earth, and the relationship between the teachings of Genesis and the new geological theories became of increasing concern to many. Of the numerous and varied responses that this concern elicited, that of Chateaubriand is of particular interest. Writing in 1802 during the conservative reaction to the excesses of the French Revolution, his *Genius of Christianity* was an attempt to defend Christianity and its role in the progress of history. Among the main propositions that Chateaubriand argued for was the view that all evidence cited in support of a great age for the earth was refutable. After a defense of the traditional short time scale view of Genesis, he then provided one of the earliest

clear statements of the apparent age doctrine:

> "The earth", it is said, "is an aged nurse, who betrays her antiquity in every thing. . .". This difficulty has been solved a hundred times by the following answer: *God might have created, and doubtless did create, the world with all the marks of antiquity and completeness which it now exhibits.*.

and added further that "The oaks, on springing from the fruitful soil, doubtless bore at once aged crows and the new progeny of doves. . . .the very day the ocean poured its first waves upon the shores, they dashed against rocks already worn, over strands covered with fragments of shell-fish. . . ."[5] Chateaubriand here made very explicit what many undoubtedly simply took for granted previously. In subsequent years some writers openly adopted apparent age arguments to help solve the perceived difficulties between Genesis and geology. In the anonymous *Conversations on Geology* of 1828, for example, it is stated that, according to his system of Mosaic geology, Granville Penn

> concludes from the argument, that rocks were not formed by deposition nor melting, but at once by the fiat of the great Creator, in the same way as animals and plants were formed; . . .[6]

Gosse himself stated in 1857 that the concept was originally suggested to him by a tract he encountered a dozen or more years earlier, and that he recognized the "germ of the argument" in another of Granville Penn's works of 1822. Most of these early writers seem to have used apparent age primarily as a stop-gap, to deal with arguments for great age that could not be handled in any other way.

On the other hand, there were also those of this period who were dealing with the relationship between science and Scripture who, even though they held a high view of biblical teaching, nevertheless refused to take apparent age seriously. In 1840, for example, John Pye Smith published *On the Relation between the Holy Scriptures and some parts of Geological Science*, a work which went through several editions, in which he attempted to maintain the integrity of both science and Scripture. He discussed with great clarity the various evidences for a great age of the earth and the universe, but it was clear that he wanted no part of any explanation that involved an appearance or an illusion of age.

> Can any man imagine that granite was created in its characteristic state, a composition of visibly and palpably distinct minerals. . .? It would be almost as reasonable to affirm that the stomachs of the first animals were created with bitten and masticated fragments of the appropriate food in them.[7]

Smith also discussed the relatively new evidence from astronomy, which was based on the work of Sir William Herschel, the builder of great reflecting telescopes, and provided a simple but powerful new argument for the antiquity of the world that was independent of the geological theories of the day. By 1800 Herschel had concluded that his large instruments could reveal objects at a distance of some 12 million million million miles from us,[8] and by 1802 he had explicitly connected this distance to vast intervals of time:

> I shall take notice of an evident consequence attending the result of the computation; which is, that a telescope with a power of penetrating into space, like my 40 feet one, has also, as it may be called, a power of penetrating into time past. To explain this, we must consider that, from the known velocity of light, it may be proved, that when we look at Sirius, the rays which enter the eye cannot have been less than 6 years and 4½ months coming from that star to the observer. Hence it follows, that when we see an object of the calculated distance at which one of these very remote nebulae may still be perceived, the rays of light which convey its image to the eye, must have been more than nineteen hundred and ten thousand, that is, almost two millions of years on their way; and that, consequently, so many years ago, this object must already have had an existence in the sidereal heavens, in order to send out those rays by which we now perceive it.[9]

That apparent age could explain all of the evidence for great age in a logical manner was generally agreed. Few, if any, however, were prepared to take this logical possibility seriously.

"These views of the antiquity of that vast portion of the Creator's work which astronomy discloses," wrote Smith, "may well abate our reluctance to admit the deductions of Geology, concerning the past ages of our planet's existence."[10] Although, as exemplified by Smith, the implications of the geological and astronomical evidences were increasingly being accepted, apparent age was to experience a brief but spectacular revival. In 1857, Gosse published *Omphalos: An Attempt to Untie the Geological Knot*.

Philip Henry Gosse

Philip Henry Gosse was a person whose views would be heard. No irresponsible fanatic, he was a fellow of the Royal Society, an acquaintance of Darwin, "an eminent naturalist" with "acute powers of observation" and "no undistinguished place among British Naturalists." While his earlier works on zoology and marine biology gave no hint of what was to come, it is evident that the reconciliation of the scientific theories of his day with a literal interpretation of Genesis was of great concern to Gosse, and *Omphalos* was to be the basis of that reconciliation. As mentioned above, some years earlier the apparent age concept had been suggested to him by a brief tract. Now, faced with an ever increasing flood of evidences for the great age of the earth and universe, Gosse decided to use apparent age, not as a stop-gap where other arguments failed, but rather as an overarching, fundamental principle, "the Law of Prochronism in Creation."[11] His motive was clear.

> I would not be considered as an opponent of geologists; but rather as a co-searcher with them after that which they value as highly as I do, Truth. The path which I have pursued has led me to a conclusion at variance with theirs. I have a right to expect that it be weighed; let it not be imputed to vanity if I hope that it may be accepted. But what I much more ardently desire is, that the thousands of thinking persons, who are scarcely satisfied with the extant reconciliations of Scriptural statements and Geological deductions,—who are silenced but not convinced,—may find, in the principle set forth in this volume, a stable resting-place. I have written it in the constant prayer that the God of Truth will deign so to use it; and if He do, to Him be all the glory![12]

Gosse based his thinking on two major propositions. The first was that "All organic nature moves in a circle," a circle of birth, life, death, and rebirth, with the result that for any living creature any stage of its existence automatically bears the evidences of its previous stages. Much of the book is devoted to demonstrating this fact for a great variety of life forms. His second proposition was that "Creation is a violent irruption into the circle of nature," and therefore all created living things *must* have possessed, at the time of their creation, all the evidences of a previous but unreal existence, these evidences being therefore "effects which never had causes." Adam, for, example, although never born of a woman, clearly must have had a navel (and hence, the title of the book). This led Gosse to draw a distinction between developments that were "diachronic," those which occurred in real time, and those that were "prochronic," being "unreal developments whose apparent results are seen in organism at the moment of its creation. . . ," adding "Now again, I repeat, there is no imaginable difference to sense between the prochronic and diachronic development."[13] It seemed that his conclusions simply could not be denied. "This is not put forth as a *hypothesis*, but as a *necessity*; I do not say that it was *probably* so, but that it was *certainly* so; not that it *may have been thus*, but that it *could not have been otherwise*."[14] On the degree to which these concepts could be applied to the inorganic world Gosse was less certain, but still believed in the basic validity of his "Law of Prochronism." He suggested, for example, "*that the strata of the surface of the earth, with their fossil floras and and faunas, may possibly belong to a prochronic development of the mighty plan of the life-history of this world.*"

> Hence the minuteness and undeniableness of the proofs of life which geologists rely on so confidently, and present with such justifiable triumph, do not in the least militate against my principle. The marks of Hyaenas' teeth on the bones of Kirkdale cave; the infant skeletons associated with adult skeletons of the same species; the abundance of coprolites; the foot-tracks of Birds and Reptiles; the glacier-scratches on rocks; and hundreds of other beautiful and most irresistible evidences of pre-existence, I do not wish to undervalue, nor to explain away. On the hypothesis that the actual commencing point of the world's history was subsequent to the occurrence of such things in the perfect ideal whole, these phenomena would appear precisely as if the facts themselves had been diachronic instead of prochronic, as was really the case.

But what about other, non-geological evidences for great age, such as the astronomical work of Herschel, indicating that the light from distant objects would take thousands, even millions of years to get to the earth?

> Beautiful, and at first sight unanswerable as this argument is, it falls to the ground before the spear-touch of our Ithuriel, the doctrine of prochronism. There is nothing more improbable in the notion that the sensible undulation was created at the observer's eye, with all the pre-requisite undulations prochronic, than in the notion that blood was created in the capillaries of the first human body. The latter we have seen to be a fact: is the former an impossibility?[15]

And then, in summary:

> Finally, the acceptance of the principles presented in this volume, even in their fullest extent, would not, in the least degree, affect the study of scientific geology. The character and order of the strata; their disruptions and displacements and injections; the successive floras and faunas; and all the other phenomena, would be *facts* still. They would still be, as now, legitimate subjects of examination and inquiry. I do not know that a single conclusion, now accepted, would need to be given up, except that of actual chronology. And even in respect of this, it would be rather a modification than a relinquishment of what is at present held; we might still speak of the inconceivably long duration of the processes in question, provided we understand *ideal* instead of *actual* time;—that the duration was projected in the mind of God, and not really existent.[17]

Gosse's scientific reputation insured that the book would not be lightly dismissed, and that its thesis would be at least considered by his contemporaries.

The Reaction

The reaction was almost totally negative. The most frequently quoted source for this interpretation, although possibly not the most objective, has been the autobiography of Gosse's son Edmund, the literary historian and critic. In speaking of his father's motive for *Omphalos* and the nature of its reception, Edmund wrote:

> never was a book cast upon the waters with greater anticipations of success than was this curious, this obstinate, this fanatical volume. My Father lived in a fever of suspense, waiting for the tremendous issue. This "Omphalos" of his, he thought, was to bring all the turmoil of scientific speculation to a close, fling geology into the arms of Scripture, and make the lion eat grass with the lamb. It was not surprising, he admitted, that there had been experienced an ever-increasing discord between the facts which geology brings to light and the direct statements of the early chapters of "Genesis." Nobody was to blame for that. My Father, and my Father alone, possessed the secret of the enigma; he alone held the key which could smoothly open the lock of geological mystery. He offered it, with a glowing gesture, to atheists and Christians alike. This was to be the universal panacea; this the system of intellectual therapeutics which could not but heal all the maladies of the age. But, alas! atheists and Christians alike looked at it and laughed, and threw it away.[18]

and added that his father was plunged into deep depression as his prochronic theory failed to gain a favorable hearing.

Recently it has been argued that in certain particulars Edmund's story may not be entirely accurate, and that his literary talents may have outrun his memory, at least with regard to the *Omphalos* episode.[19] While this suspicion may indeed be correct concerning certain details, Edmund seems clearly right in his analysis of the general tone of the reception of his father's work. Charles Kingsley, for example, the Anglican clergyman, writer, and early supporter of Darwin, was a good friend of the elder Gosse, one for whom he had hoped to obtain a favorable reaction toward prochronism, but it was not to be. Kingsley, while never losing his admiration for Gosse as a scientist, indicated that "I would not for a thousand pounds put your book into my children's hands,"[20] and wrote to him:

> If we accept the fact of absolute creation, God becomes a *Deus quidam deceptor*. I do not mean merely in the case of fossils which *pretend* to be the bones of dead animals, but in the one single case of your newly created scars on the paudanus trunk, and your newly created Adam's navel, you make God tell a lie. It is not my reason but my conscience which revolts here.

and added further in a footnote to a new edition of his *Glaucus*:

> It is with real pain I have seen my friend Mr. Gosse, make a step in the direction of obscurantism, which I can only call desperate, by publishing a book called *Omphalos*.

—It seems to me that such a notion is more likely to make infidels than to cure them. For what rational man, who knows even a little of geology, will not be tempted to say—If Scripture can only be vindicated by such an outrage to common sense and fact, than I will give up Scripture, and stand by common sense.[21]

Omphalos was also reviewed by numerous journals and publications in the years immediately after its appearance. Their reactions are probably reflective of the general tone of the book's reception. *The British Quarterly Review*, for example, wrote that "More than once we have had occasion to write of Mr. Gosse as an eminent naturalist. Here we must view him in a somewhat different capacity. He now comes forward as a fanciful theorist." "Indeed, before we can entertain Mr. Gosse's proposition for a moment, we must put down all human reason—his own as well—and adopt a supposition which is... monstrous. . ." and "desperate," involving "lying geological appurtenances." It also pointed out the ultimate scientific obstacle to theories of this kind by saying, "It is impossible, however, to deal argumentatively with a theory which starts with a miracle, and draws upon that miracle for an answer to all your objections."[22] *The Westminister Review* stated, "It will doubtless be a surprise to our readers, as it has been to us, to find the geological notions of the dark ages resuscitated in the latter half of the nineteenth century by a writer who has acquired no undistinguished place among British Naturalists. . . ." His ideas involve "the material embodiment of a sort of dream." "The thing is too monstrous for belief; and the whole notion affords a lamentable instance of the degree to which the vision of even an intelligent man may be blinded by theological prejudice." Of Gosse's attempt to explain away the astronomical evidence of great age, by appealing to the direct creation of the light rays at the observer's eye, it was said, "This is cutting the Gordian Knot with a vengence." The review concluded with some advice for "Mr. Gosse and his disciples—if he has any."[23] A review in *The Geologist* included the following comments, stating that *Omphalos* was

. . . unworthy of Mr. Gosse, and indeed of anybody else, in its doctrine. . . . the world itself is thus, like everything else, made to offer a fallacious display of an antiquity it does not possess. As if God could create anything with the impression of untruth upon it. . . . We must not take up our Bibles and, with certain notions of our own, point out certain passages and say the Bible says so and so, and, therefore, no evidence of the senses must be allowed to contradict it. . . . We think most persons, not, in the least degree, geologists, would prefer to use their senses rather than blindly to be enslaved by such wild and hypothetical speculations, alike derogatory to the intellect of man, and to the power and wisdom of God.[24]

Perhaps the most penetrating analysis was that written in *The Natural History Review* which compared Gosse to Berkeley, and agreed that, logically speaking, the theory was impeccable.

We have no hesitation in pronouncing this book to be the most important and best written that has yet appeared on the very interesting question with which it deals. We believe the logic of the book to be unanswerable, its postulates true, its laws fairly deduced, and the whole, considered as a play of metaphysical subtlety, absolutely complete; . . . But the important question remains to be asked, whether, after all this display of logical subtlety, the world at large will believe one word of Mr. Gosse's theory. We are confident, and so we think is Mr. Gosse, that they will not. . . . From Berkeley's day to the present hour, his theory of the non-existence of an external world has not gained a single convert; and we believe that Mr. Gosse's theory of *Prochronism* . . . will prove equally barren and unfruitful. They are idle speculations, fit only to please a philosopher in his hours of relaxation, but hardly worthy of the serious attention of any earnest man, whether scientific or not. . . .We do not think that the cause of religion is served by these attempts to remove difficulties by metaphysical subtleties.

"Non tali auxilio, nec defensoribus istis
Tempus eget."[25]

The most wonderful mystery of all, the salvation of man by the atoning sacrifice of the Son of God, has more than once been endangered by the rash attempts of injudicious friends to explain what God had left obscure. For ourselves, we believe that a mode of reconciling all difficulties connected with the relation of the Bible to Science, *does exist*, and may be readily found, which would not detract one tittle from the authority of the former, nor require of us to abandon the use of our reason in the investigation of the latter.[26]

After the passage of a century the wheel had turned full circle, the philosophical corpse was disinterred, and apparent age was with us once again.

If the publication of *Omphalos* in 1857 was the high-water mark of the apparent age concept, reviews such as those cited evidently marked, in the very next year, its rapid decline as an acceptable means of reconciling science and Scripture. Gosse had, in effect, taken the idea as far as it could go.[27] That apparent age could explain all of the evidences for great age in a logical manner was generally agreed.[28] Few, if any, however, were prepared to take this logical possibility seriously. Gosse continued to advocate prochronsim in various letters and minor publications, but in his later scientific work, which includes some of his best, he is silent on the issue. No new champion of the cause appeared, and the concept seemingly vanished from sight. Upon his death in 1888, Gosse's obituary in the *Proceedings* reviewed his life and work but contained no reference to *Omphalos* or prochronism.[29] The *National Biography* of 1890 identifies *Omphalos* only, rather cryptically, as an "unfortunate" volume written "in a conservative spirit" that was "not warmly received, either by savants or the public."[30] In 1927 Brewster reviewed the historical background of non-evolutionary theories of origins, and acknowledged, as had been conceded by many in the 19th century, that "Logically, then, there is no refuting Gosse," but adding significantly "But men will not, in the end, set logic above eyesight," and concludes "the notion seems never to have been revived."[31] As recently as 1954 Ramm, in his review of past attempts at the reconciliation of geology with scripture treats Gosse and apparent age strictly as a 19th century phenomenon, with no evident awareness of such ideas in the 20th century.[32] And then, in 1961, Whitcomb and Morris published *The Genesis Flood*, and after the passage of over a century the wheel had turned full circle, "the philosophical corpse was disinterred,"[33] and apparent age was with us once again.[34]

Ecclesiastes 1:9

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[1]John C. Whitcomb, Jr. and Henry M. Morris, *The Genesis Flood* (Grand Rapids, Michigan: Baker Book House, 1961). See pp. 232-34, 237-39, 344-46, 354, 356-57, 366, 369.

[2]Henry M. Morris, ed., *Scientific Creationism* (San Diego: Creation-Life Publishers, 1974); John C. Whitcomb, Jr., *The Early Earth* (Grand Rapids, Michigan: Baker Book House, 1972). Every advocate of a greatly shortened time scale to whom I have spoken has, when pressed, used apparent age arguments.

[3]Gosse has received little attention from historians of science. The most complete source for his life is Douglas L. Wertheimer, *Philip Henry Gosse: Science and Revelation in the Crucible* (1977), a PhD dissertation completed at the University of Toronto.

[4]See, for example, Francis H. Haber, *The Age of the World: Moses to Darwin* (Baltimore: The Johns Hopkins Press, 1959), pp. 112-15.

[5]Viscount de Chateaubriand, *Genius of Christianity*, tr. Charles White, (Baltimore: John Murphy and Co., 1956), p. 136, 37.

[6]Anynomous, *Conversations on Geology* (London: Samuel Maunder, Newgate Street, 1828), p. 306.

[7]John Pye Smith, *On the Relation Between the Holy Scriptures and Some Parts of Geological Science*, from the fourth London edition (Philadelphia: Robert E. Peterson, 1850), p. 299.

[8]*The Scientific Papers of Sir William Herschel* (London: The Royal Society and the Royal Astronomical Society, 1912), V-2, p. 51. A reprint of the original paper "On the Power of Penetrating into Space by Telescopes" in *Philosophical Transactions* (1800), pp. 49-85.

[9]*The Scientific Papers of Sir William Herschel*, V-2, p. 213. A reprint of the original paper, "Catalogue of 500 new Nebulae, nebulous Stars, planetary Nebulae, and Clusters of Stars; with Remarks on the Construction of the Heavens" in *Philosophical Transactions* (1802), pp. 477-528.

[10]Smith, *On the Relation . . .*, p. 254.

[11]Philip Henry Gosse, *Omphalos: An Attempt to Untie the Geological Knot* (London: John VanVoorst, 1857), p. -vi.

[12]*Ibid.*, pp. vii, viii.

[13]*Ibid.*, pp. 124-26.

[14]*Ibid.*, p. 335.

[15]*Ibid.*, p. 347, 353.

[16]*Ibid.*, pp. 362-63. This is precisely the position taken by Whitcomb and Morris in *The Genesis Flood* (p. 369).

[17]*Ibid.*, p. 369.

[18]Edmund Gosse, *Father and Son* (London: William Heinemann, 1907), pp.121-22.

[19]Frederic R. Ross, "Philip Gosse's *Omphalos*, Edmund Gosse's *Father and Son*, and Darwin's Theory of Natural Selection," *Isis* (1977) V-68, pp. 85-96.

[20]Quoted in Wertheimer, *Philip Henry Gosse*, p. 261.

[21]Quoted in Una Pope-Hennessy, *Canon Charles Kingsley* (London: Chatto and Windus, 1948), pp. 184-85.

[22]*The British Quarterly Review* (1858), V-27, pp. 557-60.

[23]*The Westminister Review* (1858), V-69, pp. 143-46.

[24]*The Geologist* (1858), V-1, pp. 213-16.

[25]Roughly being, "This time needs neither such help nor defenders."

[26]*The Natural History Review* (1858), V-5, pp. 55-60.

[27]But not quite, perhaps. The most extreme use of apparent age arguments I have ever encountered is that of Henry Morris in his *Scientific Creationism*, where he suggests that various astronomical bodies may have been visible even before they actually existed (p. 210).

[28]The logical status of apparent age continues to draw comment. Thomas Leith (*Journal of the American Scientific Affiliation*, V-17 #4, 1965, p. 119) argued that apparent age is "a logical impossibility." His discussion seems somewhat obscure, and a series of exchanges (*JASA* V-18 #2, pp. 61-63; V-18 #4, pp. 125-126; V-19 #2, pp. 62-63) evidently has not clarified the issue. Whatever the merits of Leith's suggestion, it is evident that many in the 19th century, even while rejecting apparent age, agreed that it was logically consistent.

[29]*Proceedings of the Royal Society of London* (1888), V-XLIV, pp. xxvii-xxviii.

[30]*Dictionary of National Biography* (New York: MacMillan and Co., 1890), V-XXII, p. 260.

[31]Edwin T. Brewster, *Creation, a History of Non-Evolutionary Theories* (Indianapolis: Bobs-Merrill, 1927) p.121. Bernard Ramm (see note 32 p. 194) faults Brewster as "a most glaring example of failing to follow through the logic of the man he is criticizing." I believe, however, that it is Ramm who has misunderstood here. Brewster's point is that, even granting the logical possibility of a world created instantly with even the most detailed evidences of age built in, men will always, faced with this possibility, forgo logic and instead accept such evidences as indicators of a *real* past. This is the force of Brewster's comment that apparent age "depend(s) on logic and outrage(s) common sense. . ." (p. 121). This is also what I see as the meaning of Kingsley's statement quoted above (see note 21); "It is not my reason but by conscience which revolts here."

[32]Bernard Ramm, *The Christian View of Science and Scripture* (Grand Rapids, Michigan: Eerdmans, 1954), pp. 192-95.

[33]James R. Moore's term, from note 41 of his article "Charles Lyell and the Noachian Deluge" in *Journal of the American Scientific Affiliation*, (Sept. 1970), p. 115.

[34]The version of apparent age advocated by Henry Morris and his followers to me seems to contain a fundamental flaw that was not present in the work of Gosse. Gosse accepted the reality of the evidence for great age and explained it, in a consistent manner, as "prochronic." In *The Genesis Flood* and *Scientific Creationism* (to pick just two examples) however, the authors confusingly oscillate between two incompatible postions. On the one hand, the claim is made that certain evidences seem to indicate that the world is "young." These evidences are then accepted as being the result of processes that actually occurred in real time. Faced with other evidences that indicate that the world is "old," however, the apparent age doctrine is then invoked to explain why the implications of these evidences need not be accepted. This seems to be an obvious attempt to both have and eat the proverbial cake. Thus, apparent age as utilized by present day "creationists" does not correspond to its consistent use by Gosse, but rather bears a distinctly closer resemblance to its use by the early apologists of the 19th century who, when geology was first developing, invoked apparent age primarily to explain away data that could not be otherwise reconciled with a short time scale. While this oscillation between mutually incompatible alternatives may indeed provide a quick, convenient answer to any possible objection, it hardly seems to be an adequate base upon which to build a satisfying scientific world view.

Toward the Development of A Christian Psychology: Comparative and Physiological Psychology

RONALD L. KOTESKEY

Asbury College

Wilmore, Kentucky 40390

Comparative and physiological psychology are viewed from a Christian perspective. From this perspective secular comparative psychology studies how humans are similar to animals. This comparative method can be extended to studying similarities between humans and God. Physiological psychology studies how humans are similar to God with respect to neuroanatomy, neurophysiology, sensation, learning, and biological drives. Christian physiological psychologists must also remember that humans are also spiritual, sinful, perceptual, and cognitive beings.

