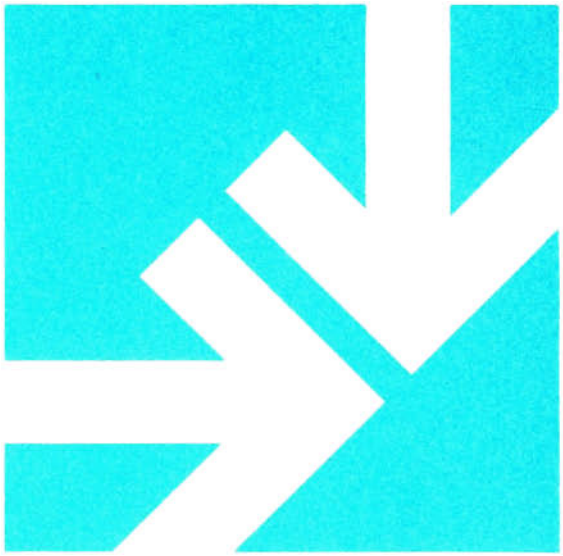
JOURNAL OF THE
AMERICAN
SCIENTIFIC
AFFILIATION



An evangelical perspective on science and the Christian faith (US ISSN 0003-0988)

1984

A Symposium: The Future Becomes the Present

Also starting a prophetic new series by Walter R. Thorson, "Reflections on the Practice of Outworn Creeds"

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

VOLUME 33, NUMBER 1 **MARCH 1981**

MEMBER epa EVANGELICAL PRESS ASSOCIATION

Concerning SUBSCRIPTIONS, changes of address, requests for back issues, and other business requests, address: Executive Director, American Scientific Affiliation, P.O. Box 862, Elgin, Illinois 60120. The SUBSCRIPTION PRICE: one year $16.00, two years $30.00 *Students:* $8.00. *Institutional rate:* one year, $30.00. *Gift subscriptions:* one year, $8.00. Single copies may be purchased at $4.00 each. Second class postage paid at Elgin, Illinois and at additional mailing offices. Postmaster: Please send POD form 3579 (change of address) to American Scientific Affiliation, P.O. Box 862, Elgin, Ill. 60120. Published four times a year in March, June, September and December by the American Scientific Affiliation. Telephone: (312) 697-5466. Back issues: $2.50 per issue from 1974 to 1977; $1.50 per issued from 1963 through 1973; $2.00 per volume or $1.00 per single issue before 1963; *Supplement* 1, 1976; $3.00.

The pages of the *Journal ASA* are open to any contribution dealing with the interaction between science and Christian faith in a manner consistent with scientific and theological integrity. Papers published in the *Journal ASA* do