A Christian world-view should be broad enough to encompass all areas of knowledge, including all areas of psychology. Although most Christians would agree with this statement, no one has specifically demonstrated that many of the subject areas of psychology fit into a Christian world-view. In previous papers (Koteskey, 1973; Koteskey, 1975) I have developed a basic Christian perspective into which all areas of psychology can be placed. Briefly, as adapted from Schaeffer (1968), this perspective is that humans are simultaneously created beings (similar to animals, different from God) and personal beings created in God's image (thus resembling him, and different from animals).

COMPARATIVE PSYCHOLOGY

Comparative psychology studies the similarities and differences in the behavior of living beings, from plants and one-celled organisms to primates, including humans. Some researchers study animals just because animals are interesting or because they have some interest in manipulating animal behavior. Others study animals rather than humans because they are easy to obtain, their genetic and experiential background can be completely controlled, and they are less complex.

Secular Comparative Psychology: Like Animals

Comparative psychologists are interested in comparisons among all species and in comparisons among different types of behavior within a species, not just in comparisons between humans and animals. The general goal of comparative psychologists is to move toward developing a general theory of behavior, one which postulates mechanisms applicable to all behaviors of all species. In

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attempting to accomplish this, they are more likely to compare several species of animals than to compare humans to animals, although they often do both. Two major approaches to comparative psychology have been used, ethology and experimental comparative psychology.

Ethology is the study of animal behavior from a biological viewpoint. Ethology originated in Europe and places an emphasis on naturalistic observation. Ethologists watch animals in their natural surroundings and carefully describe their behavior. Some observe animals in the field for long periods of time, while others rear animals themselves in nearly natural conditions so they can observe behavior even more closely. Ethologists maintain that this natural description of behavior is essential because premature artificial experiments may obscure important variables influencing behavior.

While European ethology was developing during the first half of this century, American comparative psychology was developing independently. The American researchers also studied animal behavior, but relied primarily on the experimental method. Most experiments were conducted in the laboratory where genetics, age, drives, past experiences, and so forth could be controlled. Objective, precise recording devices could be used and one variable could be manipulated at a time.

When the American comparative psychologists and European ethologists finally "discovered" each other in the 1950's, much controversy arose over the different concepts they had developed. One would expect these two groups to evolve different explanatory concepts since they are studying different types of behavior in different species under different conditions using different methods.

In the Christian perspective taken here, this comparison between various species of animals and between humans and animals is a valid comparison to make. Humans are quite similar to animals, including similarities in some of their behaviors. Humans and animals have similar sense organs, may learn in similar ways, have biological drives, and may inherit behavioral tendencies.

While humans are similar to animals in many respects, we must be careful to remember that they are also very different from them in others. When we apply the comparative method to the human species and systematically compare likenesses and differences to animals, we must be careful not to reason by analogy. *Analogy* may be used to *illustrate* but *never* to *prove*. While an analogy may be useful to help understand a difficult concept, it does not logically prove anything. In comparative psychology an analogy may serve as a fruitful source of ideas about human behavior, but it does not prove that a human's behavior is caused by the same thing as an animal's. Even though many insights about human behavior come from the study of animal behavior, the final test of their correctness *must* always be made by a direct study of humans. Uncritical, untested extrapolations from animals to humans cannot be made.

A Christian Extension: Like God

The secular comparative psychologists are correct as far as they have gone. The problem is in thinking of humans as "nothing but" animals. Humans are not only like animals, they are also similar to God. Humans are created in God's image; we must extend the comparative method to make comparisons between humans and God. Just as the study of animals has proven to be a fruitful source of hypotheses about humans, so does the study of God.

Of course, God is not exactly like anything we know. When humans have attempted to describe God, words fail. Yet even though we cannot know all about God, he has chosen to reveal certain things about himself; we call these his attributes. An interesting study can be done taking a list of the attributes of God and seeing how humans are like him and how they are different. God is self-existent, transcendent, omnipresent, and sovereign. Of course, we cannot be like him in these ways because we are finite, created beings.

On the other hand, God is holy and we are told, "Be ye holy; for I am holy." (I Peter 1:15-16; Leviticus 11:45; 19:2). God is love and we are told to "love one another as I have loved you" (John 13:34; 15:9-17), to the extent of loving our enemies, just as God did. "Be ye therefore perfect (in your love), even as your Father which is in heaven is perfect" (Matthew 5:43-48). God is just, so we are told to "give unto your servants that which is just and equal" (Colossians 4:1). God is merciful, so we are told "be ye therefore merciful as your Father also is merciful" (Luke 6:36).

Although many people are reluctant to make comparisons between humans and God, the Bible does so repeatedly. Most Christians want to be more Christlike: they want to increasingly develop God-likeness in themselves.

When considering the attributes of God one at a time, we must never forget that God is a unity. When considering any one attribute in detail, we find that the other attributes are always involved. All of his attributes are essentially one, blending into each other in his unity. There is no conflict among his attributes and they define each other. We must not overemphasize any one attribute or subset of attributes to the exclusion of others or we get a very unbalanced view of God. Even in this characteristic of God's unity, we are to be like him both within ourselves and in a social sense. Jesus prayed "That they all may be one; as thou Father, art in me and I in thee, that they also may be one in us. . . . That they may be one even as we are one: I in them and thou in me, that they may be perfect in one" (John 17:21-23).

The previous comparisons were from Scripture, but indeed similar comparisons are also found in secular psychology. Maslow (1968) reported finding values of Being, or B-values in people in peak experiences or in self-actualizing people. The B-values he found were wholeness, perfection, completion, justice, aliveness, richness, simplicity, beauty, goodness, uniqueness, effort-

lessness, playfulness, truth, honesty, reality, and self-sufficiency. Although he was an atheist, Maslow himself noted that these were "attributes assigned to most conceptions of a god." (p. 93). The person at a peak experience is god-like. Maslow noted that it is the god-like in ourselves that we are ambivalent about, attracted to it but afraid of it. He notes that we are simultaneously worms and gods.

Comparative psychology in a Christian perspective thus includes both what the secular comparative psychologists study and comparisons to God as well. These comparisons to God appear not only in the Bible but in secular humanistic psychology as well.

PHYSIOLOGICAL PSYCHOLOGY

Physiological psychology is the study of the anatomical and physiological bases of all behavior. Whenever behavior takes place, certain physiological events occur. It is these events which concern physiological psychologists. Physiological psychology is closely related to comparative psychology, so closely that the American Psychological Association publishes material on both in the same journal, the *Journal of Comparative and Physiological Psychology.*

Secular Physiological Psychology: Like Animals

Thompson (1975) begins his *Introduction to Physiological Psychology* by stating that humans are animals. He notes that psychologists too often ignore the fact that humans are biological organisms similar to animals in structure, function, and behavior patterns. Physiological psychology is an approach which emphasizes human similarities to animals, not another content area of psychology. Let us now look at some of the major topics usually covered in physiological psychology and attempt to relate human animal-likenesses to human behavior. These may have implications for humanity's relationship to God.

Neuroanatomy and Neurophysiology. Since the human nervous system is basically very similar to the nervous system of other mammals, many of the data gathered in physiological psychology are from animals. Generalizations are then made to humans. This is done for obvious ethical reasons. If one is interested in the effect of a lesion in a certain part of the nervous system on learning, sensation, or motivation, we cannot arbitrarily remove a part of a human's nervous system.

Christians have hardly begun to explore the implications of physiological psychology for their faith. Meyer (1975) is an example of one exploration in this area. He wrote an article on "Neuropsychology and Worship." Research in neuropsychology seems to indicate that there are at least "two minds," a verbal, analytic, dominant hemisphere and a spatial, Gestalt, non-dominant hemisphere. As we are to be transformed by the renewing of our minds, Scripture appeals to both minds. The apostle Paul reasons and debates in his travels to spread the gospel. Peter exhorts us to study our faith so that we can give a reason for the hope we have. The intricate rational discourses in the book of Romans also appeal to the verbal, analytic mind of the dominant hemisphere. However, Ezekiel's message is of a great mystical experience when the Lord appeared to him. The apostle John also received a similar vision of the Lord when God appeared to him at the Revelation. The highly symbolic descriptions of these men's visions appeal to the spatial, gestalt, non-dominant hemisphere. Meyer ends by calling the church to minister to both minds so that a complete transformation of the mind may occur.

Just as the study of animals has proven to be a fruitful source of hypotheses about humans, so does the study of God have that potential.

Sensation. Just as we are similar to animals in neuroanatomy and neurophysiology, so are we similar to them in our sensory processes. Humans are sensitive to a similar range of stimuli. Human sensory organs are similar anatomically and physiologically to those of other mammals. Neural pathways to the brain are similar in humans and other mammals.

Learning. Physiological psychologists have long assumed that humans and animals learn in a similar way. Although they have spent a great deal of time searching for the physical changes that result from learning, the search has been unfruitful thus far. Early work in this search centered around removing parts of the cerebral cortex. It was assumed that there must be connections between the sensory areas for incoming stimuli and the motor areas which controlled responses. However, it was found that it made little difference which part of the cortex was removed; all that mattered was the proportion of the cortex removed.

Physiological psychologists began to consider molecular biochemical changes in learning. If DNA could store the blueprint for an entire organism, certainly it, or some similar mechanism, could store the memories of a lifetime. DNA, RNA, and protein molecules have all been investigated. These experiments have been conducted on animals for ethical reasons and it is assumed that similar mechanisms will be found in humans.

Biological Drives. Of course, physiological psychology puts the emphasis on biological drives when dealing with motivation. Since humans are similar to animals, they do have these biological drives. Most of the evidence on the regulatory mechanisms of hunger, thirst, sex, and other biological drives has been collected from research with animals.

As an example, many psychologists have proposed "start" and "stop" centers in the hypothalamus which initiate or inhibit eating. Changes in food intake may be observed quite reliably following lesions or electrical stimulation of these centers in animals. Similar changes have been found in humans; Reeves and Plum (1969, as

cited in Balagura, 1973) reported the case of a young woman who developed a hypothalamic tumor. She suffered from excessive hunger and thirst. When she died two years later, her body weight had doubled and an autopsy revealed a tumor which was restricted to the ventromedial hypothalamic region.

Similar start and stop centers for thirst are found in the hypothalamus. Osmotic, electrical or chemical stimulation of the lateral hypothalamus induces vigorous drinking even in sated animals. Removing these parts of the brain produces at least temporary refusal to drink in a variety of species. Hormonal factors are also involved in that when the secretion of the antidiuretic hormone is reduced, both humans and animals develop excessive urination and severe thirst.

The similarity in physiological mechanisms underlying sexual motivation in humans and animals is not as clear cut. Sexual motivation of lower animals, especially females, seems to be under rather direct control of the sexual hormones. The presence of estrogen results in sexual receptivity and the absence of estrogen results in the absence of sexual behavior. Sexual motivation becomes increasingly independent of hormones as we look at higher animals and humans. At the level of humans, if there is a minimal amount of androgen present, sexual motivation seems to be relatively independent of the exact amount present. Increasing androgens beyond this minimal amount does not increase sexual motivation.

A Christian Extension: Like God

Previously I noted that Thompson (1975) began his book by stating that humans are animals. In the same section he goes on to point out that biology often ignores the fact that humans are unique animals. Rather than being simply naked apes, humans possess language which sets them apart from all other animals. Humans also have an apparently unlimited ability to develop complex and abstract thought. Their personalities have a complexity and richness which is qualitatively different from animals. Humans are the only ones to deliberately create art. They are the only ones to develop ethical and moral systems and behave with charity toward others. After listing all of these God-like characteristics, Thompson goes on to state that he believes that all of these characteristics are the result of evolution and have a biological basis in the structure and function of the human brain. If we understood the brain we should understand all of human behavior and experience.

In the Christian perspective taken here, I take issue with this assumption. Although I agree that humans are similar to animals in many ways, they are also similar to God in many others. When one begins to deal with language, personality, creativity, morality, ethics, and love, one needs to look more to comparisons with God than to the structure and function of the brain. God is spirit and a human created in his image is a spiritual being as well as a physical one.

Before discussing this spiritual aspect, we need to look at a Christian attitude toward the physical. Early Greek philosophy influenced some Christian theology so that it sometimes became "overspiritualized" to the point where the body itself was seen as something evil. The position taken here is that the human body is neither good nor evil, but can be used for either. Humans are mortal physically, so that they die and physically return to the dust of the earth. Yet though they may be weak physically, they are not inherently physically evil. Jesus showed a concern for the body in his healing ministry. He showed compassion for those with sensory and motor difficulties by healing the blind, the deaf, the lame, the lepers, and those who were maimed. Jesus would not restore something that was inherently sinful. We know that the physical body is not sinful in itself, since Jesus Christ was made flesh and yet lived sinlessly among us. He would not have taken on something inherently sinful. Furthermore, our bodies are described as God's temples. Jesus Christ and the Holy Spirit are often referred to as dwelling in us, and God would not dwell in something inherently sinful. Finally, God chose the analogy of the human body to tell us about what our relationship with each other and with his Son should be. He would not have chosen something inherently sinful as an analogy for the church and then put Christ as the head. As Christians we must study the human's animal-like body and its influence on behavior.

Spirit and Sin. While humans are anatomically and physiologically similar to animals, they are also spirit, like God. God is spirit, and humans, created in his image, are also spiritual beings. God does not dwell in temples made by humanity, but he does inhabit humans, spiritual beings. Romans 8 has an extended discussion of the body and spirit, noting that when God dwells in us it even has an effect on our natural bodies, giving them new life. The physical and spiritual influence each other. Spiritual and physical well-being go hand in hand. The term "psychosomatic" illness implies this unity. Psychological or spiritual problems may be expressed in ulcers, headaches and a variety of other "physical" illnesses. On the other hand, the physically ill person is likely to experience spiritual problems as well. Pastors are much more likely to visit the physically ill than the healthy.

As spiritual beings humans are also capable of sin. Psychologists have done little to study the effects of sin. Clinical psychologists have noted how frequently guilt feelings are found in the etiology of mental illness, but the concept of sin is seldom mentioned. Menninger (1973) asked *Whatever Became of Sin?* and concluded that things which used to be called sins are now called crimes or symptoms. When they were sins, the minister or priest dealt with them. Now the police, the judge, the lawyer, jailer, psychiatrist or psychologist handle it. They arrest, coerce, incarcerate, counsel, treat, and execute, but never forgive.

Humans are different from both God and animals in that they have the capacity to sin and have sinned. Animals do not have the capacity to sin. It is the image of God in humans that makes them morally responsible. God does not sin. In his holiness, he does not capitulate to evil.

Sin must be taken into account in the study of physiological psychology. Not only are humans a part of a fallen

world, but specific sins have physiological effects. As an example, police frequently use the lie detector which capitalizes on the fact that the guilt that most of us experience when we lie (sin) results in widespread measurable physiological changes. Blood pressure, breathing, heart rate, and electrical resistance of the skin are all affected. Other sins undoubtedly also have physiological effects.

Perception. While humans are similar to animals in their sensory processes, we must not forget that humans are also similar to God in their perceptual processes. Humans do not merely passively receive stimuli. They are active in selecting the ones to which they attend, organizing and attributing meaning to such stimuli. When studying sensation as physiological psychologists, we must be aware of these higher processes in humans and the effect these higher processes have on sensations experienced.

Cognition. The topic of perception leads naturally to the topic of cognition. Perceptions are intricately related to cognitions. Humans may have the same molecular bases of memory as animals, but humans are also God-like, rational beings. In Isaiah 1 God asks us to come and "reason together" with him. We all agree that animals can learn and we sometimes talk *to* them, but we do not really believe that we can "reason together" with them.

These God-like factors enter into even relatively simple learning situations, such as classical conditioning. The major research emphasizing cognitive (God-like) factors was done by Kenneth Spence and his colleagues during the 1960's. Spence (1966) summarizes this work, noting that extinction in animals proceeded at about the same rate as acquisition, but in humans extinction occurs much more rapidly. He attributed this to cognitive factors and showed that when using masking situations (where the subject was deceived as to the purpose of the experiment) to eliminate cognitive factors, extinction of the conditioned eyelid response in humans proceeds at a relatively slow rate, as in animals. That is, humans are different from animals, but if one controls for (eliminates) the God-like cognitive attributes, then humans learn like animals.

Cognitive Motivation. In addition to the animal-like biological drives previously discussed, humans also have God-like cognitive motives. Humanistic psychologists have studied the motive toward self-actualization as mentioned in the section on comparative psychology. Even the humanists recognize this drive toward becoming God-like. Humans may also be motivated by love, a real concern for the other person.

Cognitive factors are also involved when studying the physiological drives. Numerous experiments have shown that hungry people respond both to internal cues and to external cues, such as the presence of food, the effort needed to get it, and taste. Zimbardo (1969) presents many experiments in which cognitive dissonance is shown to change how thirsty people felt, how much water they drank, and even the chemical composition of the blood. Cognitive factors are major determinants of sexual motivation. Removal of the ovaries and testes in humans has been shown to have little effect on sexual behavior—unless the person thinks it will.

When one begins to deal with language, personality, creativity, morality, ethics, and love, one needs to look more to comparisons with God than to the structure and function of the brain.

Conclusion

It should be emphasized here that a human person is a unity, just as God is a unity. Any division into animal-like and God-like attributes is highly artificial and only for the purpose of analysis. Even then, something is lost in such an analysis. Whenever we consider animal-like traits, we must not ignore the God-like traits.

The particular Christian perspective taken here accepts what comparative and physiological psychologists have done, yet says that they have simply not gone far enough. Secular comparative psychologists have compared humans only to animals. This Christian perspective says that the comparative approach must be extended to making comparisons between humans and God. Likewise, physiological psychology has emphasized humans as physical beings. This Christian perspective says that we must also view humans as spiritual beings and be aware of their God-likenesses even when studying the physical.

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Explanation, Testability, and the Theory of Evolution Part II

T. H. LEITH

Department of Natural Science

Atkinson College

York University

Toronto, Ontario, Canada

The Relationship of Explanation to Prediction

Some analyses of evolution, having argued that it does not explain in the fashion of physical science, have concluded also that it cannot predict as we expect the physical sciences to do. Others like Popper believe conversely that evolutionary theory fails to predict and thus does not explain nature in the manner which we expect of science. Both are, as I have tried to show, mistaken in their respective initial assumption but each has raised an important issue—the relationship between prediction and explanation. It is worthy of some closer examination.

Let us look again at the deductive model of scientific inference: one or more laws of some type L_1, L_2, . . . , together with statements about specific circumstances C_1,C_2, . . . , provides a statement about an event E. In prediction we begin with the laws and the circumstances obtaining and derive a statement about the occurrence of an event. In explanation we begin with E (the *explanandum*) and reason that it arises because of the laws and circumstances stated (the *explanans*). We move with equal ease or difficulty in either direction because the logical relationship is time-symmetrical.

(One comment in passing: I have used the term "prediction" but this suggests that whether E is predicted or explained depends on whether E lies in our future or in our past. In historical studies, such as parts of geology, we must however include the postdiction that, given the uniform application of nature's laws and the presence of the same relevant circumstances in the past, an event which we would anticipate in the future is also as likely to have occurred in the past.)

If there is a temporal symmetry in the logical relation of explanans and explanandum when explaining and predicting (or postdicting) there is on the other hand, no necessity that there be a symmetry in a scientist's confidence when he does so. Physics, when universal laws are employed as they commonly are, provides its practitioners with as much assurance in their predictions as in their explanations but the evolutionist is in a very different position. For one thing, even if he too could employ universal laws, which would not themselves be the source of uncertainty, the evolutionist realizes that individual organisms or populations are found in conditions which are quite unlikely to be as knowable for the future as they are, from the stratigraphic record, for the past. The explanans, as a result, is far less satisfactory in one case than it is in the other.

This may seem to suggest that postdictions do not suffer from the same difficulties as predictions in evolution. We must be careful here. Certainly, a scientist will feel secure in stating that an event has occurred in the past, if he has a record of it, but unsure that it will happen in the future where he can have no record. However, if he used the same laws and the *same uncertain circumstances* that he must use for prediction, as we noted above he could postdict a past event with no more confidence than he could predict a similar event. Also, knowing that the event has occurred, provides him with no more assurance that he has explained it in terms of some ex-

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planans than using the same explanans provides for postdicting the event or predicting a similar occurrence.

Where the stratigraphic record helps the evolutionist here is in presenting him with a reasonably well-defined set of circumstances preceding a past event. These, together with appropriate laws may be employed to explain the event and, had he used the same explanans, could have enabled him to predict it with equal confidence if he had been alive at an earlier time. Were the scientist today to assume that the same explanans is applicable in the future he could predict with the same assurance. Were he to believe that it was applicable at some locale and time in the past which is different from the above event he could also postdict a similar event just as confidently.

Because he often has a geological record the scientist is clearly aided in arriving at sets of conditions on different past occasions and at different places from which he can postdict different events (and likewise explain them). For the future, he can say only that, if the same sets of conditions prevail, he will forecast similar events: these conditions though may be not only different but quite uncertain. Surely, then, if some of the scientists postdictions are corroborated by later research and very few are falsified, he will be increasingly confident about events which he has postdicted but whose traces are not yet observed. His predictions on the other hand can have been tested at best over only the short period between when they were offered and the present. Thus, even if some have been corroborated, his confidence in his forecasts over a longer time, and certainly over future intervals of the order of those found within the fossil record, is unlikely to be nearly as great.[20]

Explanation and Prediction in Darwin's Theory

We have now seen that evolutionary explanation, in spite of variant descriptions offered of it, has a style which is scientific by the standards of understanding within the physical sciences. It is, of course, often supplemented by narration where brevity or inadequate information prevents a proper explanatory account.[21] Concommitant with this sort of explanation is the presence of predictions and postdiction, and therefore the possibility of testing.

However, these are general observations. Evolutionary concepts and laws may have characteristics differing from those usually found in the physical sciences. Predictions may suffer from limitations unfamiliar to the physical scientist. Then too, as in the other sciences, explanations offered in evolution may vary in scope, in conceptual content, in testability, and the specific predictions and postdictions accompanying each may differ.

Let us look here at Darwin's theory with these thoughts in mind. Pun has recently outlined the Darwinian schema,[22] the principal theses of which may be summarized as follows (though Darwin knew that they were supported by evidence of varied worth or arguments of differing character):

One may argue that selection and adaptation are testable implications of Darwinian evolution.

1) *random variation within species in nature produces organisms adapted to their environment in varied degrees;*
2) *natural selection preserves preferentially those variants best fitted to the environment;*
3) *species under natural selection are modified and eventually give rise to new species;*
4) *the fossil sequence is a fragmented record of past modifications;*
5) *life originated chemically and by natural laws;*
6) *the interval from this origin to the present and even the period recorded paleontologically, is very long;*
7) *variation is inherited by the process of pangenesis, a process which entails the inheritance of acquired characteristics.*

Over the past century these theses have been evaluated in varied ways. For example, in 1837 Lyell commented that

> in attempting to explain geological phenomena, the bias has always been on the wrong side . . . a disposition to reason *a priori* on the extraordinary violence and suddenness of changes . . . instead of attempting strenuously to frame theories in accordance with the ordinary operations of nature.[23]

There is no doubt that much of the early, and some of the later, denials of Darwin's theses are grounded in a similar prejudice.[24] Others, like William Thomson (Lord Kelvin) considered the generalizations developed by Darwin imprecise, incapable of quantitative measurement or mathematical expression, and in disagreement with established theory. He also preferred to believe that life was as old as the universe, arriving on earth by means of meteorites.[25] Though similar judgments are common and important in science, I shall not consider them to be tests of Darwinism in the spirit of my earlier comments.

Another sort of evaluation lay in an examination of the theses individually. Thus, for example, pangenesis, with its concepts of blended inheritance and of gemmules, was eventually found wanting. On the other hand, the idea that life is of inorganic origin and arose by natural processes is today widely accepted as feasible and even probable.[26] Likewise, the vastness of geological time recorded in the fossil sequence (over 3 billion years) is now considered firmly corroborated though this was frequently denied before the discovery of radioactivity: witness Kelvin's 1868 comment that "the existing state of things on earth, life on the earth, all geological history showing continuity of life, must be limited within some such period of past time as one hundred million years."[27] This was considered far too short by evolutionists, unless of course rates of extinction and modification were somehow more rapid in the past than at present; that in turn called for an explanation which wasn't forthcoming.

Of course these theses are not on a par with (1) - (3) above which formulate the basic Darwinian theory. Theses (4) and (6) follow from the theory together with certain other assumptions while (5) and (7) express additional postulates, the one extrapolating the naturalness of biological evolution into the prebiotic period and the latter suggesting the nature of the inheritance of modification. What then may be said about the testability of the remaining kernel of Darwin's scheme?

Consider first the matter of variation. Williams[28] notes that the scheme predicts transitional forms between an ancestral species and descendent species which are reproductively isolated. This, together with the assumption that the causal agencies for speciation which are found in the past are also present today, leads to the conclusion that populations will be found at present which contain all the predicted stages of transition. This appears to be the case.[29] Again, Lovtrup[30] argues that Darwin's theory does not call for organisms to be necessarily optimally adapted to their environment and thus calls for extinction to be expected on occasion. This prediction is both testable and corroborated. Or again, Darwinism predicts that organic forms will increase in variety and complexity with time: this too appears to be testable.[31]

Earlier we mentioned Ruse's critique of Popper who enunciated a variety of common claims against the testability of such ideas as speciation, adaptation, and evolutionary rates. In response to the claim that evolution does not predict the evolution of variety, Ruse notes that in a world of varied ecological niches (past and present) evolutionists would be disturbed if no evidence of speciation were revealed.[32] There is however considerable evidence that populations isolated from the ancestral group have evolved into new species under differing conditions; surely that is a fulfilled prediction.

Likewise, one may argue that selection and adaptation are testable implications of Darwinian evolution. For example, Darwin predicted that competition between species of the same genus and inhabiting the same environment would generally be more severe than between species of different genera.[33] That is clearly either true or false. Nor is adaptation devoid of empirical content (i.e. merely an analytical definition as Popper claimed): there is evidence that what is of adaptive value in one situation is also of value in similar situations, that a characteristic of an organism may be adaptive at one place and time and not in another, and that adaptation isn't always equated with survival (except in terms of group averages) because less-well-adapted individuals often survive better than the well-adapted.[34] More specifically, claims as to the function of specific parts of organisms may be tested and such tests are really attempts to demonstrate the predicted adaptedness of these parts.

As a final example we may note Darwin's prediction that evolutionary change will be gradual: "If it could be demonstrated that any complex organ existed, which could not have been formed by numerous slight modifications, my theory would absolutely break down" and "Natural selection acts only by taking advantage of slight successive variations: she can never take a great and sudden leap".[35] Clearly these were empirical claims, however difficult it has proven to obtain agreement on the tests involved as many of us know.

I must assume that, with these examples, it is understandable that biologists and geologists were justified in treating Darwin's scheme as both explanatory and predictive as most of them did in the half century following Darwin. Of course, there were numerous issues in historical areas on which Darwin's theory was *not* predictive (or postdictive): the specifics of biogenesis or the specifics of the expected interrelationships among many groups and the modes by which one changed into another are examples. At best Darwin, or those accepting his scheme, might speculate on these matters in the absence of either data or prediction. The evolutionary theory, though it claimed universal application for its principles, lacked both sufficient knowledge of environmental conditions and an adequate set of postulates for making many testable statements about biological development.

It is necessary to emphasize as well that Darwin's followers, like contemporary workers in evolution, frequently did not focus upon predictive matters at all. As Manser was seen to argue earlier, they treated evolution by natural selction as a conceptual scheme whereby things are to be related in certain ways and seen as exhibiting certain processes. Kuhn[36] has called this activity "normal science," a process of articulating a thesis and elaborating it, a process of solving puzzles by applying it rather than putting it to test. The procedure is familiar to students in (say) physics laboratories: they are asked to perform experiments but one could scarcely call what they do tests of physical theory. They are rather illustrating its application.

This is not the occasion to examine either Kuhn's description of normal science for appropriateness or, if it is correct, such activity as proper policy among researchers. We have also seen that conceptual schemes, if scientific, are predictive and that Darwin's scheme exhibits that property. Here I merely wish to point to a facet of Darwinian (and later) evolution which looms large, for it explains what is going on when critics claim that evolutionists argue in a circular fashion, that they believe nature provides evidence for evolution while interpreting that evidence as if evolution were already demonstrated.

Kitts illustrates what worries the critic.

> We cannot fault paleontologists. . .for refusing to accept events out of history as falsifications of the general laws to which they are committed. . . . This is not a kind of dogmatism directed at shaping the world according to some arbitrary preconceived scheme. It is a means for getting from the present to the past.[37]

Again he says,

> Thus the paleontologist can provide knowledge that cannot be provided by biological principles alone. But he cannot provide us with evolution. We can leave the fossil record free of *a theory of evolution*. An evolutionist, however, cannot leave the fossil record free of the *evolutionary hypothesis*. But the danger of circularity is. . . present. For most biologists the strongest reason for accepting the evolutionary hypothesis is their acceptance of some theory that entails it.[38]

Let me clarify by pointing out that Darwin arrived at his theory by a creative synthesis of suggestions including fossil sequences.[39] Such sequences may often be ordered properly in time by stratigraphic (relative) techniques or radioactive (absolute) determinations. However in cases where these are not usable the sequences derived elsewhere may then be applied to determine a proper time order on the assumption that sequences are invariant from place to place. This procedure is neither circular nor need it presuppose phylogenetic evolution but, as with Darwin, the temporal sequences may (they need not, of course) suggest an evolutionary process. Used in conjunction with other information they may take their place then among the foundations of a theory of evolution. In turn, the theory now requires that, as long as it is held by paleontology, workers in that field will employ evolutionary interpretations. There is no circularity here either as long as the paleontologist does not confuse "illustrations" with "evidence." As an evolutionist he or she will read the fossil record as illustrating evolution; its evidential role in suggesting the theory of evolution is now past.

The evolutionist is in a position where his demonstrations of the workings of evolutionary processes frequently go beyond observational or empirical data.

Two comments must now be made. For one thing, the evolutionist (as we remarked earlier) is in a position where his demonstrations of the workings of evolutionary processes frequently go beyond observational or empirical data. The illustrations are speculative; they merely show how the theory might be developed to cover hiatuses in our knowledge. Thus it can be said that "Darwin did not show in the *Origin* that species had originated by natural selection; he merely showed, on the basis of certain facts and assumptions, how this might have happened. . .", a speculation giving the impression that he had given examples of transformations by natural selection.[40] Or, "It is a matter of faith on the part of the biologist that biogenesis did occur and he can choose whatever method of biogenesis happens to suit him personally; the evidence for what did happen is not available."[41]

Kerkut's statement is rather overdrawn in the sense that methods of biogenesis must operate (if they are to be understood naturally) within numerous constraints of physical and chemical sorts provided by geological and laboratory evidence. Nonetheless, it does point up the subjective element involved and the flexibility which still remains. These mark any speculative enterprise and lead to Thompson's charge that demonstrations "can be modified without difficulty to fit any conceivable case."[42]

My second comment has to do with the evidential role of biological information (we mentioned the fossil record, for example) after the Darwinian theory has been accepted as a useful conceptual scheme.[43] I have argued that the theory remains testable, that it is possible to corroborate or falsify Darwinism without assuming what must be shown. Specifically, the fossil record might very well turn out to provide information quite different from the expectations of the theory. Thus, only while one is speculating within the unknown is a charge like Thompson's appropriate: if the unknown is reduced by new information, and though we may continue to speculate within remaining areas of ignorance, we cannot modify our earlier speculations without difficulty as he claims. This is because the falsifying information calls for a new theory and new modes of illustrating its workings.

The Structure of Neo-Darwinism

It has not been my purpose to more than mention incidentally the corroboration or falsification that nature provided to the Darwinian theory. From what I have said it should, however, be apparent that the theory was testable in specific areas to very different degrees and that, as an explanatory device, it served at times merely as a guide to speculation. This has been, of course, the common lot of scientific theories through the years and, as it is also their lot to suffer alteration or replacement, so it was with Darwin's scheme. In time its ancillary postulate, pangenesis, was replaced by an idea denying the inheritance of acquired characteristics and involving Mendelian principles. The new theory carried with it new explanatory, as well as new testing, possibilities, but more importantly for us it has drawn increasing attention as well to various features which appear to contrast with schemes employed in the physical sciences. Thus, in what follows, I shall discuss explanation and testability in terms of these contrasts rather than, as I did in the last section, focussing upon the ways in which evolutionary theory is respectably similar to physical schemes.

The Character of Prediction. We have seen that evolutionary theory has often been taken to be non-predictive. We have also noted, explicitly or implicitly, several reasons for this judgment but the point deserves a little further comment in the light of Neo-Darwinian thinking.

It is characteristic of the contemporary scheme, even more fully than in Darwin, that its analysis is in terms of the properties of groups. If variation has to do with an individual's adaptation to its surroundings, evolution involves the accumulation of variations suited to a given environment and the elimination of others. Speciation involves the transformation through time of one collection into a different set of individuals. If we talk of selection we talk of gene frequencies, and if we talk of the survival of the fittest we mean that one population expands at the expense of another. Thus, because we analyze in this fashion, we must predict in the same way. The predictions of everything from mathematical genetic models to the drawing out of the intuitive implications of evolutionary postulates are in terms of groups. Oddly, this is often forgotten.

Williams[44] offers an explanation: because they see individuals and not things like species, many critics tend to

seek predictions about individual properties instead of recognizing that they must predict in terms of group concepts. She makes an interesting contrast here to the way they treat the predictions of the kinetic theory of gases. These are of familiar things like temperature and pressure so the theory does not bother the critics, whereas evolution is bothersome with its predictions in terms of abstract concepts. If it could only be seen that evolution is forcasting or postdicting patterns, and not single events or individual properties as we usually perceive them, perhaps it would be recognized that discomfort here is at bottom psychological.

Falsification or corroboration then rests in whether nature is patterned as we anticipate. It cannot rest in the truth or falsity of statements about particular things for these are *derived from* the actual predictions and assert only probabilities, e.g. from Neo-Darwinian theory we may deduce a group's survival but only the probability of a particular individual surviving.

There is, of course, the problem of characterizing these predictions explicitly. Properly this should be done in terms of the properties of patterns. In a gas, for example, which is a group of molecules, we may predict the average squared velocity of the molecules because this average is a property of the gas. In taxonomy, Mayr speaks of sorting "numerous specimens and species into 'natural groups' by scanning their total gestalt, based on an evaluation of very many characters, most of which he does not analyze or record in detail."[45] This gestalt is the pattern which actually defines the taxon.

Were we, on the other hand, to try to predict the behavior of a single molecule at some specified temperature we cannot. Nor can we make a prediction about all of the molecules in the gas at that temperature—they don't have any relevant property in common. Yet, in biology the taxonomist is often found defining a taxon by certain constant and readily-recognized characters which are neither individually necessary nor collectively sufficient rather than by the gestalt by which he identified it. It is common in biology to characterize patterns in this way, in terms of properties which are psychologically familiar. Predictions involving patterns are therefore sought out improperly.

Let me quote Williams.

> It is difficult to find (predictions) in the literature not because they are rare but because they do not conform to our expectations of what evolutionary predictions would look like. They are not predictions about the human-sized phenomena which we intuitively recognize as individual events; they are, rather, predictions about patterns in sets of these human-sized phenomena. It has been extremely difficult to perceive these patterns . . . because our knowledge of them is obtained by piecing together information obtained from literally hundreds of thousands of human-sized individual events. To see these evolutionary events as individuals, in a single gestalt, is difficult enough; to verbalize adequately this gestalt is vastly more difficult.[46]

The Character of Evolutionary Concepts. The remarks above have illustrated one of the nuances which mark some distinction between physical theory and the theory of evolution. A second shows up, I think, in the conceptual apparatus of Neo-Darwinism, for this contemporary synthesis of genetics and Darwinian theses employs a variety of terms which tend to exhibit difficulties not commonly present in the physical sciences. Let me show this first for the term "speciation."

As is well-known the processes covered by this concept are quite varied though each involves a single basis: selective pressures which push apart genetically groups of common ancestry. Workers in the field have identified a common allopatric form requiring a period of geographic isolation, a sympatric form (found in the same geographic area but presumably involving gradual adaptation to different niches within the region), stasipatric change involving chromosomal rearrangement, a parapatric type of evolution along gradients in allele frequencies (i.e. clines) and also processes involving asexual reproduction.[45]

It has been a most ingenious piece of work, yet it is flawed by the taxonomist's present inability to determine their relative importance. He has simply no available method for distinguishing widely in nature among their products: he has uncovered what he takes to be truths about nature's ways without the means of knowing most of the time where the truths apply. It isn't a restriction made any easier either by the fact that the geographic isolations involved in many cases of presumed allopatric speciation are no more than possibilities that as yet lack independent confirmation.

Perhaps the physical scientist is not unfamiliar with similar problems in his discipline, but they certainly loom much less large than for the biologist. Nor does he commonly have to deal with difficulties in applying his concepts to situations in the remote past. Let me illustrate this in the case of the term "adaptation."[45]

When a paleontologist uncovers a fossil exhibiting various structures his problem is at once one of determining their likely function. Usually he can do this at best by analogy to present forms, a process which shows only that the structures may have fulfilled some particular role. If he now accepts this role as likely he should then be interested in the adaptation which these forms express. Here he has a problem for he will realize that a structure might well be adapted to some function which our analogy has missed: it may also suggest adaptation which was not in fact the case. As a result, the adaptedness of organisms in paleontology is recognized by him only *in retrospect*. In that manner what might otherwise be taken as an insignificant variant may be seen, from the later fossil record, to be a rudimentary new organ. In the same fashion what might not otherwise be seen as an early member of a new group may be seen to be such from that record. Clearly then, adaptation is a concept whose application to the past is rather different from the way it is employed in the current scene and whose utility in paleontology is heavily dependent on the fullness of later information.

Lastly, I wish to mention the term "complexity," so widely used in evolutionary literature. Neo-Darwinism predicts short-term increases in fitness which may involve increases or decreases in the complexity of the organisms involved. It does not forecast increasing com-

plexity over the long term except that its additional postulate of the inorganic origin of life suggests very simple beginnings and the record indicates later changes toward more complex forms. Biology, however, lacks precise measures for complexity—which presumably involve numbers of parts, their relative functions, their interactions, and such—and it needs them if theory is to predict what is observed. Also needed is a scheme that will predict both the perpetuation of complex phenotypes and their increase with time.[49] In any event, we have here a situation indicative of a young science: unlike much of contemporary physical science it lacks a means of comprehending a major feature of nature lying within its concern.

The Nature of Laws. Earlier we have argued that one of the commonest forms of evolutionary writing, historical narration, requires the wide-spread and at least implicit use of what appears to be law-like generalizations. Later we have claimed that evolutionary theory makes predictions, particularly about the properties of groups and hence about the probability of individual occurrences. Such predictions would, we'd expect, usually be thought of as being laws for that is what theories commonly predict. Yet it is frequently claimed that there are few laws of biology or of evolution. I suggest that the problem here, as I noted in discussing prediction earlier, is that laws in these disciplines do not meet our expectations that arise from observing much of the physical sciences. I make a few further comments on the contrasts here.

Among the physical sciences it is usual to find process laws, laws which permit us to infer any past or future states of a system given a knowledge of the values of the relevant variables on some particular occasion. While biology might occasionally exhibit such laws, in cases where the system involved is sufficiently closed to permit prediction and postdiction, it is difficult to employ them in evolution where climatic and geological conditions in the past and in the future may vary in unknown ways from present conditions. At best we might then predict or postdict possibilities. Should we know past conditions from the historical record, or have acceptable ways of forecasting climate and geological change, these predictions or postdictions could of course be made with greater confidence.

However, the initial problem in biology or evolutionary studies is to come up with laws at all. That task, as we have seen, calls for identifying patterns and groups which can be described with enough breadth to permit laws to be formulated. Part of the reason that these have not been developed in quantity empirically, as many have in physical science, is because the proper identifications haven't been made. Part of the reason they haven't come frequently enough from drawing out the consequences of evolutionary theory lies in the same failing.

When such laws *are* formulated they are usually quite unlike the process laws mentioned above. Some permit only inferences regarding the past and others are historical, employing a knowledge of the past trends to extrapolate into the future. Commonly they may be causal in form (A causes B) or developmental (D because C because B because A).[50] Laws of this causal sort reveal a further problem in evolutionary generalizations with which I shall close this section.

The major issue in discussions about causality involves a determination of those conditions which are necessary, and of those which are sufficient, to bring about some event which is to be explained. The former usually proves to be far easier than the latter so that it is fairly common to find evolutionary statements such as "If E then N_1, N_2, N_3 . . . preceded it." We are then afforded a means to *postdicting* something about the past of an event whenever we come upon it. However, if the causes N_1, N_2, N_3 . . . are not sufficient to explain the event, we are clearly not permitted to *predict* it simply because the agents are present. Should we, however, occasionally find some cause sufficient for an event to occur but not necessary to it (i.e. the event will occur if the causal agency is present but may occur in its absence) we might then say "If S then E" but not "If E then S." Thus in this situation prediction from the presence of the proper causal agent would be possible but postdiction from the presence of the event could suggest at best that the agent might have preceded it. For at least these reasons it should now be apparent why in evolution inferences about the past are more readily obtained than inferences involving the future.

What Tempos and Modes are Explanatory and Predictive?

There is one further issue that I wish to discuss. There are those who may accept evolution as a scientific theory in almost the same terms as I have done to this point and yet consider it unscientific on one remaining criterion. That stumblingblock is the inability, as they perceive matters, of the theory to explain a major feature of the fossil record; a record which evolutionists take to be the historical trace of evolutionary change. The object of their attention is the apparent absence of intermediate forms between one phylum and another and also between the subsidiary high categories such as classes and orders.

These gaps attracted the attention of Darwin in the *Origin*. Here they were explained if not by the incompleteness of our researches, then largely as the result either of erosion, which removed the strata containing the transition forms, or of conditions which caused any sediments which might have retained the missing record not to have been deposited. In over a century since then paleontologists have usually become convinced that their information is now sufficiently complete to eliminate erosion or non-deposition as an explanation of the missing forms in numerous instances. Something else must therefore account for their absence.

Those who accept Neo-Darwinism as more or less sufficient, together with what we know of environmental situations, to explain the appearance of new species have naturally attempted this task.[51] Assuming that their usual tools of mutation, isolation mechanisms, selection, and adaptation apply to the appearance of the higher categories as well they have concluded, as Simpson says, that

It appears that both camps are reduced to using their theses in a purely explanatory fashion in the gap problem. Because of a situation like this the critic may claim that evolution has broken down as a scientific theory. I find this judgment improper.

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the distinguishing features related mainly to the scale and the adaptive relationships of the evolution of (these) categories. They involve certain durations, intensities, and combinations of factors. There is no reason to believe that any different factors are involved than those seen in lower categories or in "microevolution."[52]

As a result, the apparent lack of transitional forms between higher taxonomical categories is not sufficient to suggest that these structural plans persist as long as life has existed. The missing forms are merely the consequence of processes which Neo-Darwinism is capable of comprehending and thus the plans may be fitted to an evolutionary scheme.

A minority of evolutionists, agreeing with the second part of this statement, have disagreed with the first portion. For them Simpson's arguments appear inadequate to their task and his conclusions unwarranted. Instead, they seek an answer to the missing forms in sudden changes of a sort not included within Neo-Darwinism as Simpson understood it.[53] For example, Schindewolf assumes the sudden appearance of non-adapted structures, which however eventually find a specialized adaptive role, and denies that new adaptive categories can originate gradually.

The issue is now one of debating the extent to which paleontology should bow to accepted Neo-Darwinian evidences and principles. As yet contemporary laboratory studies and evolutionary principles that work rather well in the field do not provide a place for sudden changes of the sort the minority group proposes. Indeed the minority might consider their occurrence to be unlikely in nature within the foreseeable future and thus might accept Neo-Darwinism, like the majority group, as an adequate theory for most purposes in contemporary studies. It is on the propriety of extrapolating that theory across the fossil record that the two groups differ. The majority claim that the gaps must be interpreted in terms of an explanatory scheme found worthy in most other matters. The minority feels that the lack of transition forms requires us to supplement that scheme, when it is used in interpreting the fossil record, by otherwise unsupported mechanisms. To their opponents this is an *ad hoc* procedure and a gesture of despair which they find unnecessary.[54]

Unlikely as both groups might take it to be, what would occur should forms be found within the gaps? We noted earlier that fossil structures cannot be shown not to be adapted. Consequently we would be unable to use the forms to falsify a Neo-Darwinian thesis like Simpson's which takes all structures as adaptive. Of course, we would be unable to corroborate Schindewolf's sort of thesis, with its non-adapted structures, for the same reason. We are, therefore, left with a theory otherwise accepted as reasonably well-supported elsewhere by both groups, which cannot be critically tested in the gaps as we know them: we are left too with a theory not otherwise tested which cannot be corroborated within the gaps it was intended to explain.

It appears that both camps are reduced to using their theses in a purely explanatory fashion in the gap problem. As Grene and Kitts point out, each interprets the facts here in a different way and thus the objections of the one to the arguments of the other are, from the alternative point of view, irrelevant.[55] Because of a situation like this the critic may claim that evolution has broken down as a scientific theory. I find this judgment improper. We have simply another case of a theory, or variants of a theory, being employed as the basis for speculation within a hiatus in our knowledge. One difference here is that, where we usually speculate in line with our theory as does Simpson, Schindewolf wishes to (even feels compelled to) speculate in terms of additional concepts.

Scientists do not like to find themselves forced into this position on important issues. It leaves them, for example, drawing up very different schemes for evolutionary development, the phylogenetic trees.[56] It also leaves a variety of opinions in the field on the matter of the appearance of the various phyla, early and more or less together, around the end of the Precambrian. So it must be, but surely it says as much about the recalcitrance of nature in giving up her secrets as it does about failings in our evolutionary theories. These are the product of imagination, enlightened by observation and experiment, and tested in the crucible of experience. They are imperfect and, until we find them to err, their range of application is undetermined. That simply places them firmly among other attempts at scientific understanding.

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Christianity As An Ethical Matrix for No-Growth Economics

STANLEY W. MOORE
Pepperdine University
Malibu, California

FRED JAPPE
Mesa College
San Diego, California

Evidence is mounting within the scientific community that planetary resources are finite. This challenges all contemporary ethical systems, for it is clear that any successful ethical matrix must one day accommodate itself to no-growth systems; exponential growth curves such as exist with population and resource consumption cannot continue indefinitely in a closed planetary system. The authors argue in favor of a modified Pascalean Wager and that a future perspective is an absolute imperative to all decision making. Arguing that alternative ethical frameworks are inadequate, relevant biblical principles are presented that would positively support the Christian community's advocacy of planetary stewardship.

The Ethical Challenge: Finite Planetary Resources

The decade of the 1970s started with a major call for planetary ethical action with the publication of Jay Forrester's *World Dynamics*. Using five system levels[a]—population, natural resources, capital investment, food and pollution—the computer model's standard run was one where the aggregate planetary system overshoots its natural resources and collapses around the year 2020.[1] Utilizing Forrester's basic concepts and a more sophisticated, but still rather simple model, a team of seventeen Massachusetts Institute of Technology researchers, led by Donella and Dennis Meadows, produced in 1972 *The Limits To Growth: A Report for the Club of Rome's Project on the Predicament of Mankind*. This was followed in 1973 by *Toward Global Equilibrium*, edited by the Meadows, containing the scientific papers to support the model in *Limits*. Then in 1974 a more complex model, "world three," was presented by this M.I.T. team in *Dynamics of Growth in a Finite World*.[2]

Another team of 56 researchers from six countries produced during this same time six volumes of scientific papers that led to the publication of the popular book *Mankind at the Turning Point: The Second Report to the Club of Rome*.[3] Mihajlo Mesarovic (Case Western Reserve) and Eduard Pestel (Hanover, Germany) report that "in our model about 100,000 relationships are stored in the computer, as compared to a few hundred in other well-known world models."[4] Instead of using an aggregate model of the planet in which the "entire system reaches its limits at one time and either collapses or not," as occurs in the Meadows' *Limits* model. Mesarovic *et. al.* base their model on diversity in the system:

> there is no such concept as one limit for the entire system; rather different parts of the system face different limits at different times with the traumatic experiences for the entire system depending on the interrelationship of the constituent parts . . . the collapse, if it occurs, would be regional rather than global, even though the entire global system would be affected.[5]

Mesarovic and Pestel then produce three theses:

> The solution to such catastrophes of the world system is possible only in the global context and by appropriate global actions. If the framework for such joint action is not developed, none of the regions would be able to avoid the consequences. *For each region, its turn would come in due time.*
>
> Such a global solution would be implemented only through a balanced, differentiated growth which is analogous to organic growth rather than undifferentiated growth. It is *irrefutable* that the second type of growth is cancerous and would *ultimately be fatal.*
>
> The delays in devising such global strategies are not only detrimental or costly, but deadly. It is in this sense that we truly need a *strategy for survival.*[6] (Emphasis supplied.)

Are these dire predictions by these research teams just the product of inadequate computer models? Other scholars, such as Heilbroner in *An Inquiry Into the Human Prospect* (1974) and Richard Falk in *This Endangered Planet* (1971) have arrived at similar conclusions without the aid of quantitative models and computer simulations. The former examines three major problems confronting man: population, nuclear technology, and thermal pollution; the latter arrives at a "series of increasingly grim 'decades': the 1970s characterized by a Politics of Despair; the 1980s by a Politics of Desperation; the 1990s by a Politics of Catastrophe; the Twenty-first century as an Era of Annihilation."[7]

All of the above writers are suggesting that western civilization's past success in handling crises may not guarantee future success, for we are enmeshed in numerous interwoven simultaneous global crises which can be dealt with only together, not in isolation from one another. We are part of an interdependent world system. Furthermore, there has been a tremendous increase in the system's complexity, and this, coupled with system delays,[b] "creates a need to act very much in advance of the full development of a crisis, if its potential impact is to be counteracted successfully."[8] We need a new time-horizon of 50 years, rather than the present very limited one of less than a year to the occasional one of as much as five years. For example, a 3.3% economic growth rate produces in 16 years the change that used to take 40 years, and in 40 years the amount of change will be five times the amount of the past 40 years (1938-1978)—the equivalent of 200 years of change in 40.

What should the United States' response be to these dire predictions? Should the predictions be dismissed as the products of simplistic computer models? Should they be dismissed as misguided prophets of doom? It

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is not the intention of the authors to defend the above scenarios of catastrophe. It should be clear, however, that any successful ethical matrix must one day at least accommodate itself to no-growth systems, for no exponential growth curve for any closed planetary system can continue indefinitely.[9] The planet is experiencing exponential growth curves with population, pollution and consumption of non-renewable natural resources. These writers argue that it is best to opt for a no-growth economy as soon as possible with a modified Pascalean Wager. That is, if we opt to continue to grow, and the no-growth advocates are essentially correct, disaster looms. If we opt for no-growth soon the loss is so small compared to the risk as to make this choice the only meaningful one. By opting for no-growth economics we conserve our planetary resources and give the scientific community more time to respond with possible technological solutions. We believe that a future perspective is an absolute imperative to all decision making, and especially to ethical decision making.

Alternative Ethical Frameworks

What should be the Christian response to these planetary crises? What should be done, individually and corporately? Does Christianity, in fact, provide an adequate ethical matrix for making decisions such as opting for a no-growth economic system in the present to avoid possible future societal collapse? Would some other ethical system provide a better basis for the necessary futuristic component in decision making that is inherent in the call for a no-growth economic and population system?

Kieffer asserts in his *Ethical Issues and the Life Sciences* that "moral pluralism is unworkable as an approach to deal with the sensitive issues raised by recent advances in the medical and biological sciences."[10] He believes *one ethic* is needed to provide direction for our society. He rejects Christianity as inadequate, opting for a humanistic self-actualization matrix for ethical decision making. There appear to be at least five broad philosophical alternatives for providing a monistic ethical

[a] A "level" is a major component of the system where quantities either build up or from which quantities are removed. In this model population, for example, is mathematically portrayed as being increased by a birth rate flow and decreased by a death rate flow. Depending on the rates of the two flows into and out of the level, population would be either increasing or decreasing in the computer simulation. Forrester's model has population increasing at the U.N.'s estimated 1970 growth rate until it reaches in the "standard" computer run more than 8 billion; then, having greatly depleted another major level, natural resources, the model shows population dropping to one billion.

[b] The time between when an action is taken or occurs and the "system's" reaction is known as a system delay. An economic decision by the American Government takes 10-12 months to begin taking effect. There is a 25 year system delay from the discontinuance of the application of DDT and lower levels of DDT in fish—simply because of its slow degradation rate combined with the build up of DDT in the soil. This stored DDT will be released over time into the aquatic system, resulting in higher rates of DDT in fish for as much as 25 more years. See *Toward Global Equilibrium*, Chapter 10.

matrix to support futuristically oriented decision making, including no-growth economics: (1) the Judaeo-Christian ethic, (2) evolutionary naturalism, (3) humanistic self-actualization, (4) some contemporary form of economic socialism, and (5) some other world religion that might seek to universalize itself. The latter two are not explored in this paper; however, it is appropriate to note that socialism, as capitalism, is a *present consumption* oriented system. It claims that it can deliver more, and with less economic inequalities, than capitalism. A no-growth economic system threatens *both* capitalism and socialism, since both are *consumption models.*

Is Christianity a viable ethical matrix for contemporary public decision making, or does it need to be replaced by another framework such as evolutionary naturalism or modern humanism? Can these latter philosophies provide a superior basis for making public decisions, particularly a decision such as making a present sacrifice in order to benefit future generations and the peoples of other countries? Could they provide a futuristic perspective that is lacking in Christianity?

Leo Rosten notes in *Religion in America* that a Gallup poll indicated that 98 percent of the United States population believe in God.[11] To fail to utilize such a widely existing consensus seems politically unwise. To reject this belief system totally, as humanism does, means that a great deal of effort will be needed simply to tear down this structure before a new Weltanschauung can be erected. But this is simply an utilitarian argument; we wish to go beyond reliance on simply utility, or the weakness of alternative models, to assert the full adequacy of an intelligent Christian theology and a fully applied Christian ethic—an ethic that also permits ethical pluralism. Any monistic belief system would likely result in a decrease in human freedom, e.g., Skinner.

Let us briefly, however, examine naturalism and humanism before turning to Christianity. Naturalism has great difficulty, in the light of empirical reality, of asserting that human beings do have and intrinsically should be accorded human dignity. The essential question is, "Why should we care?" Why should we care about other countries? about economic inequalities? about future generations? Skinner, for example, compares humans to machines that respond to outside stimuli,[12] and denies the reality of freedom (all actions, ideas, beliefs are responses to environmental stimuli) and the ascription of dignity to mankind. No person is "worthy", for that would assume an "inner man" that acts independently of outside events.[13]

When naturalism is combined with an acceptance of total evolution, then philosophically it becomes even more difficult for adherents of this position to answer the question "Why should we care?" If one takes the 4½ billion years of the earth's history and, as an analogy, represents it by a stack of papers 1000 feet high, for the first 500 feet the only life—near the top—is blue green algae. Man appears 1 inch from the top; all of recorded history is on the top page; and, the age of science is the dust on the top.[14] Consider in addition that the atmosphere has undergone extensive change in the last 200 feet and that the vast majority of species ever evolved are now extinct (perhaps only 0.1% are now surviving). Throw in the enormous "powers" of nature—earthquakes, floods, ice-ages, pole reversals—and man looks unimportant. In addition, consider that we are on a small planet with a medium sun in a galaxy with 10 to 100 billions of suns in a universe of 10 to 100 billion galaxies. This picture says that man is not important at all. In no way does it say that the future of an individual or species is important or valuable. This system says that we will be replaced or die out. So what? Why should we be ethical? Any ethics from the evolutionary model are *ad hoc* impositions. They are not built in, nor necessary to the system, and consequently they can be accepted or rejected at the whim of the viewer.

The Christian, while acknowledging the above, asserts that God cares, transcends and interacts. The universe has personal meaning. Man, because of God, and only because of God, has meaning.

Humanism, whether naturalistic, evolutionary or scientific, also has great difficulty, in the light of empirical reality, of asserting that human beings do have and should be accorded dignity. Humanism can assert merely that we should care, we *should* respect the dignity of human beings. Either we as individuals will feel better if we do, or society will benefit. Kieffer bases his appeal on the claim that "self-actualization" will result in the present if we care about future generations. This is a difficult concept to sell to the majority of people. Such an appeal is predicated on the assumption that all of the other need levels of an individual have been met. It is subjective to the individual; its measurement by the individual is subjective, it is inward, rather than outward, and its normative authority appeals only to those who already have a particular moral proclivity. In fact, at heart it is based on a selfish motif—*you* will believe and feel that you are a better person *if* you act in such a way.

The evidence is overwhelming that most people do not, in fact, have a future orientation beyond their own immediate physical progeny and their immediate physical surroundings.[15] Kieffer's call for a monistic ethical system to replace the present ethical pluralism in America and the world is necessarily either a call for a long-term generational evolution of values, (which will not help us meet the present world crises), or, it will require a strong indoctrinational socialization process, perhaps even requiring behavioral modification techniques such as advocated by B. F. Skinner.[16]

Christianity as a Matrix For a No-Growth Economic Model

In the last half of the twentieth century it is obvious that any ethical framework must be intellectually harmonious with modern science; total agreement is not required, nor is agreement with science's normative conclusions, but they certainly cannot be systematically contradictory or incongruent. What are the ingredients of a purely naturalistic Weltanschauung on which western science rests? Are any major postulates derived from, or consonant with, historic orthodox Christianity?

We believe that the conceptual ground from which western science arose contained many concepts based on Christianity, such as: (1) the idea that time is linear (in the beginning God . . .); (2) progress is possible and desirable; (3) the objective world is real and good (Genesis 1); (4) man has the right to seek understanding and rational dominance over the physical world; (5) no reincarnation or transmigration of the soul; (6) no concept of preexisting souls awaiting physical bodies to inhabit; (7) a basic optimism that nature can be made more amenable to man, rather than a fatalism that accepts whatever happens as inevitable; and (8) that God is a God of order and hence the future develops out of the present —it is not arbitrary or capricious. [The dependability of nature is based on the dependability of God (Genesis 1:17; 9:22; Jeremiah 5:24). The latter assumption is basic to all the sciences—uniformitarianism. Scientifically we are forced to assume a non-random universe, otherwise our enterprise will be fruitless.] Also (9): nature as creation is distinct from the creator and thus is not to be worshipped. This concept has important implications for scientific inquiry: nature, while the product of God's act, is not off limits to man's inquiry and study. In some societies in which the tree is some kind of spirit or a mountain is holy or the storm is god itself, it would be sacrilege for man to investigate these phenomena. Thus Christianity provides a more rational base for man's scientific investigations because the natural phenomena are not sacred, *per se*.[17] It would appear, then, that Christianity is not *a priori* in discord with modern science.

It seems paradoxical that the Judeo-Christian tradition provides the basis for Western societies' love for the material and resulting economic growth, as well as its cure.

Does Christianity provide a viable ethical foundation for meeting potential, if not present, planetary crises? Does it have a futuristic dimension? Is it compatible with no-growth population and economics? Lynn White, among others, has charged Christianity with being a pro-growth ethic.[18] Because it has been instrumental in promoting growth, is it necessarily eliminated as a basis for a future-oriented no-growth economics? It is true that certain ideas of Christianity appear to have stimulated modern science as well as industrial development. Max Weber has attempted to link Protestantism, in particular, with the pro-economic growth system known as capitalism.[19]

At first it might seem paradoxical that the Judaeo-Christian tradition provides the basis for Western societies' love for the material and resulting economic growth, as well as its cure. We suggest that both are true in that by affirming the value and goodness of the real world, and mankind as the apex of God's creation (Genesis 1:27-31—first creation account), it made conditions possible for economic models that favored growth. Couple this with concepts of industry (see Proverbs 20:4, 13, etc.) and the first part of the paradox is true. The other side of the paradox is the assertion that life is *more* than the material, and that man, in some limited way, can know and experience a spiritual dimension to reality—witness the manifold claims of Christians that God did enter and change their lives.

We believe that Christianity functions well as a "sitz in leben" for no-growth economic systems. In fact, we believe it to be superior to other models, including the evolutionary one already briefly examined. A first requisite of a no-growth system is that those people living in advanced countries where biological needs and a moderate standard of living prevails should find psychological contentment with the economic status quo. For much of the West this means a value reorientation and a rediscovery of the Christian view that while the material world is real and good, it is not *the good*. Jesus said life does not consist in the abundance of things (Matthew 6:25-34). We are told to "set our affections on things above, not on things on the earth." (Colossians 3:2) Multitudes of Christians respond that the paradigms of Christianity do make the foregoing a possibility. It also means that western Christians who presently enjoy the highest living standards on this endangered planet must seriously confront the many references in Scripture that protest against injustice and exploitation. Christians need to ask: Is our consumption of the planet's nonrenewable resources an oppression of the poor nations of the world? (See Isaiah 1:17, 3:15, 6:1,2, and 8; Amos 2:7f; Luke 4:18; Matthew 23:23, and Chapter 25, etc.)

Another need of any ethical model is a commitment to and vital sense of the future. Here again Christianity functions well in that it sees all men—past, present and future—as brothers, made in the image of God (Acts 17:26), and possessing sufficient worth so that God interacts with us, ultimately partaking of human nature. In the New Testament the church is seen as the elect of all ages (Ephesians 1:5-10, Hebrews 11-12:1). Hence the present Christian sees himself as part of a community of past, present, and future believers. The "communion of the saints" in the Apostle's Creed means just that sense of past and future awareness, coupled with commitment. Wolfhart Pannenberg in *History As Revelation* makes the point that God is seen and understood from history, which includes a strong future history as well.[20] Christians go beyond present self-actualization to see themselves in a grand cosmic drama played over eons of time. A future perspective to Christian ethical decision making is an absolute imperative.

Motivation is provided the Christian by God's own example of involvement in the world. Since He became involved, so must we. And, as his involvement stressed a self emptying and a concern for others (Philippians 2), so must ours. To the suggestion that this goes against basic human nature, the assertion of the Christian experience is that man has help, God's help, in being a new creation with new outlooks.

Another Christian concept relative to no-growth economic principles is that of man as a steward or *trustee* of God's creation—who will one day give an account of his stewardship (Matthew 25:14-30; I Corinthians 4:1-2). While it is true that no creedal statement says that salvation is a result of man's working, most stress a responsibility for good works. This attitude of stewardship ameliorates the concept of man being superior to the rest of creation. All that exists is the result of God's creative work and none of it is to be abused. In the second creation account—the Yahweh account—man is placed in a garden to keep it, not to exploit it. While Yahweh tells us that there are no sacred groves, He also tells us to take care of the land.

An additional factor for consideration is that the Christian matrix provides *global concerns*. Christianity does see itself as a world-wide system. Consequently Christians are to care about what goes on everywhere in the world because God cares and we are commanded to (Matthew 28:19). This means that Christians should not view the world from the standpoint of nation-states with economic needs, but as a single system in which the Christian concerns of *equality* and *justice* must dominate (see Galatians 3:28 and II Corinthians 8). Paul asserts that we should esteem other(s) better than ourselves (Philippians 2:3). While much about the Holy Roman Empire was myth, the concept of a single people, the people of God, with varied backgrounds and cultures, was biblically valid (I Peter 2:9).

We also assert the supremacy of Christianity over other religious systems as a matrix for no-growth economic systems in that it has no view of a pre-existing soul, and hence no need of physical births. While maintaining the view that sex is good (man was created male and female and pronounced very good) it does not require reproduction for successful living. This is of great importance, since the ethical model presupposes that human needs must be met on an adequate level and the more humans, the greater the strain on the system.

Perhaps the strongest of all motivations is *Love* and Christianity provides examples of many and varied expressions of love. Since the Christian believes he experiences God's love, so he in turn is better able to love and accept himself and others. Who has read the New Testament and not experienced the various writers' love of God? It is interesting to note that Dennis Meadows closes *Limits* with an appeal that avoids the word love, but assumes its presence, requesting the industrialized nations to stop growing economically, and indeed, to lower their standard of living so the underdeveloped countries can continue to grow in order that their future not be so impoverished. The same position is basically advocated by Mesarovic—the developed must stop growing and must transfer trillions of dollars to the developing world so that the gap between them can be narrowed. The appeal is to self interest—altruism in order that the third world not hate us and deny us resources. How much greater is the motivation of the Christian—we are to love, because we have been loved.

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Is Theology a Science?

ROBERT B. GRIFFITHS

Department of Physics

Carnegie-Mellon University

Pittsburgh, Pennsylvania 15213

If one defines science to be a method of acquiring knowledge through critical evaluation of empirical evidence, Christian theology can be, and sometimes is, practiced as a scientific discipline. Certain features that are unique to theology do not place it in a separate category, but are rather a reflection of its special subject matter. Theology is related to the other sciences in much the same way that they are related to each other.

A significant problem for the philosophy of science is that of determining what sort of human activity can properly be described as "science". Many modern philosophers do not wish to consider theology as one of the sciences, and many theologians and religious people concur with this judgment out of a belief that a critical, questioning, reasoned approach is inappropriate in matters of God and religion.

I do not argue that theology should always be counted among the sciences. But there seems to be nothing in an appropriate definition of "science" that necessarily rules out theology. In addition I argue that at least orthodox Christian theology can be carried out using a scientific approach.

It is quite true that theology possesses certain features not present in other sciences, and this is probably the main reason why many people regard it as non-scientific. The issue, however, is not whether certain methodologies are special; instead, it is whether the methodologies are appropriate for a (scientific) study of the subject. I treat two important theological "peculiarities" from this point of view.

If theology is a science we can expect appropriate areas of overlap with the other sciences. I argue that this is, indeed, the case for a scientific theology.

The reader will be left with little doubt as to my opinion of the relative merits of scientific theology and its non-scientific competitors. Nonetheless I apologize for omitting, in the interests of brevity, any additional remarks on this important topic.

What is Science?

I shall use the word "science" to denote any serious and systematic approach to discovering the nature of the world that uses empirical methods for this investigation. The term "world" is to be understood in a very broad sense as anything that impinges on human experience. In practice, various scholarly communities are devoted to studying certain particular parts of the world, and are named accordingly: biology, physics, history, etc.

The physicist, for example, may be interested in learning more about atomic nuclei, so he carries out experiments in which nuclei are bombarded with other particles. The historian who wants to learn more about England in the sixteenth century cannot carry out experiments in the same sense as the particle physicist, but he can examine documents and landmarks dating from that era. The astronomer may try to determine the properties of distant stars through observing their spectra. In each case there is an object of research about which one wishes to know

more, and a method of study that appeals to experience, in a broad sense of that term, as a basis for forming correct opinions.

Let us contrast the work of the scientist with other sorts of human endeavor (without implying that the latter are any more or less worthwhile than science). The novelist constructs an imaginary world, whereas the scientist wants to know what the "real" world is like. The engineer and the social reformer are interested in changing the present state of the world into one that is superior in some respects for human purposes. Both may make use of scientific studies, but their goal is the application of this knowledge rather than its discovery. The "pure" mathematician seeks to construct formal systems whose validity does not depend on empirical observations, and is thus not a scientist in the sense in which I use that term. Of course one person may simultaneously be involved in several different activities. And it is often the case that engineering applications provide a motivation for scientific research. Nevertheless, it seems useful in a philosophical analysis to distinguish activities whose primary focus is understanding what the world is like from others in which the main goal is either a practical application or the construction of a formal system, and I use "science" to refer to the former.

There is no single set of rules which constitutes "the scientific method," because studies of different aspects of the world focus on different types of questions and operate under very different sorts of constraints, as is evident when one compares history with particle physics. The methods that are most effective in investigating a particular aspect of the world cannot be determined *a priori*. They are found, at least in part, by trial and error, and are modified from time to time on the basis of the results obtained by earlier methods. Of course, in the more developed sciences there is a considerable body of experience which suggests that some approaches will be fruitful and others will not be. Even so, the very best scientists are often those who think of alternatives to traditional methods.

One can, on the other hand, discern certain types of activity which seem to go on in all the sciences, and which should therefore be taken into account in developing a philosophy of science. In putting forward the following list, I am not claiming that it is either exhaustive or the best way of looking at scientific activity. But it has helped me in my own attempt to understand the scientific enterprise to note the presence of:

(1) *Speculation*: the construction of hypotheses, theories, models.

(2) *Observation*: experiments and other observations to find out what the world is actually like.

(3) *Critical checking*: theories must be checked against observation, and observations themselves must be critically examined.

In practice all of these activities go on simultaneously within scientific communities, and it is frequently difficult to disentangle them. For instance, what constitutes an "observational fact" often depends in no insignificant way on a complex theoretical structure. But I know of no science that lacks these three elements. Thus it may be a useful characterization of science to say that all these techniques are employed and that, furthermore, the second has a certain primacy over the first. For if science is committed to using empirical evidence to determine the nature of the world, the ultimate appeal must be to observation.

The knowledge that results from scientific activity has varying degrees of reliability, but is never *absolutely* certain. The reason is that it is based on empirical evidence, and experience indicates that experience is not always reliable, or at least that it can be misinterpreted. In practice, scientific knowledge ranges all the way from that which most scientists and others would regard as "certain for all practical purposes", such as the (approximate) sphericity of the earth's surface, to that which is highly speculative, such as the state of the cosmos five seconds after the "big bang". The criteria used by scientists (and others) to judge the reliability of knowledge are complex, and not an appropriate topic for this paper. It is, however, worth emphasizing that to call a discipline "scientific" (in the sense in which I use that term) is not to say that its results are guaranteed to be correct. The degree of certainty achievable in a particular case depends to a great extent on the subject matter considered and the state of development of the discipline.

Theology as Science

Theology is the study of God: his nature, his relationship to the physical world, and his relationship to mankind. This definition makes use of the results of (orthodox) Christian or Jewish theology: there is one God, not many or none, and he is personal rather than impersonal. That is not to say that the truth of these assertions must be taken for granted. It is quite appropriate in a scientific discipline to ask critical questions about the validity of premises which have been generally accepted within that discipline. It is also characteristic of scientific disciplines that the very definition of the subject matter depends to some extent on the results of previous investigations.

The above definition has also been formulated with theology as a scholarly discipline, as distinct from religion, in mind. This is not to suggest that theology and religion (the latter understood to include worship, religious communities, etc.) are unrelated. However, I wish to focus on theology as a discipline that can (possibly) yield cognitive knowledge, and the question as to whether, in this narrow sense, it is, actually or potentially, a science.

Rather than discussing theology in the abstract, let us consider a particular example from Christian theology: the doctrine of the Trinity. The following succinct statement is from the Westminster Confession: "In the unity of the Godhead there be three Persons of one substance, power, and eternity: God the Father, God the Son, and God the Holy Ghost." The essential ideas in this doctrine were set forth by Christian theologians several centuries ago. However, the question I want to ask is not concerned

with historical origin, but rather with how this doctrine, or "theory" if one were to use a term common in other sciences, would be understood, or explained, or related to empirical data by a scientific theologian who regarded it as a correct statement about the nature of the world.

Let me, in my capacity as a (strictly amateur!) theologian, attempt to answer my own question as follows. The empirical evidence is historical, and consists of two parts. One has to do with God's making himself known to the Israelites over a period of several centuries as a unity, the one God. The other concerns events in Palestine in the first half of the first century when Jesus of Nazareth taught in Galilee and Jerusalem. Through what they heard and observed, his followers came to the conclusion that Jesus was not just an ordinary man, but in some sense the incarnation of God himself. The doctrine of the Trinity is a hypothesis or theory constructed in order to make sense of the historical data.

The account just given is, of course, quite abbreviated and oversimplified, but should indicate the essential point of my argument. The doctrine of the Trinity is a theory or "model" constructed by the theologians. However, it has been subjected to critical scrutiny to see how well it fits the empirical evidence, and the person who thinks it is faulty is welcome to go and check the evidence himself, and propose an alternative theory if he thinks he has something which agrees better with the data.

The historical evidence itself can be, and in my opinion should be, given a critical examination to test its reliability. Why should we believe the reports of those early followers of Jesus?—and, indeed, do the documents which we possess provide us with their reports, or accurate summaries of their reports? These and similar questions are very proper concerns for the scientific theologian, and in studying them he will seek the assistance (or himself perform the tasks) of the historian, the expert in ancient writings, the specialist on reliability of human testimony, etc.

One thing is (almost!) certain: the end result of this process of critical questioning and investigation is not absolute assurance, not proof in the mathematical sense, of the validity of the doctrine of the Trinity. Scientific theology seems unlikely to achieve that ultimate reliability which has escaped the other sciences. On the other hand, there is no reason to suppose that its results must necessarily be less reliable than those of other sciences that make important use of historical data.

A similar analysis can, I believe, be applied to various other doctrines (or theories) of Christian theology, at least of the more orthodox kind. The doctrines of creation, atonement, salvation, etc. have the property that they make assertions—whether correct or incorrect—about the real world, and can be related to empirical evidence of an appropriate sort. That is, the scientific theologian can say that: "The reason for believing this to be true is as follows . . .", and what follows is tied to empirical evidence which the critic can investigate, and for which he is free to suggest alternative interpretations. This resembles the state of affairs in other sciences, where the justification for a theory can always be related, though not necessarily in a simple and straightforward manner, to some sort of observation.

Theology must apply a methodology appropriate to the nature of God if it is to make progress as a science.

It is perhaps worth pointing out that there are nowadays a variety of different theologies to be found in various academic circles, only some of which could be called "scientific" in the sense of this paper. If the theologian, for example, considers his primary task to be one of making up myths to comfort the distressed, or of providing an ideological basis to further (or to counter) the goals of a social reform movement, or of constructing a formal philosophical system whose validity cannot be subjected to any empirical test, then the label "scientific" (as the term is used in this paper) is, of course, inappropriate.

Special Features in Theology

It is undeniable that theological study employs certain methods that are distinctly different from those used in other sciences. However, as pointed out above, there is no uniformity of method in disciplines commonly considered to be scientific. Hence the real question of interest is whether the methods employed in theology are appropriate ones in view of the nature of the subject matter. I shall discuss two "peculiarities" of theology from this point of view.

The authority of revelation.

A central feature of (orthodox) Christian theology is its constant appeal to the authority of Jesus of Nazareth. A great many doctrines are based upon his words: that God is concerned with intentions and motives and not just actions; that the righteous do not perish at death but will be raised to life eternal; that the wicked are bound for a place of punishment in the hereafter; and many others. The point is not that Jesus was the first person to assert these things, but rather that his teaching them is a decisive piece of empirical evidence in favor of their validity.

So far as I know, there is no other science in which a comparable appeal is made to the authority of a single individual. For example, physicists believe that the helium atom contains two electrons, but would deny that this belief is based on the authoritative pronouncement of any individual, however renowned that person may be for his knowledge of the subject.

This obvious difference between the physicist and the theologian in terms of methodology is related to the nature of the subject studied in each case. To the physicist the properties of the helium atom are, so to speak, "out there," a fact of the natural world open to study and investigation, but immune to his personal wishes, decisions, etc. On the other hand, the relationship of Jesus to the

assertions he made was, if the theologians are correct, a somewhat different one. That the righteous are raised to eternal life and the wicked sent to hell is *to us* a state of affairs "out there;" its truth or falsity is independent of whether we like it or what we plan to do about it. To God it is a very different matter: he is the one who *decides* to take this course of action. Thus Jesus, as God incarnate, was in a unique position among men to make declarations of this sort: he was, in fact, saying what he intended to do. This gives his words a unique authority for the theologian.

To put the matter another way, theology must apply a methodology appropriate to the nature of God if it is to make progress as a science. If God chooses to make known in special ways or through special people what he is like and what he plans to do, these revelations necessarily possess a unique authority for the scientific theologian.

This is not to deny the value of a critical and careful examination of the claims of those who assert that they are God's spokesmen. Indeed, I regard such an examination as an essential part of scientific theology. But if the claims have been examined and the theologian has good grounds for believing that they are correct, there is nothing "unscientific" in ascribing appropriate authority to the words of the spokesman.

The moral obligation of the theologian.

If God is the source of moral authority and the proper object of men's worship and honor, as theology indicates, then the theologian has a moral obligation to worship and obey the God who is the subject of his study. This state of affairs is unique to theology and raises an important question as to the possibility of theology as a scientific discipline. Can the theologian be both a trusting, obedient servant of God and, at the same time, a critical scientist who objectively examines evidence about the nature of God, including evidence which might indicate that he (the theologian) is mistaken in his belief that God exists? Is not the theologian in the same unenviable position as social scientists living under a totalitarian government that may well deprive them of their jobs or even their lives if the results of their research, however carefully based on objective evaluation of evidence, are displeasing to the rulers?

While such could, conceivably, be the case, the biblical teaching about God indicates, if I understand it correctly, a rather different state of affairs. The God of truth commands men to learn and follow the truth. What displeases him is not the careful examination of evidence in order to form opinions in accordance with it, which is characteristic of good science. Rather, he condemns suppression of the truth and the deceitful alteration of the results of investigations to make them agree with preconceived notions as to what the answer must be.

If this analysis is correct, any scientist—not only the theologian—is under obligation to God to seek after the truth, and God holds him accountable for the quality of his work. If work of high quality in scientific theology requires (as I believe it does) a critical evaluation of the available data, the theologian is obliged to carry out such an evaluation. Only in this way can he be an obedient servant of God. Thus I would argue that the moral obligation which might at first seem to place the theologian in a position different from other scientists in fact works to make his task similar to theirs.

Theology and the Other Sciences

There are two extreme positions concerning the relationship of theology and the other sciences. One claims that all aspects of human experience for which theology provides some explanation are better explained, or soon will be, in terms of other sciences (such as psychology). The other claims that theology is in a privileged position and need not concern itself with developments in other sciences. Neither of these positions is correct; theology is related to other sciences in much the same way that the latter are related to one another.

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This relationship may be thought of by analogy with an atlas containing many maps of different parts of the earth's surface. While different maps show different regions, there are areas of overlap, regions which appear in more than one map, which facilitate comparison and aid the reader in understanding the relationship between the maps. Similarly it often happens that more than one science deals with a certain subject. By comparing the points of view provided by the different disciplines, we may check the consistency of various methodologies, and perhaps better understand the relationship of the different viewpoints.

As an example, note that certain events in Palestine in the first century are of interest both to the theologian and to the historian. While these disciplines, quite properly, take a rather different point of view towards the life and teaching of Jesus of Nazareth, one would hope to find some consistency between them. If the theologian bases the doctrine of the Trinity in an important way on Jesus' resurrection from the dead, and the historian says there is good evidence this event did not occur, there is evidently a serious discrepancy.

The scientific theologian is not, of course, obliged to wait until the historical evidence has been established with certainty before he carries out his work. Nor need he be overly concerned with failure to achieve complete agreement with another discipline. All sciences (including theology) are imperfect and subject to improvement, and better understanding at a later date may place current problems in a different light. However, if he is to

appeal to empirical evidence in support of his theological theories, he must have some concern for the quality of this evidence. One might add, in addition, that the scientific theologian (as well as the scientific historian) is under no obligation to accept the results of methodologies which would rule out Jesus' resurrection, without regard to empirical evidence, on the basis of *a priori* philosophical presuppositions.[1]

Theology also makes assertions about the nature of man: e.g., he has been created in God's image, but is now a rebel against the divine order. One should expect the theological picture to be in general agreement with, though of course not identical with, the picture provided by other disciplines dealing with man: physiology, psychology, sociology, literary criticism, etc., to the extent that these are sciences. Inevitably there will be some disagreements, and then the question as to whether theology or the other discipline is in error, or has been misapplied, can be resolved only by further study.

It is sometimes supposed that these other disciplines by themselves provide a complete picture of man without the need for any reference to God or gods, and thus the theological contribution is superfluous. On the contrary, the failure of non-theistic systems in providing a scientific understanding of the basis of normative ethics is one piece of evidence (among others) indicating that, at least at present, theology plays an irreducible role in our understanding of man.[2] It is not inconceivable that future developments in the psychological and social sciences will successfully fill this gap, but I see no reason to be optimistic.

Conclusions

The essence of my argument is as follows. If one adopts a reasonable definition of "science," one broad enough to encompass both experimental and historical sciences, there is no reason to exclude from the sciences that type of theology which appeals to empirical evidence subjected to critical analysis as the basis for its conclusions. Furthermore, a Christian theology, at least of the more orthodox sort, can be pursued as a scientific discipline. Certain features of theology that seem to be distinctive, such as the appeal to the authority of revelation, reflect the nature of the subject matter and thus do not by themselves indicate a non-scientific approach. Scientific theology treats a number of subjects in common with other sciences, such as history and psychology, and this provides a check on its methods and its consistency.

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[2]The difference between theistic and non-theistic approaches to normative ethics requires an extensive analysis which I hope to give in a later paper.

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

Part 13

Creation
(B) Understanding Creation and Evolution

RICHARD H. BUBE

Department of Materials Science and Engineering

Stanford University

Stanford, California 94305

In the previous installment we considered the essentials of the biblical doctrine of creation and saw how these essentials are independent of the specific mechanisms of God's creative activity. In this installment we consider in some detail the interaction between creation and evolution. First, however, we begin by taking a look at Genesis 1 - 3 in order to identify some specific ways in which the Genesis account conveys its teaching on Creation.

Genesis 1 - 3 Reveals Ultimate Truths

Genesis 1:1 through 2:4a provides us with a logical and systematic account of creation.[1] This account proceeds in a common sense manner to build an environment suitable for man, the end product of God's creative activity. First what is needed is light to do work, then separation of the waters above the firmament from those below, then separation of dry land from the waters, then growth of plants and trees, then assignment of the various heavenly bodies to their tasks as signs for human beings, then fish in the sea, living creatures and animals on the land, and at last the creation of man, male and female, followed by the rest in which to glorify God.

We see a seven-day pattern that follows the religious experience of the people involved. Light is created without the sun, and the sun and moon are not even named, but are called into being midway in the creative process to serve as signs for mankind, to demonstrate that God is sovereign over these, His creations. By declaring God's rule over the waters, His sovereignty over mythological sea deities (remember the Babylonian Tiamat) is emphasized. The plan of creation reaches its climax in the creation of mankind—a unique creation, made in the image of God, male and female.

In Genesis 1, God is commander; in Genesis 2, God is sculptor. An imaginative and symbolic creation account follows in Genesis 2:4b - 2:25. Still there are no contradictions of essence between the two accounts, nor should any be read into them. Genesis 2:7 tells us that man became a living being. Man does not *have* a soul; man *is* a living soul.[2] Eden represents the whole of the created order free from sin. It reappears in Revelation 21 and 22. A possible interpretation using the form of prophecy is the substitution of a chronological mode of description for an ontological mode: God is not responsible for the real evil that exists in the world—God made the world good *and then* (in a chronological parable) sin entered the world. Thus the essential separation between the goodness of the world and the reality of sin is maintained. The garden encloses symbolic trees. Life does not come from knowing good *and* evil; to know evil is to enter into death. Life comes from knowing only God. Genesis 2:18-25 reveals that mankind is superior to the animals, for Adam names them. Man and woman are made uniquely to complement one another. Sex is part of the good creation; shame is the consequence of sin and guilt.

Genesis 3 teaches that the creature is responsible for sin, not the Creator. The sin of man is rebellion, idolatry and disobedience. The consequences of sin are shame, a broken relationship with God, and a broken relationship between man and woman. The curses of Genesis 3:14-19 are physical signs and symbols of the fall. Still a note of hope remains. God continues to communicate with man and does not cut them off completely. God meets the shame by preparing coverings. Genesis 3:22-24 shows that there is no way back for mankind to Eden on their own. If they are to make it back to Paradise, it will be by accepting the way that God provides.

These are some of the things that Genesis 1 - 3 teach. None of them depends critically on the specific mechanism or mode of creative activity. What then of evolution? Is this a totally atheistic and anti-biblical view that mutually excludes faith in the God of the Bible? Or is

it possible to consider that the process of evolution may indeed be our description of the creative activity of God?

Evolution: What Does It Mean?

The necessity to discriminate between different uses of the term "evolution" has been repeated so often that another repetition may seem totally unnecessary.[1] Still our discussion would not be complete if we did not pause at least briefly to indicate at least four principal ways in which the term "evolution" is used, all with quite different emphases and implications for the Christian.

1. *The Special Theory of Evolution—Microevolution.* This is a biological theory that relates changes in the physical and biological structures of living populations with the passage of time, particularly in response to changes in environmental conditions. Such changes can readily be observed in the laboratory, and no one questions either the fact or the interpretation of such changes. A simple example is the way in which insects become immune to pesticides with the passage of time, as a strain survives and multiplies with immunity at the expense of those without it.

2. *The General Theory of Evolution—Macroevolution.* This is a biological theory that attempts to describe the development of all living creatures from a common origin (or possibly origins) resulting from the transformation of non-living to living matter, through the types of changes observed in microevolution acting over the long stretches of time since the beginning of the earth. Sometimes the biological theory dealing with living creatures is preceded by what is called *chemical evolution*, and that by what is called *cosmological evolution*. Clearly in these cases the word "evolution" is used to signify change with the passage of time, but quite different mechanisms are involved than in biological evolution.

All of these theories are outgrowths of a scientific framework in which the accepted guidelines specify that only those mechanisms can be admitted that can be described in natural categories. Supernatural categories are ruled out of scientific descriptions by definition.

It is a mistake to refer to "divine creation" as an alternative scientific mechanism to evolution.

If there are phenomena that cannot be described scientifically, then this will be evidenced by a constant failure to arrive at a scientific description, although in the nature of the case no certain proof can be obtained.

It is a mistake to refer to "divine creation" as an alternative scientific mechanism to evolution. To the scientifically oriented observer, a *bona fide* case of *fiat* creation can be described only as a *spontaneous event*, defying scientific description in natural categories. To speak of "divine creation" is to supply a *theological* interpretation of "spontaneous event." It may be decided that it is unprofitable to look for a scientific description of origins, but it cannot be argued that there are two equally viable scientific mechanisms: creation and evolution.

As a scientific description, evolutionary theory as we know it today may well prove inadequate to describe the development of life forms on earth, although so much circumstantial evidence exists in its favor that no simple and abrupt refutations of the theory are expected. Evolutionists, themselves, however, do not hesitate to indicate the *limits of their knowledge*—at least when writing as scientists and not as public relations promoters. They acknowledge the improbability of what seems to have happened in the evolutionary picture. And they are frank about their *ignorance* of such topics as:[4] the genetic component of non-physical traits, any direct evidence on the first billion years of earth history, the chemistry by which monomers of life could have been synthesized on the primitive earth, the evolution of the genetic machinery, the development of innate behavior by evolution, the absence of fossil clues to the neurological advance accompanying increase in brain size, clearly defined rules that state how fossils should be compared or how anatomy should be understood, and the origins of human speech, to give a partial list from the open literature. Considering the magnitude of the problems involved in this undertaking, however, such shortcomings should not occasion surprise or drive us prematurely into thinking that increased understanding will not come with time and effort.

We may summarize these comments about the General Theory, therefore, by stating that the General Theory of biological evolution is *very much alive* and *quite far from complete success*. Scientists will, by the nature of science, continue to see how far descriptions in natural categories may be pushed to describe earth and human history. Certainly the past is replete with the skeletons of previous attempts to declare that scientific description could never pass the next frontier of human knowledge.

3. *Cultural Evolution.* This very term itself warns us that we have stepped out of the bounds of biological theory into social theory, just as before biological theory we considered cosmological and chemical evolution. Cultural evolution simply describes the changes in man-

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This continuing series of articles is based on courses given at Stanford University, Fuller Theological Seminary, Regent College, Menlo Park Presbyterian Church and Foothill Covenant 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.* 165-174. 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.

The specific format of this paper follows lectures at an interterm on Creation given at George Fox College, Newberg, Oregon, in September 1978.

kind and the environment with time because of the effects of human culture and civilization. This is a fascinating and relevant topic, for certainly the changes in human life due to cultural evolution are currently far more rapid than those due to biological evolution. Biological evolution, for example, does not pass on acquired characteristics from one generation to the next, but cultural evolution does!

4. *Evolutionism.* Finally we come to the term with an "-ism" on the end, indicating an extreme position. It is a *philosophical* and *religious* (in a general sense) position that elevates evolution to an ultimate significance and reinterprets everything else in terms of such an elevation.

Common forms of evolutionism have received a wide press, and it is not surprising that the popular mind tends to equate any mention of "evolution" with this philosophico-religious, non-scientific extrapolation of evolution into realms far beyond its proper area.

Traditonal evolutionism tends to emphasize the following anti-Christian perspectives: (a) denies the importance or reality of divine Creation in any form; (b) substitutes metaphysical for moral evil, and regards evil as incompleteness of the evolutionary process; (c) defines the nature of humanity in terms of a highly evolved animal only; (d) considers it possible for humanity to save itself by taking charge of evolution: (e) confines reality to the natural; and (f) believes that evolution will ultimately deliver all mankind to some kind of earthly or supra-earthly Utopia.

It is therefore critically important that discussions of creation and evolution should be based on a careful concern for *which meaning* of these two terms is really involved.

Are Creation and Evolution Mutually Exclusive?

The debate about creation and evolution has unfortunately involved itself in two main types of category confusion. One form of such confusion occurs in discussions of creation and evolution *per se*, and the other form in discussions of the related topics of design and chance. That the terms as commonly intended in such discussions really deal with two *quite different levels* can be seen by examining the situations illustrated in the following Table.

With these terms defined as we have developed in these installments, it is evident that Creation (with a capital C) and Evolutionism (with a capital E) are mutually exclusive worldviews. The former is based on the foundational activity of God, the latter on a godless presupposition. In any given phenomenon, such as the origin of life or the origin of humanity, a spontaneous instantaneous beginning and a gradual continuous evolutionary process are also mutually exclusive mechanisms. The worldview of Creation, however, is able to encompass either instantaneous *fiat* or evolutionary process—*depending only on which indeed did occur.* The acceptance of a worldview of Creation assures that the scientific mechanism can be nothing else than a particular manifestation of the activity of God.

The General Theory of biological evolution is very much alive and quite far from complete success.

Similarly one may compare the other pair of concepts: Design and Chance. Design refers to a worldview in which the character of the universe has been formed in accordance with divine intelligence and concern. Chance (with a capital C) refers to a worldview in which the universe is the product of blind, meaningless, impersonal statistical processes. Clearly Design and Chance are mutually exclusive worldviews. The choices in a scientific description, however, are of only two types: either a process is described in terms of exact mathematical relations (a *deterministic* description), or it is describable in terms of a *probabilistic* approach (often called "chance" in science). To say that a scientific description is a chance description implies only that our present knowledge leads us to describe it in a statistical rather than a deterministic manner. As descriptions of the same phenomenon, determinism and chance are mutually exclusive scientific descriptions, although they are often closely related: in the case of an atomic particle a description of its motion in terms of its "position" and "velocity" can be given only in terms of probabilities, but a description of its motion in terms of its corresponding "wavefunction" can be given deterministically. To argue that a scientific chance description rules out Design, is as unfounded as the argument that a deterministic scientific description rules out human responsibility.

The Christian discounts the worldview of Chance. But the worldview of Design is able to encompass phe-

Worldview ***Scientific description***	Creation spontaneous event (*fiat* creation)	Evolutionism evolutionary process
Worldview ***Scientific description***	Design determinism	Chance chance

nomena described scientifically as either "determined" or "chance."

Are Evolution and the Bible Mutually Exclusive?

We are now in a position to ask an additional question. Granted that our present knowledge is incomplete and that we cannot make a final judgment on the validity of the present theory of biological evolution—is there something about this theory, which if assumed, would be in necessary contradiction with biblical teaching?

It seems to me that at the present time the answer to this question is no. An evolutionary framework is as suitable as an instantaneous creation framework for expressing the basic truths of the Bible. Note what I am *not* arguing: (a) I am *not* arguing that instantaneous *fiat* creation is impossible (thereby limiting the omnipotence of God), and (b) I am *not* arguing that evolutionary process is an ultimately faithful description of God's creative activity (for there are still too many unanswered questions). What I *am* arguing is that an evolutionary-type description *need* not be ruled out *a priori* by biblical considerations, and that therefore the Christian has the freedom to pursue wherever biblical and scientific integrity lead in the future. I present this argument by giving a description in evolutionary form that is consistent with the biblical teaching about Creation.

It is God's purpose to call forth a people for Himself.

To achieve this purpose God called into being from nothing this universe in embryonic form and sent its various parts hurtling through space, establishing the immense universe in which we live. Often men have felt fragile and incredibly inconsequential in the presence of the universe with its billions of billions of stars stretching out to distances that must be measured in terms of billions of light years. It has been increasingly realized, however, that the vastness of the universe is the necessary incubator for the fulfilment of God's purpose to call forth a people for Himself.

The worldview of Creation is able to encompass either instantaneous fiat or evolutionary process—depending only on which indeed did occur.

If the energy of the initial "big bang" (if that is indeed the proper model) had been less, the universe would long ago have collapsed, recoiling from its period of expansion into self-destructive contraction.

But if the energy of the "big bang" had been much more, the expansion would have been so rapid that the density of the universe would have been too rapidly decreasing for stars and galaxies to form.

All of the elements heavier than hydrogen and helium are believed to have been synthesized in cataclysmic supernovae explosions much earlier in the history of the universe. *We are made of the ashes of the supernovae.*

The synthesis of carbon—the essential element of living matter—depends upon the critical nature of the energy states that exist; a little bit more one way, and we would have had beryllium and very little carbon; a little bit more the other way, and we would have oxygen and essentially no carbon. How big is "a little bit"? Only 0.5%!

It has been suggested that the meaning of the universe is to bring forth life. Without 100 billion galaxies, life would never appear!

To achieve His purpose in calling forth a people to Himself, God brought into being the solar system in our galaxy that we call the Milky Way. In that solar system He brought forth the earth as the environment suitable for a people that He would call.

As He worked through what we might call "cosmogenesis" (the birth of the universe and our earth),[5] so He continued to work in what we might call "biogenesis," bringing forth on this earth living creatures in the seas, on the land and in the air.

When the time was ripe, when the cosmic "temperature" of creation was at white heat, a new reality burst forth that we might call "noogenesis," the birth of self-conscious human life. But this new, self-conscious humanity is self-centered and unwilling with its newly-given consciousness to recognize the lordship of its Creator. Made in many ways like the animals, but called to transcend the other animals as that unique creature enabled to have personal fellowship with God Himself, this human being chooses to forsake his humanity for his lower nature. Sin enters the world through the disobedience of the first man. The living, sinful human creature needs one more transformation to complete the purpose of God.

Before the origin of life, God's evolutionary change functioned in the physical stuff of the universe. When living creatures emerged, the focus of evolutionary change shifted from the physical stuff to the living creatures, from the physical realm to the biological realm, as cosmological evolution—having completed its task of bringing forth life—gave way to biological evolution. In its turn biological evolution also fulfilled the task set for it and gave rise to self-conscious human beings made for fellowship with God. But this self-centered sinful creature needs a final transformation—needs another shift in evolutionary development—a transformation now adequate for the thinking, self-conscious world brought into being with noogenesis.

What transformation is there known to us that creates new spiritual life in a human being without it?

What transformation do we know that takes what is provided by cosmological evolution from the ashes of

What transformation do we know that takes what is provided by cosmological evolution from the ashes of the supernovae, what is provided by biological evolution from the primeval sources of the first living creatures, and completes the calling and purpose of God by providing a new creation in the realm of the spiritual?

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the supernovae, what is provided by biological evolution from the primeval sources of the first living creatures, and completes the calling and purpose of God by providing a new creation in the realm of the spiritual?

To ask the question of Christians is to answer it. The new birth in Christ, the regeneration of the Holy Spirit —this is what is needed to complete God's call and purpose: this is the final earthly stage in the great drama that God has been working out over the life of the universe—to be followed only by the end and consummation of that drama at the end of this age.

And so—one might argue as I have done here—an evolutionary scheme of description is not only consistent with the essential themes of the biblical teaching, but leads in a natural and continuous way into the essence of the Christian Gospel, without making sin any less real or less serious than it is, without invoking self-salvation or cosmic salvation, without reducing moral man to metaphysical animal, and without being universalistic.

In closing I remind the reader once again that I am not claiming that this is indeed the pattern of what happened, but only that *if* something like this happened, I see no necessity to regard it as in unresolvable conflict with biblical teaching.

Summary

Attention to the text of Genesis 1-3 reveals the set of ultimate truths revealed by these accounts. None of these truths depend in any critical way on the specific mechanism involved in the event of creation. To equate the revelational content of Genesis with a specific mechanism of creation is both textually and conceptually unjustifiable.

Confusion about evolution often stems from the failure to understand at least four quite different ways in which this term is used: microevolution, macroevolution, cultural evolution, and evolutionism. The first is scientifically established and the fourth is openly anti-Christian, but a clear understanding of the relation between the four is essential for an evaluation of an evolutionary hypothesis vis-a-vis the biblical revelation.

To confuse a worldview based on Creation with a specific mechanism that might have been involved in the creation events, consists of the same type of category confusion as the confusion of a worldview based on Design with a specific type of scientific description.

A synthesis of evolutionary process with biblical revelation can be made without doing violence to the integrity of either. Although it can certainly not be claimed that such a synthesis is a reliable description of earth and life history, the possibility of such a synthesis shows that it is not necessary to reject evolutionary hypotheses *a priori* because of the biblical revelation.

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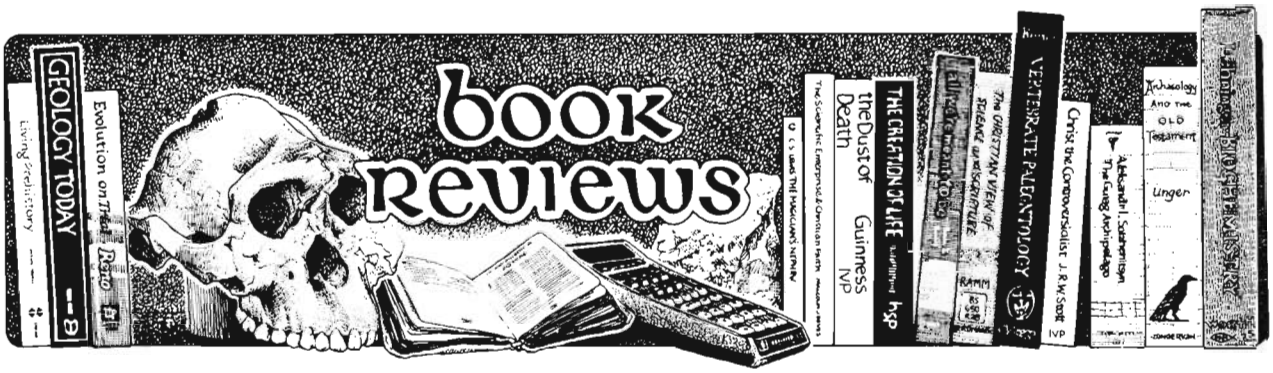
[2]See, for example, R. H. Bube, "The Significance of Being Human," *Journal ASA 31*, 37 (1979)

[3]See, for example, R. H. Bube, *The Human Quest*, Word, Waco (1971)

[4]See, for examples, a series of articles in a special issue of *Scientific American* on "Evolution," September (1978)

[5]The terms, "cosmogenesis," "biogenesis," and "noogenesis" are borrowed from the writings of Teilhard de Chardin, e.g., *The Phenomenon of Man*, Harper, N.Y. (1959), but without Teilhard's total interpretation that follows these with the universalistic stage of "Christogenesis."



THE IDEA OF JUSTICE IN CHRISTIAN PERSPECTIVE by Jan Dengerink, Wedge Publishing Foundation, Toronto. 1978. Paperback, 59 pp., $2.95.

In this brief book, Jan Dengerink, professor of Reformed philosophy at the universities of Utrecht and Groningen, presents his view of justice. His entire presentation is theoretical (there are no examples from life situations), yet none the less valuable.

He begins with a brief but incisive summary of the views of justice held by various philosophers in western history: Pre-Socratics, Plato, Aristotle, Augustine, Locke, Rousseau, Barth, Brunner, Ellul and more. He elucidates their ideas in view of their broader concepts on metaphysics and theology. Assuming the reader has some acquaintance with philosophy, this section is invaluable.

In the light of this historical overview, Dengerink presents his own view. Though brief and often merely suggestive, it is sharply focused. All justice, he claims, is founded in the sovereignty of God and preserved by the love of God in Christ's redemption. God has called man not only to a stewardship of justice, but to be a co-laborer in forming the concrete expression of justice in positive law.

> Man is called therefore to give concrete form to the so-called structure-norms or structure-principles, which hold, by virtue of the order of creation, for the various societal relationships: the family and marriage, the state, the school association, a music group, a business, etc. Nowhere is he simply left to his own devices. In this concrete forming of such structural norms man is invested with *authority*, which at bottom he does not derive, as western humanism teaches, from himself or from those who have called him to his place of authority (the people, or whatever) but from God. Authority indeed has its deepest ground in the divine world order. (p. 54)

Dengerink concludes with an appeal to Christians to "make an essential, even an indispensable contribution" to law, especially to international law, since humanistically-based law tends invariably to totalitarianism.

Despite sentence structure and punctuation which is in places confusing, the book is valuable as an outline of the concept of justice in our western heritage and as a stimulus to further reflection on an important issue.

Reviewed by James Walter Gustafson, Professor of Philosophy, Northern Essex Community College, Haverhill, Massachusetts.

THE TAX DILEMMA: PRAYING FOR PEACE . . . PAYING FOR WAR by Donald D, Kaufman. Herald Press, Scottsdale, Pennsylvania. 104 pages. Paperback. $3.95.

This is an excellent book to challenge the thinking of anyone who claims to be a follower of Christ. Just what does it require to put His Kingdom first?

One can now legally adopt a pacifist position and refuse to physically serve in the military. However, few people will submit to the hassle of withholding their portion of the tax dollar which goes to support war.

The author makes a clear point that Jesus' teaching demands radical commitment and cannot be intimidated by government. The exposition raises some difficult questions for the so-called pacifist who pays all of his income tax.

The book will even be uncomfortable reading for those people who already feel they can rationally support national defense. After a thoughtful reading of the material, one cannot help but question the legitimacy of claiming to be a genuine follower of Christ and also a supporter of the military complex. Where do you put your security . . . in military strength . . . or Jesus Christ and His teachings?

All in all, a very practical book that points out one aspect of the everyday struggle and cost of true discipleship. I recommend it as a must to all who are serious about the meaning of the Lordship of Jesus Christ in all aspects of their life.

Reviewed by Richard A. Jacobson, Professor of Mathematics, Houghton College, Houghton, New York.

BETWEEN THE EAGLE AND THE DOVE by Ronald Kirkemo. InterVarsity Press, Downers Grove, Illinois, 1976, 181 pp. Paperback. $4.95.

Ron Kirkemo, an Associate Professor of International Relations at San Diego's Point Loma College, addresses the Christian and American foreign policy. His discussion of foreign policy is typical of the scholarship and Aristotelian approach of most universities today. He lists the

four possible distributions of world power, the three categories of foreign policies (and their subcategories), the five factors determining an individual nation's foreign policy, etc. He states the obvious (e.g. "Each political office has a specified term after which the incumbents must stand for re-election."), and garbles technical details such as the Department of Defense Planning, Programming and Budgeting System. All this is fine for the purposes of testing the students in International Relationships 101, but where is the continuity? What predictive power is there?

When the author comes to the role of the Christian in foreign policy, the results are even more disappointing. After urging Christians to participate in government, he then asserts that the Bible offers no guidelines for foreign policy and that there is no such thing as a Christian Foreign Policy. This leaves the door open for anyone to say anything. Kirkemo pushes his program, a collection of moral platitudes to which most pagans would assent. The explicit statements on the "sovereignty" of nations and the implicit treatment of the Bible as not relevant demean the Lordship of God.

One of the many biblical examples of God's Lordship over nations is contained in the Areopagus address where Paul points out God's space/time control of all nations (Acts 17:26). One of the most interesting of the many biblical foreign policy guidelines is the treaty between the Gibeonites and the Israelites (Joshua 9) and God's response to the breaking of that treaty (2 Sam. 21).

Reviewed by E. T. McMullen, Major, USAF, Aeronautical Systems Division (AELE) Wright-Patterson AFB, Ohio 45433.

EVANGELICALS AT AN IMPASSE by Robert K. Johnston, John Knox Press, Atlanta (1979). 178 pp. Paperback. $6.95.

Johnston is Associate Professor of Religion at Western Kentucky University; my own personal experience upon reading this excellent book was heightened by the fact that I knew Bob as an InterVarsity undergraduate at Stanford! Subtitled, "Biblical Authority in Practice," the book focusses on the issue, "How do evangelicals translate their understanding of Biblical authority from theory into practice?" To illustrate the problems that evangelicals currently face, Johnston considers the specific issues of biblical inspiration and inerrancy, the role of women in the church and family, social ethics, and homosexuality.

Johnston sees the present impasse faced by evangelicals as caused by their failure to appreciate the different inputs of biblical exegesis, historical interpretation and contemporary evaluation. Undue emphasis on any one of these three approaches, without an integrative synthesis, leads to an unbalanced position, whether that of traditionalism, biblicism, or false contemporary relevance. By referring to the leading Christian authors in each of the problem areas he treats, Johnston seeks to guide the evangelical in an understanding of the issues, contemporary proposed solutions, and the first steps toward an integration.

In the discussion of biblical inspiration and inerrancy, for example, Johnston defines four major positions with their principal adherents: (1) detailed inerrancy—Harold Lindsell and Francis Schaeffer, (2) partial infallibility—Dewey Beegle and Stephen Davis, (3) irenic inerrancy—Clark Pinnock and Daniel Fuller, and (4) complete infallibility—David Hubbard. Johnston's useful guidance is evident in such summaries as, "With Lindsell, Scripture is culturally independent; with Fuller, it is culturally conditioned; with Jewett culturally limited . . . I would suggest that evangelicals might better look at the notion of accommodation in terms of Scripture's culture-directedness."

In the chapter on women's roles, Johnston compares the approaches of evangelicals Nancy Hardesty, Virginia Mollenkott, and Paul Jewett, with evangelicals George Knight, Elisabeth Elliot, and Larry Christenson. In the chapter on social ethics, he explores four of evangelicalism's leading periodicals: *Moody Monthly, Christianity Today, The Reformed Journal,* and *Sojourners.* In the chapter on homosexuality, Johnston discusses inputs to a rejecting-punitive approach, a rejecting-nonpunitive approach, qualified acceptance, and full acceptance, citing evangelical authors in each category.

This book will help evangelicals to be more responsive to the needs and opportunities of the day while at the same time developing a biblical foundation for this response. It would serve as an excellent text for a discussion or study group; I have used it this way!

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

GENERAL RELATIVITY FROM A TO B by Robert Geroch, The University of Chicago Press, Chicago, Illinois 60637, 225 pp. (hardbound), $11.95, 1978.

Popularization of the theory of relativity has been an important activity for physicists and mathematicians ever since Einstein's general theory achieved fame sixty years ago, and its practitioners have included such names as Eddington, Born and Russell. Increased interest in relativity during the past two decades, spurred largely by new astronomical discoveries, has meant also an increased demand for books on relativity which are comprehensible to interested laymen.

A temptation for the popularizer is concentration on spectacular phenomena, with neglect of the fundamental ideas of the theory in question. Geroch avoids this pitfall, concentrating on the basic notions of space-time geometry which are fundamental to Einstein's theory. While there is no mathematics beyond elementary algebra and geometry, the book perhaps has its major success in giving the flavor of the abstract character of modern theoretical physics.

Geroch proceeds from the common-sense Aristotelian world view, with its absolute space and absolute time,

through the Galilean view, in which time remains absolute, to Einstein's theory in which neither space by itself nor time by itself possesses any absolute character. These views are pictured within the framework of the four-dimensional space-time concept, with no attempt being made to follow the historical development in detail. New concepts are motivated by a few fundamental facts of physics, such as those associated with moving observers, light propagation and particle decay.

Once reached, Einstein's picture of the relation between space-time events is elucidated in terms of the concept of space-time interval, which is developed from simple thought-experiments. Some time is then spent on the development of consequences of this view of the world, such as the well-known length contraction and time dilation.

Einstein's full theory of gravitation also gives the equations which pick out the types of space-time consistent with a given distribution of matter. Geroch's desire to avoid mathematics of great complexity here compels him to use analogies about curved surfaces in order to deal with the concept of space-time curvature. Thus there is some drop in the level of rigor here, but one is almost always forced to some such expedient in an attempt to popularize the Einstein equations. In any case, Geroch has done a reasonable job of spelling out the various concepts and relationships which go to make up the complete general theory of relativity. A final chapter on black holes concentrates on the basic geometic facts about these entities, with brief comment on the astronomical evidence for their existence.

As stated earlier, Geroch succeeds in giving the flavor of abstract theory without becoming mired in the details. In addition, the book presents a reasonably modest attitude about the scope and nature of science, something which is welcome in dealing with a subject which sometimes tempts one to make overly grandiose cosmological claims. *General Relativity From A To B* expresses its limitations in its title. There is no attempt to discuss everything connected with relativity, but only to make clear the fundamental ideas of the theory in a non-technical fashion. The book can be commended to anyone who wants to achieve that kind of understanding of Einstein's theory.

Reviewed by George L. Murphy, Wartburg Seminary, Dubuque, Iowa 52001.

THE FEMININE DIMENSION OF THE DIVINE by Joan Chamberlain Engelsman, Philadelphia: The Westminster Press, 1979, 203 pp., $8.95.

What is the role of a goddess? The theme of this book is that man (and woman) needs to believe in a goddess-figure in order to be psychologically healthy. The absence of goddess-figures in modern Western society is not the "healthy" state of man, but an unhealthy one caused by religion-based repression of feminine aspects of the divine.

Dr. Engelsman begins her discussion using Jung's archetypal theory. Such Jungian archetypes as the *mater*, or the source of life, and the *anima*, who presides over bodily and material transformations, are feminine images of what Engelsman calls the "Great Mother". These images have been symbolized by water, fountains, light, animals, the moon and weather. Feminine images will always seek expression of some kind, says Engelsman, "because they are part of the structure of the collective unconscious" (p. 31).

Generally these feminine archetypes have not been deified in modern Western society. Instead, the divine Father-Son relationship is stressed, excluding recognition of important feminine archetypes. This is a result of psychological repression, "a major deterrent to the free expression of the archetypal feminine" (p. 32). Engelsman believes that whole cultures can become involved in repression, so that the return of collectively repressed material will affect the life of an entire society.

Results of this repression are twofold. First, the distinction between "feminine" and "evil" has become blurred in some instances. Women are "regarded as seductive; they lead men into a life of sin and alienation from God Father." (p. 39) Second, this missing feminine dimension of God leads to psychological impoverishment; "the divisive nature of patriarchal religion" (p. 40) is stressed, instead of the wholeness encouraged by complementary divine feminine symbols.

Deification of feminine archetypes last occurred in Western civilization during the Hellenistic period; Dr. Engelsman examines the cults of Isis and Demeter as examples of the most recent Western worship of feminine archetypes. She then turns to ancient Judaism, and claims goddess-status for Sophia, the personification of Wisdom in the Old Testament: "I, Wisdom, dwell together with prudence; I possess knowledge and discretion." (Proverbs 8:12, NIV) Because of the strict monotheism of Judaism, she argues, Sophia was repressed and not allowed official recognition as a deity. However, the development of Sophia demonstrated the subconscious need of the Hebrews for a goddess-figure.

Sophia was further repressed by Jewish and early Christian theologians, who replaced her with the "Logos" concept, masculinizing Divine Wisdom. Engelsman specifically discusses Philo, who initiated this substitution: "Philo's general attitude toward women . . . results in open hostility toward the feminine." (p. 105) Engelsman then applies Philo's motivations to early Christian theologians as well, in explaining their continued emphasis on a male Christ, the Logos of God.

In conclusion, Dr. Engelsman sees resolution of the repressed feminine in certain modern trends: the recent feminist movement, she feels, has revealed the absence of feminine images in Western religion; material repressed for centuries in Judeo-Christian thought is now rising into consciousness; male-dominated religious symbolism is now recognized as "bias," not "fact;" and masculine virtues are no longer perceived as the highest virtues attainable. Engelsman feels that Christian theology

will begin to change as a result, toward a more holistic perception of God, including masculine and feminine dimensions.

This book does not deal with revelational theology. Issues such as the inspiration of Scriptures, God's incarnation in Christ and the reality of knowing God personally are disregarded in this treatment of man's perception of God. Dr. Engelsman is examining what man has thought about the divine, not what God has thought about man. Read with this in mind, the book is a thought-provoking exposé of traditional Western attitudes toward women.

Reviewed by Barbara Trudell, Department of Chemistry, Houghton College, Houghton, New York.

NOBODY SPEAKS FOR ME! SELF-PORTRAITS OF AMERICAN WORKING CLASS WOMEN by Nancy Seifer. New York: Simon and Schuster, 1976. 477 pages. Paperback. $4.95.

This is an important book but, like the population it documents, it has not received the attention it deserves. *Nobody Speaks For Me* presents the oral life histories of ten working class women and allows them to speak for themselves.

Author Nancy Seifer describes herself as a "middle class Jewish liberal" and confesses that she fears her class credentials might cause her to be seen as an "illegitimate" spokesperson for "working people." However, anyone who has read her previous book, *Absent From The Majority*, knows that she cannot be numbered among the many who seem virtually unable to understand the dignity of working class culture. Seifer is primarily concerned with fostering mutual respect and liberation for the oppressed.

The ten women in this book are not "typical" but they are true-to-life. You could meet a couple of them in any working class neighborhood. They also are not simply products of the recent feminist movement. Activist working women have been with us since the rise of the working class. Seifer's women represent a wide diversity in ages (26 to 60), and ethnic and religious backgrounds (Black, Catholic, Chicana, French, Jewish, Italian, White-Anglo-Saxon-Baptist). They are all unified by the fact that each one of them experienced some hard living and then organized to reach out with help to others whose lives were being similarly violated. "Each has emerged as a fighter, in many cases a recognized leader, committed in some way to improving the quality of life." (p. 37)

In each chapter the reader has the experience of sitting down over a cup of coffee with a stranger and emerging at the end of the interview with a new friend for whom you have a great deal of respect. We are introduced to Anita Cupps, an evangelical Christian and miner's wife, who is committed to social equality through her involvement in Alabama coal mining politics; Mary Sansone, an activist who perseveres to found the Congress of Italian-American Organizations in New York City; Rosalinda Rodriguez, a city councilwoman who is active raising Chicano political awareness in Cotulla, Texas; Jancie Bernstein, fighting blockbusting on Boston's Blue Hill Avenue; Bonnie Halaseasak who blends feminism and unionism in Gary, Indiana, as she grows into and out of her job as U.S. Steel's first woman security guard; Dorthy Bolden, who organizes a national labor union for domestic workers after working as a maid for 42 years in Atlanta.

The book as a whole is reminiscent of anthropologist Oscar Lewis's best work, and it has the same problems. What was originally a series of dialogues has been edited into a vivid monologue. The value of the book as a research document is limited without Seifer's interview questions and comments. The reader is also not provided with Seifer's observations; the only thing we know about the unique context of each woman's life is what the woman herself tells us. Yet there is good evidence that Seifer's editing was done with great care. For instance, even sections that seem overly detailed are important in helping the reader to understand each woman's preoccupations and concerns.

None of these women will likely become another "Mother Jones," but all are already blue-collar aristocrats. I take my hardhat off to them for the integrity of their lives and to Seifer for recording their redemptive lifestyles.

Reviewed by John R. Snarey, Center for Moral Development and Education, Harvard University, Cambridge, Massachusetts 02138.

A NEW LAND TO LIVE IN by Francislee Osseo-Asare. Downers Grove, Illinois: InterVarsity Press, 1977. 159 pp. $3.95.

The title of this book has two appropriate meanings: (1) it is the author's personal struggle with the decision to marry a native Ghanaian committed to returning to his homeland after college (Berkeley of the 1960s) and (2) an affirmation of Bonhoeffer's (*Letters from Prison*) characterization of the wedding day as a triumph over doubt and impediment. Through journal entries and letters we follow the searching path. "Did *love* and *marriage* even mean the same things in African and American cultures?" "How did I know that I would be able to make the adjustments required to allow us to live a full life together?"

To answer these questions for herself she decided to travel to Ghana alone and interpret life there without the native tutelage of her fiance. Spending nine months as a teacher in a coastal fishing town, her experiences as a naive schoolmistress, Scripture Union member, and with daily problems common to living in an unfamiliar nonwestern culture, are described sensitively but with varying degrees of interest to this reader. At times she is melodramatic: "I'm ready to crucify, every day if

necessary, any self-pity or regrets that the Accuser may bring as we kneel at the marriage altar." After nearly nine months in the land she poignantly described the agonies of feelings of helplessness and aloneness. "I don't know anyone in Ghana I can talk to about these things." And in reply Kwadwo wrote that he couldn't find anyone in the States who would understand these things either.

The author's intent is to let us know that there are others who do understand intercultural, interracial Christian marriages. The last section of the book highlights these conflicts with personal and family struggles over the final decision to marry.

Having read the book and written the above, I am perplexed by the publisher's last statement on the back cover. "Francislee Osseo-Asare is a writer living in *Pennsylvania* (italics mine) with her husband." Surely the Ghana to Pennsylvania odyssey is as interesting as the decision to marry, but, unfortunately, is not included.

Reviewed by David Kapusinski, Department of Psychology, Bluffton College, Bluffton, Ohio 45817.

FOUR ARGUMENTS FOR THE ELIMINATION OF TELEVISION by Jerry Mander. William Morrow and Co., 105 Madison Ave., New York, N.Y. 10016, 1978. 371 pages. Paperback. $4.95.

When one stops to reflect upon the enormous waste of time and human energy spent in television watching—to say nothing of the general banality and crassness of programming or the oft-times offensive and manipulative advertisements—one wants very much to like any book which comes out strongly against television. And there is much to like in this book entitled *Four Arguments for the Elimination of Television*. Unfortunately there is also much that disappoints.

The author is a former advertising agency executive from San Francisco who has become a sort of self-appointed consumer advocate in the field of advertising. Mander's thought is in many respects a child of the radical '60's and, like much of the thought born out of that tumultous era, is an admixture of the profound and the foolish. This reader feels compelled to at once both praise and condemn.

But first a brief outline of the book is in order. Mander begins with a rather lengthy (47 pages) introduction in which he describes his changing perspectives on television and advertising as his occupation changed from college student to ad-man to consumer advocate. He then launches into his four arguments, which are quite diffuse and somewhat amorphous. Considerable work on the reader's part is required to distill and crystallize them, but as best as I can manage, they are as follows.

I. *Argument One*

(a) Increasingly, the environment of man is artificial (i.e. man-made).

Books Received and Available for Review

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

Bebbington, *Patterns in History*, InterVarsity
Bliss, Parker and Gish, *Fossils: Key to the Present*, Creation-Life
Bockmuehl, *The Challenge of Marxism*, InterVarsity
Bryant, *In the Gap: What It Means to be a World Christian*, InterVarsity
Butt and Wright, *At the Edge of Hope: Christian Laity in Paradox*, Seabury
Clark, *The Pantheism of Alan Watts*, InterVarsity
Dayton and Fraser, *Planning Strategies for World Evangelization*, Eerdmans
Gladwin, *God's People in God's World: Biblical Motives for Social Involvement*, InterVarsity
Guenther and Kawamura, *Mind in Buddhist Psychology*, Dharma
Hamilton and Reid, *A Hospice Handbook: A New Way to Care for the Dying*, Eerdmans
Hammond, Macinko and Fairchild, *Sourcebook on the Environment*, Univ. of Chicago
Hardy, *The Spiritual Nature of Man*, Oxford
Hess, *From the Other's Point of View: Perspectives from North and South of the Rio Grande*, Herald Press
Hiebert, Ihade and Schofield, *Joseph Priestly: Scientist, Theologian and Metaphysician*, Buckness O. Press
Hovenkamp, *Science and Religion in American 1800-1860*, Univ. of Pennsylvania
Jennings, *The Tragic Tale of the Dog Who Killed Himself*, Bantam
Kirk, *Theology Encounters Revolution*, InterVarsity
Lapp, *The View from East Jerusalem*, Herald Press
Lefever, *Amsterdam to Nairobi: The World Council of Churches and the Third World*, Georgetown Univ.
Lindskoog, *The Gift of Dreams: A Christian View*, Harper & Row
Malony, *Living the Answers*, Abingdon
Mannoia, *What is Science? An Introduction to the Structure and Methodology of Science*, Univ. Press of America
Martin, *You've Got to Start Somewhere When You Think About Education*, InterVarsity
Martin, *The Family and the Fellowship: New Testament Images of the Church*, Eerdmans
Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution*, Harper & Row
Murray, *The Celluloid Persuasion*, Eerdmans
Pinnock, *Reason Enough: A Case for the Christian Faith*, InterVarsity
Pippert, *Out of the Salt Shaker and Into the World*, InterVarsity
Ryken, *Triumphs of the Imagination: Literature in Christian Perspective*, InterVarsity
Sanford, *The Invisible Partners: How the Male and Female in Each of Us Affects our Relationships*, Paulist
Sider, *Living More Simply: Biblical Principles and Practical Models*, InterVarsity
Sider, *Christ and Violence*, Herald
Torrance, *Space, Time and Incarnation*, Oxford
Torrance, *Theological Science*, Oxford
Travis, *Christian Hope and the Future of Man*, InterVarsity
Trobisch, *Living with Unfulfilled Desires*, InterVarsity
Tulku, *Time, Space and Knowledge: A New Vision of Reality*, Dharma
Vanier, *Community and Growth: Our Pilgrimage Together*, Paulist
White, *Parents in Pain*, InterVarsity
Worgub, *From Magic to Metaphor*, Paulist

(b) The more artificial his environment, the more man must rely on media for knowledge of his world and the less on his own experience.

(c) Media information may be unreliable; experiential information is always reliable.

(d) Therefore, the more artificial his environment, the more susceptible man is to the implantation of arbitrary information (i.e. brainwashing).

(e) Television is far and away the best medium for effecting this brainwashing.

(f) These conditions are intolerable; therefore television must be eliminated.

II. *Argument Two*

(a) Power and wealth are continually being concentrated in the hands of fewer and fewer people.

(b) This tendency is a necessary result of modern technology and economic factors.

(c) Television is controlled by those in whose hands wealth and power are concentrated.

(d) Television is the primary instrument whereby the continual concentration of wealth and power is effected.

(e) Power and wealth ought not to be concentrated; therefore television ought to be eliminated.

III. *Argument Three*

Television technology produces undesirable and possibly dangerous neurological, physiological, and psychological responses in people who watch television; therefore television ought to be eliminated.

IV. *Argument Four*

(a) Television can convey some types of information completely, other types partially or with great difficulty, and some information it cannot convey at all.

(b) These "biases" of television are inherent in the technology and cannot be changed.

(c) In general, these "biases" of television give rise to dangerous distortions of reality and gross misconceptions in television viewers.

(d) Having no information from television is better than misinformation; reality is better than distorted reality; therefore television ought to be eliminated.

The author concludes with a short section (10 pages) in which he deals with some basic questions. The author suggests that technologies are not in general morally neutral but often are inherently inclined towards good or evil purposes (e.g. How shall we reform the technology that produces hydrogen bombs?). If technologies are not morally neutral, he argues, then we should be able to ban those that are undesirable. He also questions the desirability of any technology so complex that it necessarily shifts decision-making power away from democratic control to control by the "experts."

With a title such as this book has, one expects a very organized, well-structured book. One finds the opposite. The book reads like the outline was written after the text. The arguments overlap one another a good deal more than they have to. With better organization the book could easily be reduced by thirty to forty pages without substantial loss.

Also, Jerry Mander gerrymanders his research, drawing the boundaries of his research so as to include any and all data which support his pre-conceived notions and exclude all data which do not. Towards anti-television data he is completely without skepticism: science, pseudo-science, pop-psychology, science fiction, Eastern mysticism, Indian religious beliefs, and personal experiences all are equally acceptable as data sources insofar as they coincide with his ideas.

In addition, there is much over-glorification of the "noble savage," and overly-harsh condemnation of modern technological society. Stone-age peoples and cultures are wise and good; technological-age peoples and cultures are stupid and bad. Nowhere is there the slightest hint that, after all, a lot of superstitious nonsense has been gotten rid of or that technology has brought many benefits to mankind as well as problems. Although never explicitly stated by Mander, the conclusion that man must return to a pre-technological society follows from his first two arguments and is a constant, thinly-veiled undercurrent throughout the book.

This book encourages one simply to dismiss the whole issue. It is too easy to categorize *Four Arguments* as the work of a crackpot, for despite all its shortcomings, there is much presented in this book that merits serious thought.

Anyone who tried to follow the events in the recent invasion of Viet Nam by Communist China will not quickly dismiss the problem of telling truth from fiction or news from propaganda in this technological age. Anyone who has seen children transfixed in front of the television set will not easily brush off the assertion that television to some extent mesmerizes. Anyone who has ever tried to read a book or have an intelligent conversation in the same room with a turned-on television set, anyone who has caught himself watching "Gilligan's Island" reruns when he had not intended to watch at all but had merely sat down in the same room with a turned-on television set, will not doubt the power the medium has to fix attention and stupefy. Anyone who has tried to picture Moses in his mind and came up with Charlton Heston will not argue too strongly that media images are of little lasting consequence and do not greatly distort reality.

The time is past due for Christians to critically examine their television watching habits in the light of Christ's lordship over all areas of their lives. It is not enough to simply decide that one can watch programs such as "Little House on the Prairie" and cannot watch others such as "Charlie's Angels." It is not even enough to work at reforming television programming. More basic questions concerning the medium itself must be wrestled with. Books such as *Four Arguments* will prove thought-provoking for thoughtful Christians.

Reviewed by David A. Kloosterman, Analytical Methods and Services, Fine Chemicals Division, The Upjohn Co., 1140-91-1, Kalamazoo, Michigan 49001.

THE RELIGIOUS IMPULSE by Jean-Claude Barreau, New York: Paulist Press, 1979, ix & 70 pages, $1.95 (paperback)

Marx, Nietzche, and Freud attempted to eliminate religion in the nineteenth century but human beings responded by creating or discovering different gods. Still others continued to believe in the God of their fathers and mothers. Jean-Claude Barreau writes that the religious impulse is frequently misdirected but cannot be denied.

God has never been the only unrestricted value affirmed by human beings. Idols, which permit believing people to make their own concerns absolute, have been the perennial problem of all true religions. Even atheists recognize and try to satisfy the religious impulse.

Barreau affirms Christianity to be the authentic expression of the religious impulse but is critical of the Church as an institution. However he does not appeal to the Bible as the source of the living Word nor does he ever explain how Christianity survives in history. His Christianity is personal and unique as compared to his perception of the religious impulse which is universal. One value of the book is also its limitation: Barreau's pilgrimage from non-belief to faith is as personal and private as his relationship to his grandfather.

The book is a spiritual autobiography of a young Frenchman who was able to escape the atheism of his grandfather without ever rejecting that man's authentic love and concern. Barreau became a Christian, then a priest, and exercised an innovative and redemptive ministry among poor youths in Paris' Pigalle. He remains a Christian but he is now married and has moved to a new ministry as a layman.

To be a Christian, according to Barreau, is to follow the religious impulse to its limit. He passes other options across the reader's horizon quickly only to show why they could not be satisfactory responses to the religious impulse. But the tour from Communism via Islam to science and sex is no more satisfactory than the tour of Pigalle by night. Ideas fly by swiftly. Perhaps the author would say that, like seeds, his ideas will take root in fertile, well worked ground.

His conclusion is that the human can find rest only in God the Father, Son, and Holy Spirit. No Church can stifle that truth and Jean-Claude would say no human can ignore it without stifling or misplacing the desire for the transcendent or the religious impulse, common to all of us.

Reviewed by William J. Sullivan, S.T.D., Associate Professor, Religious Studies, St. John Fisher College, Rochester, New York 14618.

The Federation Christian Fellowship (FCF): A History

The Federation of American Societies for Experimental Biology (FASEB) is an umbrella organization comprised of the following groups: The American Physiological Society, American Society of Biological Chemists, American Society for Pharmacology and Experimental Therapeutics, American Association of Pathologists, American Institute of Nutrition, and The American Association of Immunologists.

Its membership includes Nobel Prize Winners and members of the National Academies of Science and of Medicine. In the 1950s and 1960s, when government research grants were plentiful and relatively easy to obtain, the Annual Scientific Meeting, also known as the Federation Meeting, attracted some 20,000 to 30,000 scientists, exhibitors, press corps, etc., and could be held only in a very few cities with large enough facilities to accommodate this large group. At least every other year the meetings were held in Atlantic City, N.J. More recently, some of the organizations (particularly the American Society of Biological Chemists), have held their meetings separately, thus allowing the Federation meetings to be held at other cities. Moreover, other organizations, not members of the Federation, have been guest participants recently. Thus in April 1980 at Anaheim, California the following groups participated as FASEB Guest Societies: Biomedical Engineering Society, Reticuloendothelial Society, Society for Experimental Biology and Medicine, Society of Mathematical Biology, and the Committees on Nutritional Anthropology of the American Anthropological Association.

In 1956 Drs. Walter R. Hearn and A. Kurt Weiss met for the first time on a bus shuttling travelers from the Brussels, Belgium, airport to the City Terminal. Both were delegates to the International Physiological Congress being held in Brussels that year. They recognized each other as Christians and promised to look each other up at the next Federation Meeting for prayer and Christian fellowship. At a subsequent encounter Dr. Hearn expressed his desire to become acquainted with other fellow Christians who, like himself, attend the Federation Meeting yearly. It was not difficult for him and Dr. Weiss to meet a few other believers.

Dr. Hearn first suggested the establishment of a Federation Christian Fellowship Meeting. In April 1959 or 1960, posters were placed in key hotels in Atlantic City, inviting the conventioneers to a Christian Breakfast get-together at the old Jefferson Hotel at 7 A.M. More than 30 individuals attended and Dr. Weiss gave a short message based on Proverbs 16:3: "Commit they works unto the Lord and thy thoughts shall be established." The attenders agreed to meet again next year at the annual conven-

tion. Thus the Federation Christian Fellowship was born. Meetings in subsequent years were held in the evening, however. It was decided from the beginning that the group would have no constitution, no dues, no officers; rather, at each meeting a Chairman was chosen to make arrangements for a room and some coffee or tea for the following year, to arrange for a speaker to lead in prayer, to take up a collection to defray the expenses and . . . to make up out of his own pocket the difference between the actual cost incurred and the collection received.

By 1965, contact had been made with some 175 individuals who, at one time or another, had attended these meetings. Over the years some of the names on the list changed. In 1977 the list included 98 names, with some individuals coming from faraway places like Hawaii and other countries like Canada and Switzerland.

Over the years two improvements were made which were extremely beneficial. Announcements of the next meeting were mailed in advance to individuals on the contact list. In the mid-1960s the Federation included the Federation Christian Fellowship Meetings in the official program, and was willing to add the name and topic of the speaker whenever we were able to furnish these in time. Now if an individual forgot when or where our meeting would be held, he could look it up in the official program.

Attendance at these meetings varied from year to year. In 1977 in Chicago some 40 persons were present. In other years the group was slightly smaller or larger. But the fellowship was always sweet and welcome after long hours of listening to technical papers and arguing about the finer points of one's own presentation.

When in 1971 the Biochemists decided to meet separately in San Francisco in July, we tried holding two FCF meetings. In April in Chicago Mr. John Stucky from the Medical Assistance Program, Inc. spoke to a large group. Through the efforts of Dr. Quinton R. Rogers of the School of Veterinary Medicine of the University of California in Davis, some 16 Biochemists met in San Francisco in July to hear Dr. Marvin Chaney, Assistant Professor of Old Testament at the San Francisco Theological Seminary speak on "A Socio-Economic Approach to the Faith of Early Israel: Illustrated by the Detailed Exegesis of Selected Old Testament Texts."

Not all lectures given over the years were as technical as this one. A complete list of all speakers is not in existence. However, in the early 1960s the speakers included Dr. Walter R. Hearn, A. Kurt Weiss, Robert Herrmann and Dr. Henry Morris, then a Professor at the Virginia Polytechnical Institute and all members of the ASA. Other early speakers were Dr. James A. Shaw, Harvard Nutrition Professor, Dr. John Alexander, newly elected President of the Intervarsity Christian Fellowship, and Mr. Joseph Finkelstein of Philadelphia who ministers to Jewish young people in his home in Philadelphia. The record for speakers in the 1970s is more complete, and includes Dr. John R. Brobeck, who, when he served as President of the American Physiological Society, honored us by attending our meeting in Atlantic City.

In 1973 when Lewis P. Bird, Eastern Regional Director of The Christian Medical Society was the speaker, I was contacted by the editor of *Federation Proceedings* who requested an edited manuscript of Mr. Bird's talk for possible inclusion in the *Proceedings*. This was gladly provided and publication of an article on "The Christian Medical Society" appeared in the *Federation Proceedings* (32:2086-7, 1973) with the notation that this material had been presented at the Federation Christian Fellowship evening session at Atlantic City, N. J. on April 19, 1973.

Twice in the 1970s we had guest speakers from each of our sister organizations, the Christian Medical Society and MAP Inc. In 1971 in Chicago and again in 1977 when we met in Chicago again, MAP, Inc. provided the speakers for our program, Mr. John Stucky in 1971 and Mr. Tom Knighton, son of MAP's founder, in 1977. In addition to the meeting in Atlantic City with Mr. Lewis P. Bird, the Christian Medical Society provided as speaker its General Director, Dr. Haddon Robinson, when the Federation held its first meeting ever in Dallas. Other recent speakers include Dr. Frank Roberts of the Delaware County Christian Schools near Philadelphia, Dr. Robert Herrmann from Boston University's Medical School, Mr. David Livingstone of the Biblical Research Institute in Philadelphia and this year in Anaheim, California, Dr. Ernest B. Brown, Jr., the about to retire first Chairman of the Physiology Department of the Oral Roberts University Medical School who presided over a meeting in which the philosophy of his department was discussed, particularly as it relates to "Whole Person Medicine."

Over a period of some 20 years many individuals have helped make these annual gatherings a reality by volunteering to organize the following year's meeting and chairing the session. Names not yet mentioned which come to mind for this very incomplete list include Dr. Gordon Mills of the University of Texas Medical Branch in Galveston, Dr. James C. Kennedy, Canadian pathologist from Queen's University, Dr. Elizabeth Zipf from Biological Abstracts who, together with her sister, brought baked goods and cookies from Philadelphia to our frequent Atlantic City meetings, Dr. Richard L. Huston of the National Dairy Council and more recently of Ross Laboratories in Columbus, Ohio, Dr. David Bruce of Wheaton College, Dr. William Matthews of Smith, Kline and French Laboratories, and Dr. Kenneth Dormer, most recently my colleague at the University of Oklahoma Health Sciences Center.

What of the future? It depends on what direction the gigantic Federation meetings will go. For the immediate future these meetings will continue and provide moments of spiritual refreshment and fellowship and a forum for the discussion of a side of life which is not frequently paid much attention during scientific meetings.

A. Kurt Weiss
Department of Physiology and Biophysics
University of Oklahoma Health Sciences Center
Oklahoma City, Oklahoma

Our American Cultural Crisis

Among social scientists who have reflected on Western culture in general and on American culture in particular, the Russian-born sociologist, Pitirim Sorokin, and the American anthropologist, Jules Henry (both deceased), voiced alarming concern with conclusions that bear reiteration and further consideration in the light of recent international developments.

Sorokin from earlier experiences of oppression, incarceration, and death sentences in the Soviet Union (as well as earlier in Czarist Russia) for his political stance held that "Sensate" culture marked with hedonism, relativism, and secularism had replaced the medieval "Ideational" culture characterized by self-denial, transcendental sources of truth, and ethical absolutes. Because of a commitment to "objectivity" and materialism, Sensate culture in Western society had mostly lost distinctions between right and wrong, beautiful and ugly, and the more abstract human values. In consequence, moral, social, and es-

thetic anarchy became dominant in the West. In essence, Sorokin viewed the Sensate developments leading to the "crisis of our age."

Similarly, Henry was passionately negative in assessing American culture with his more personal and arbitrary approach. As an anthropologist, he envisioned culture as human phenomena whereby people learned and shared coping abilities to serve mankind with "preserved experience." But, argued Henry, culture developed initially to serve human societies but in its advanced American form it had become to a considerable degree detrimental to the well-being of its bearers. To document his views, Henry cited dishonest advertising, excessive indulgence and permissiveness toward children, the "absurdity" of the competitive learning experience (education), and a pervasive "nightmare" fear of the enemy (the Soviet Union)—all major indicators of "culture against man" in American life.

An Age of Cultural Crisis

As an anthropologist with theistic presuppositions, I agree that we indeed live in an age of cultural crisis. This expression is used here to describe a pervasive anxiety that makes many Americans feel that not only are they unable to deal adequately with their immediate problems, but far more seriously, they are uncertain as to the actual nature of what disturbs them. The result is that they are quite prone to vent their hostility on groups and things which often cannot be regarded in reality as fully responsible for the threatened nature of their existence.

Whatever political reality there exists to Communistic threat in America, or elsewhere (as the present Afghanistan crisis aggravates), the ubiquitous fear of Communism often appears to be rather a matter of attempting to nail a free-floating general anxiety to a concrete object, rather than a serious effort to deal with a political problem. The various polls suggest this as the public offers changing views toward governmental leadership even though there may be no necessary relationship between political decision and some particular fear.

Because world Communism is a deliberate attack upon the results of the cultural crisis without adequate confrontation of the underlying nature of the problems of our age, it must be opposed. It must not be regarded as the cause of all our difficulties, but rather as one significant result of our failure to appreciate the ultimate causes.

To conclude that we live in an age of cultural crisis does not mean that there are not analysis and proposed solutions being offered. We know the contrary to be true. Certainly it does not refer to the wide differences of opinion as to what is advisable of various options—except as these differences reveal a basic moral ambiguity. On the tactical level, differences of opinion may represent cultural health rather than some malaise.

Again, to suggest that we live in an age of cultural crisis does not mean that there is a complete absence of health in all of American culture. There is evidence to the contrary, and one of the very hopeful signs of it is the continuing ability of some of our leaders to work out pragmatically mixed approaches to complicated political and economic questions. What cultural crisis here does mean is that it is frightfully difficult in contemporary life to capitalize on the elements of health because the framework within which our civilization is understood appears to be either so ambiguous or so inadequate as to make lucid decisions in practical affairs impossible.

The threats of a third world war and of ubiquitous economic chaos suggest forcibly that our problems cannot be treated simply by some re-adjustment of the political and economic factors. When the cultural framework can be taken for granted, as it was in Medieval Europe, people do meet their problems of social dynamics by rearranging the details of either political or economic life. But when the underlying intellectual, emotional and institutional structure itself becomes part of the problem with which we wrestle, then the situation becomes serious, in some degree critical.

Culture, as defined in anthropology, is this structure in a totality of what is learned and shared. It includes not only the explicit intellectual rationale of a civilization at a particular time, but also the ideological factors which govern most normal decisions by individuals and groups toward various specific goals. It includes the whole interlocking pattern of postulates and both conscious and unconscious premises which people take for granted in the quest for solutions to an issue, to communicate with each other and to implement practical action. Culture is to be equated to a general individual and group sense of self-fulfillment.

On the human level, cultural stability is the most relevant measure for assessing the relative health of a civilization. When the culture is functioning with some degree of stability, people can think, relate themselves to each other, and act with some genuine confidence that such behavior is congruent with things as they are—even if this is not the case in actual practice. When the culture becomes ambiguous, people's thoughts, relationships and actions provide no sure basis of confidence, even though they may appear to be pragmatically satisfactory. The expectancy which focuses social life is blurred, and anxiety inevitably follows.

To allow that we live in an age of American cultural crisis, therefore, is to recognize that this sense of expectancy (or predictability), by which the social, political and economic institutions have been built, is difficult to connect meaningfully with the historical decisions we are forced to make. Whether it is a question of American foreign policy, or of the role of the family in an urban technological society, there are few sufficiently clear perspectives to enable people to make accurate decisions and to take valid action.

As any of our recent presidents know, historical issues continue to arise, but in the absence of an adequate perspective, consistent policies are difficult to make. The result among Americans is that there is an endemic free-floating anxiety regarding the past and the future, while the present remains uncertain and confused. Satisfactions tend to border on the hysterical, while disappointments are often depressing, even paranoid. Small wonder then that the incumbent president's popularity in the polls fluctuates greatly.

Two Postulates

Western culture, which is carried perhaps to its highest pitch in the American version, for the past three centuries has rested upon two parallel and interlocking sets of postulates. Within a general philosophical milieu of a pronounced transcendental void, these do not appear sufficient at present in America to enable people to interpet their experience adequately. The two postulates are: (1) *By an objective relationship to whatever concerns one, people are able to control, manipulate or at least to adjust to, circumstances satisfactorily*; and (2) *Individual self-fulfillment through economic acquisitiveness is the means whereby a healthy society lives.*

These two postulates have been analyzed by many writers with various interpretations, including those by Sorokin and Henry mentioned above, for a long time. While they may be stated in various ways, and while appreciation must be allowed for shadings of emphasis between the classes in any region, they continue as dominant characteristics in American society. But modern Americans are losing confidence in them without real-

izing it. They are not opposed by a viable alternative, since even Communism is actually an extreme systematic rationalization of Western culture. In brief, the problem confronting modern Americans is that they no longer possess sharp cultural postulates which make decisive actions valid or meaningful.

The general emergence of Western society that gave rise to the American form since the Industrial Revolution has been punctuated with many technological and scientific victories at the expense of the structure that made possible the winning of these victories. Three developments can be cited to illustrate such triumphs:

(1) There have been offered popular solutions to the cultural malaise as reflected in individual anxieties in what might be labeled the *peace of mind school of religious thought*. Such approaches are exemplified by Norman Vincent Peale's *Guide to Confident Living* and Joshua Loth Liebman's *Peace of Mind*. Dale Carnegie and many others could be included. Their views represent an attempt to enable people to escape the consequences of the cultural crisis without facing the fact that the crisis arises out of an historical situation where real problems demand solution.

On the other hand, these efforts to gain personal confidence presuppose the continued relevance of both premises and employ a glib version of the depth psychology and a Ritschlian understanding of the function of religion to authenticate it. They proclaim in various terminology the possibility of individualistic self-fulfillment in outmoded concepts. On the other hand, they conclude that the tensions or pressures which threaten people can be eliminated by employing proper technique, again derived from a combination of psychiatry with Christianity understood, not as Cross, but as euphoria.

(2) The vogue of *literary existentialism* is another phenomenon which aids in illuminating the crisis of American culture. Interestingly, this school of thought is best associated with European names like Martin Heidegger in philosophy and Jean-Paul Sartre in the field of the novel and the drama; however, it is not to be confused with Soren Kierkegaard's "existentialism" which has had much influence upon Protestant theology in America.

Of course the present essay's compass makes our treatment of literary existentialism severely abbreviated, yet the school's existence has considerable significance for appreciating the crisis of our culture. It must be noted that this thinking emerged during the unstable decade prior to the second World War at which time it came into full bloom. There are diverse stances within it with a spectrum of views from an attempted syncretism with Roman Catholicism to the bold nihilism of Sartre.

Literary existentialism in the ultimate sense denies the significance of culture at all. Its major concentration on knowledge is completely through decisive action. One scholar has noted that the effect of this focus is not unlike the grin of the Cheshire Cat, as if decision without content and content without context were possible. Some of its proponents are aware of this; but for our present purpose, this position serves to dramatize, by its rejection of Western culture, the chaos in the breakdown because none feels compelled to reject that which one can take for granted in normal life.

(3) The *rise of atomic science and technology* as the present zenith of these twin developments illuminates yet another facet of our cultural problem. A direct corollary of the two postulates in today's America is the general conviction that science—primarily the physical sciences—and ethics blend with each other as part and parcel of a single entity. The bomb dropped on Hiroshima terminated abruptly this miscegenation that the Western world had condoned. But unfortunately it did not relate science and ethics in an alternative fashion. Instead, it left a conspicuous question mark, which American society recognizes only vaguely and about which it finds little to do.

This threefold manifestation of our culture crisis, with a tripartite impact upon our lives, makes apparent that we do not find it easy to meet our practical problems of home, occupation, community, and international responsibility in the light of their inherited expectancy. This is because we do not grasp—we become impotent in seeking to grasp—the complete significance of the difficulties confronting us, and when these problems are so diffuse to defy coping with them, their persistence terminates in compounded confusion. Yet these three illustrations also identify the fact that people remain unprepared to analyze their culture critically, but that they either try to continue affirming it, or find it a frustrating problem. Hence, Solzhenitsyn's Commencement address at Harvard in 1978 met with much negative reaction by those who refused to consider the possible ultimate problem—the decline of the transcendental dimension from its dominant position in the past.

At its inception, the communist movement purported to be the creation of a new culture, but its formulators stopped short in their analysis of what they criticized. While their criticisms made positive contribution in its exposure of covert evils in Western civilization, its own acceptance of the basic premises of that which it attacked made it peculiarly dangerous. Its attacks on social ills which people found hurting them had considerable appeal in spite of its unlikely promise that it alone could provide an adequate foundation for social reconstruction.

As events have occurred this century, that which was theoretically dangerous in Communism became a horrendous destructive force since one of the two superpowers became the bearer of the communist promise. The combination of the tendency of cynical self-justification, common to all nations and enhanced in proportion to the actual power at that nation's disposal, with the messianism of a communist theory, which was actually a rationalization of a false alternative to that which it criticized, has made Soviet Communism the menace that it is, and of course most recently confirmed in Afghanistan.

While the Western world in general, and America in particular, does not recognize this aspect of Communism for what it is, it seems increasingly apparent that the movement as a desirable alternative to the traditional methods of handling political and economic affairs has lost much of its appeal. Its illumination of social injustice has become part of the general heritage, but its program more and more appears to be a way of embalming rather than reformulating any culture as a whole.

Communism seemingly will not be accepted now in the Western world except where Soviet military interference is sufficient to allow communist minorities to seize political control; the same has been true most recently in Afghanistan in Asia. In the Far East, it still holds appeal as a creative force, but it has become an unsurprising syncretism with Oriental views as those of Toaism and Confucianism, even to Buddhism. The political and economic ineptitude of the West, especially America, makes the ambiguity of its Far Eastern appeal less conspicuous, even though it appears to blend a blatant nineteenth-century nationalism requiring an individualistic basis with the mechanistic social approach of orthodox Leninism.

Yet the quest continues for a political and economic formula that will annul the tensions that increasingly distress Americans —brought to an even higher pitch by the energy crisis and international dependence. There remain those in American culture with considerable faith that the "trickle-down" theory is still valid. From this position to that of the radical anti-communist left, there are differing stances. But probably the most telling

aspect of our cultural crisis is that most people in our society seem to have diminishing confidence of any kind, no awareness of the nature of their difficulties and no hope of practical expression that anything undertaken will alter the situation for the better.

The Challenge for Christian Faith

As for the Christian faith, here is challenge and judgment. As the late Richard Niebuhr observed in a chapter of his work, *Christ and Culture*, there is a view held by some that culture, which certainly is to include our American form, is opposed to Christian faith. While it is impossible for people to live without culture of some kind in that they must have a viable framework for interpretation of the milieu of their lives within history, they are always tempted to rest their confidence in that interpretation. When the current of affairs appears to flow smoothly, the culture itself is attributed the role of God to all practical purposes. When the culture becomes shaky or uncertain, people tend to seek for a stable order as if that were an end in itself.

It seems obvious that we in America of the twentieth century are in a period of cultural breakdown. And it is absurd that we can eliminate having to deal with culture as such. People must devise some generally acceptable set of categories—possibly for a radical revision of our culture—given concreteness by social institutions, or they cannot deal with life at all. For Christianity, the challenge is to approach the problem of cultural reconstruction on an understanding that culture must be subordinate to faith. Yet there must also be an awareness, which some thinkers, no matter how theologically profound they may be in other matters, do not understand, that faith itself can become so involved in culture as to cease to be faith in the biblical sense. This was the tragedy of the Middle Ages in Europe, where culture and faith became so identified with each other that the culture itself could not be analyzed and criticized.

The challenge, if it is to be accepted with realism, involves judgment upon our culture—even if met by adverse reaction as Solzhenitsyn fully appreciated. In a genuine sense, Christianity in its practical operations is much involved in our American culture as are other social institutions. It cannot face the problem of crisis in American culture as if its organized life were not part of the problem. It cannot really claim to have understanding of symptomatic contradictions in contemporary politics and economics any more accurately, in its official teaching and institutional program, than the rest of civilization of which it is a part.

American culture understands peace to consist of the absence of international tension, either through the suppression of all major difficulties or through the achievement of an equilibrium secure enough to withstand all conceivable shocks and stresses. Our modern cultural problem raises the question as to whether such an understanding of peace is either broad or deep enough to have any long-range significance. Certainly, peace as specified in the Bible is neither monolithic nor judicial in essence, but rather it is an underlying harmony based upon faith in the Incarnate God, Jesus Christ. But this harmony is not to be envisioned as a political alternative to the various schemes attempted or proposed in the international scene. Rather, it stands in judgment on all political achievements, yet at the same time it is also a continual inspiration to those seeking more adequate political adjustments.

The history of Christianity has seen continual attempts to synthesize it with whatever culture was prevailing in order that it might be used as cement for the social structure or as re-inforcement for the particular ethical standards of a society, and above all as the means whereby men may find justification within the social process. The Age of Justinian saw one form of such an attempt and the Middle Ages another. Kierkegaard felt that Gruntvig and Martensen were doing exactly this in Denmark of a century ago. The point is that Christianity is never a means to something else without ceasing to be fully Christian!

In our twentieth-century culture crisis in America, the distinctive contribution of the biblical point of view has not often been faithfully represented—it is amazing what aspect of our culture has been identified as Christian! Usually this is because many churches are still seeking to justify themselves in terms of the prevailing social structure. And tragically, the American leadership in Christianity cooperates more often than not, as in the various efforts to merchandise organized Christianity to the people as a bulwark against Communism.

Our expectancy as Christians is not in the achievement of a society without tension, a peace in which all conflicts of individuals and groups are annulled, nor a prosperity which is automatic, nor a freedom without demands. Our expectancy within our American culture is rather that we may continue to seek both political peace and economic prosperity, both individual freedom and an adequate standard of living for everybody, not as ends in themselves, but as practical occasions in which we may observe the love of God taking concrete form in human society. We believe that the judgment of God must be pronounced on what we achieve as well as on what we oppose, and we pray that we may obtain grace to recognize it and accept it.

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George J. Jennings
Geneva College
Beaver Falls, Pennsylvania 15010

Letters

Thanks for Articles on Creation

Your articles on creation in the March 1980 issue of *Journal ASA* are most greatly appreciated. The world is indebted to you for such fine expositions.

A. P. H. Clark
P. O. Box 431
Nokomis, Florida 33555

Arguments for *Creatio ex Nihilo* Not Convincing

I believe in creation *ex nihilo* (Rom. 4:17, Heb. 11:3). However, if I didn't already believe it, I doubt that I would be convinced by William Craig's account of his "first philosophical argument" (*Journal. ASA*, March 1980).

He seeks to show that a beginningless series of events in time cannot exist while acknowledging that an endless sequence of events is possible. To do this he introduces the concepts of actual infinite and potential infinite. It appears that the essential difference between the two concepts in his use of them is the order in which he arranges the events. The past events in an eternal universe are an actual infinite and the future events a potential infinite because in both cases he views the events as arranged in the order of their occurrence. Nevertheless, in his examples about the infinite library of books some of his statements refer only to the results of the arithmetic of infinite cardinal numbers even though this arithmetic is independent of the ordering of the sets. In the examples in which he numbers the books, he doesn't say to which event book number one corresponds. Couldn't it equally well be the first event of a sequence of future events or the last event of a series of past events?

Even without analyzing the details of his argument, we should suspect that something is awry since actual infinities do in fact exist. For example, consider the following events in a person's life: attaining the age of one-nth of a year, where n can be any positive integer. For anyone who is one year of age or older the set of all such events is a series of past events with no first element.

I would also like to point out that Mr. Craig does not mention the mathematical definitions of *greater than, less than,* and *equal* for infinite cardinal numbers, but he uses such terms in discussing infinite sets, expecting his readers to have reactions based on their experience with use of these terms in discussing finite sets. However, it is by no means certain that his readers, even those who have never studied Cantor's set theory, will find what mathematicians say about the infinite so strange. They may concur with the hymnwriter John Newton who observed that after we have been in heaven ten thousand years we will still have just as much time to sing God's praise.

Gordon Brown
2880 Euclid Avenue
Boulder, Colorado 80303

Not Scientific Quality

I was quite disappointed in the article on "The Biblically-Oriented Family: A Reassessment" in the March 1980 issue of *Journal ASA*. It seems to me that research of the sort carried out by the four authors has some potential value, but it needs to be properly written up for publication. Several features of the article serve to confuse the reader. While one certainly would not ask to have all 88 items of the questionnaire included in the article, a few samples would be of great assistance. As it is, I find it very hard to figure out from what is written down the sort of data which were obtained. The section of the article labeled "Significance of Results" is quite obscure, in part because of the absence of a clear statement of what type of information was obtained in the questionnaire. In claiming to have discovered some "law-like propositions," have the authors done more than conclude that there are some correlations between beliefs and behavior? It is hard for me to see why even within the social sciences such a result should be dignified by the term "law." The section of the article labeled "Unexpected Demographic Observations" would be of some value had the authors *compared* the results they obtained for "biblically-oriented families" with comparable information for the control groups. The absence of the latter, without any excuse given for its omission, is inexcusable for a scientific article. If the authors were short of space, they could have omitted the final section on "The Working Wife," which seems to be the sort of philosophizing which needs to be tested against hard data, or at least the best data one can obtain. But not a word is said as to whether the statistical information the authors acquired lends support to their philosophical position, or the degree to which it is or is not supported by other sociological studies.

Robert B. Griffiths
Physics Department
Carnegie-Mellon University
Pittsburgh, Pennsylvania 15213

Commitment to Care Review Criticized

One of the responsibilities of a book reviewer is to avoid misrepresenting the contents of a book. A good reviewer avoids attributing to an author positions and remarks that do not actually exist in his book. In his review of my book *Commitment To Care* (*Journal ASA*, March 1980), Rev. T. M. Moore attributes to me the statement that "there is something beyond God which gives meaning to all that there is." He declares that this is one of my "most glaring theses." He makes it appear that I have argued in my book that "Care is beyond God." He presents me as saying "Care gives meaning to God as it does to all things in the universe and, therefore, must be greater than God."

Commitment to Care does indeed argue that God's care is ultimately what gives meaning to things in the universe. However, nothing is said in the book which remotely suggests that "Care is beyond God," or that "there is something beyond God which gives meaning to all that there is." Precisely the opposite is the truth. The book disallows that there is anything whatever "beyond" God. The main thesis of the book is that God Cares, that His love is always absolutely rational, creative, and altruistic. It is the absolutely righteous nature of God's love (His care in action) that makes Him always worthy of worship. I could find no real significance in the idea of God, certainly no reason for worshipping Him, if I did not believe that He cares for all of His creatures. The God of Jesus is a personal God of loving care. Christ exemplified this care in the most momentous imaginable way, which is what gave Him his unique power to inspire belief and love. My book clearly and unmistakably assigns perfect love (divine care) to God as something that is internal to His nature, not as something that is "beyond" Him. In no way in this book do I suggest that "there is something that is greater than God." Rev. Moore seems to be put off by the idea that God *is* Perfect Care, which is the thesis of the book. God is not just the abstract absolute Being, the static Entity of the Greek philosophers; He is the Supreme Person Who Lives, Who Loves all of us with creative righteousness and absolute beauty.

Rev. Moore states that I talk about "pure care," but then fail to define it. But in fact, Pure Care is one essentially Christian definition of God. There could be no essences in God's nature meaningful to us if He did not act carefully to make them meaningful to us. It is my vision of God as He Who Perfectly Cares that makes it possible for me to feel that I have a meaningful personal relationship with Him and His Son. No care is beyond God. But neither is God beyond care. The Father of Christ Jesus is not just the Aristotelian being which cannot fail to be; He is our Eternal Father Who cannot fail to love.

I state repeatedly in the book, and even on the jacket, that "The essence of God is Responsible Care," that "the perfect rationality of God is manifest in His Cosmic Scheme of Care," (p. 5). The chapter on "Care in Jesus of Nazareth" ends with the triumphant statement that "Out of His Care, the Lord gave to us freely and totally the value of Himself—that we should not perish but have everlasting life." Throughout the book, I define God as the epitome, the ultimate archtype, of the perfect care that we, His children, should seek to let into our lives and be nourished by.

I fail to see how this understanding of God "openly contradicts the clear teaching of Scripture."

Albeit, I would like to thank Rev. Moore for the time and trouble he took in reviewing the book.

Dean Turner
1857 13th Avenue
Greeley, Colorado 80631

People should not review books unless they have adequate preparation to understand the contents and thus are able to avoid distorting the author's views. "Thou shalt not bear false witness" is a principle that should apply to book reviewing as much as to any other activity in life.

Rev. T. M. Moore failed to honor this principle when he reviewed Dean Turner's book *Commitment to Care*. I trust that this breach was unconscious and simply a result of incompetency, rather than deliberate and knowing.

It is true that Turner's concepts of salvation and heaven are not as orthodox as Rev. Moore's, but they are not contrary to the spirit of Jesus' teachings. Turner's book presented the essence of Christ's message in such a way as to enable me to turn to Him as the Lord. It is unfortunate that this uniquely relevant book did not receive the kind of review that it deserves. God bless Rev. Moore and may he avoid reviewing books that are over his head.

Richard Hazelett
30663 Lake Road
Bay Village, Ohio 44140

Holy Spirit Validates the Bible

I am a new member of ASA and just getting acquainted with the *Journal*. I was a little surprised to find so much space taken up with the question of the inerrancy of the Bible. As far back as I can remember I have always been interested in any article I could find on science or philosophy. I came from a devout Christian background but could not see any reason for controversy between science and religion.

I have read articles on biblical inerrancy for about 70 years and I find about as many interpretations of the word "inerrancy" as there are people writing about it. If the original autographs had been preserved for us in some miraculous manner, many people would be inclined to make them an object of worship. Instead God chose imperfect men with human weaknesses to copy the sacred writings by hand for more than a thousand years. It would be only natural for a scribe to change the wording slightly to better clarify what he thought the passage meant. When it came to translating from one language to another variations in meaning were bound to creep in. Thus the interpretation of the scribe and the translator enter in to the wording that comes to us.

But what are words? Thoughts are not words, and words are not thoughts. Words are only vehicles to convey thought, and very unreliable vehicles at best. Every speaker or writer knows how difficult it is to choose the right words to convey to another mind the thoughts that seem so clear and meaningful in his own mind. Regardless of how carefully the words are chosen, the thought which the listener (or reader) gets is influenced by many factors such as previous experiences, background, attitude, education and many others. The remarkable thing about the Bible is the way the Holy Spirit can use the words of the Bible to convey His message to the needy soul. It is not unusual to read of some discouraged, despairing souls, perhaps on the verge of suicide, who accidentally pick up a tract, or a leaflet with a few verses of Scripture and the Holy Spirit conveys the needed message to their heart and the saving, transforming power of the Living Christ comes in to their life. And what Christian has not turned to the Bible in a time of sorrow or discouragement, and as you read an old familiar passage suddenly a new thought—a new meaning that you had never noticed before—stands out clearly.

Thus the power of the Holy Spirit to interpret the Bible to meet the need of the reader authenticates and validates the Bible as God's Word more than all the volumes ever written on inerrancy.

Dwight B. Mapes
12 Bedwell Lane
Bella Vista, Arkansas 72712

The Final Resolution of the Evolution Controversy

Recently I was provided with a copy of the ASA Selected Readings *Origins and Change*. Your opening statement includes "Evolution can be considered without denying creation" with which I agree completely. Such modern Christian scientists as du Nouy, MacKay, Rhodes, and numerous members of the ASA would agree, a conflict between Scripture and biological evolution does not exist. And yet this volume reveals a conflict does exist. Why? I have been led to an interpretation that *Evolution*—the rejected (by literal creationists) cornerstone of biological (actually all) science, is the connecting link between religion, specifically Christianity, and orthodox science.

God created life by infusing that spiritual attribute into an appropriately structured organic molecule (see *Sc. Amer.*, Sept., 1978); itself a product of an evolutionary process, about 4.0 billion years ago. God created "man" as a spiritual being (Gen. 1:27, also Ps. 104:30 and Zechariah 12:1b) about 7–8000 years ago which corresponds approximately with the Mesolithic-Neolithic boundary by infusing the human attribute into an already existing hominid body or bodies. The raising of man from the dust of the ground (Gen. 2:7) is not *ex nihilo* as that is not a bringing into existence from nothing process. Gen. 2:7b is a variation of Gen. 1:27. The evolution of the hominid bodies by the mechanism of biological descent with change can be readily interpreted in Gen. 1:25a. The process of speciation can also be interpreted. This whole relationship was evident to me about the first time I ever read

Genesis—in fact in the short space of two months, just three months after the first time I ever opened the Book. And to think this controversy has raged on for 120 years and presently seems to be intensifying. I think Somebody wants a solution! Now!

Why does it persist? Some are determined to maintain the differences, described in numerous books with large sales and several editions. The minds of some are so rock-bound, they cannot change. Many are so confused, they don't know whom to believe. Some are trying to sort out a mountain of literature containing proposals, counter proposals, charges and countercharges, all thoroughly laced with personal insults, innuendoes and false accusations. Let me ask a simple question. "Has the time not come for a solution to surface? Aren't there more important issues?"

The literal creationists are now circulating a model bill for submission to state legislatures and Senates requiring equal time for creation and evolution in public school education—the two model approach. I have learned by unexpected circumstances that copies have been sent to 41 of the 50 states. Now consider the expenditure of time and money for just 20 states in hearings, research, legislative and Senate debates, educational restructuring, teacher retraining, lawyers, clerks, printing, books, - and then testing in the courts. Be prepared! At present, I understand that California requires fair treatment in free texts for the lower grade classes. Actions are presently in progress in Florida, South Carolina, Georgia, Illinois (I wrote a Senator yesterday), probably Iowa, with intentions this year for Oklahoma, Idaho and where else who knows. I feel certain the San Diego group have lobbyists in Sacramento.

If Scripture and biological evolution are compatible as I can demonstrate, then there is no conflict on the origin of man as interpreted in the spheres of religions and scientific knowledge. Then scientific creationism, like geocentricity, is a sophism. The mountain of literature should be treated according to Acts 19:19. Do I sense you saying I don't believe it? - Well, Galations 1:20. If you and other ASA members will join in spreading this understanding, the sooner will this conflict come to its just demise. Will I write out the interpretation? No—like the Good News it has to be heard—so Luke 14:35b. I look forward to the time when I can explain—but remember my first question will be—"would you like to see an end to this century plus old controversy and are you prepared to consider a solution based on Scripture – not science?"

C. Gordon Winder
Professor of Geology
University of Western Ontario
London, Canada N6A 5B7

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

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 this 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.*

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EXECUTIVE DIRECTOR:
WILLIAM D. SISTERSON, P.O. Box 862, Elgin, Illinois 60120.

EDITOR, AMERICAN SCIENTIFIC AFFILIATION NEWS:
WALTER R. HEARN, 762 Arlington Ave., Berkeley, California 94707.

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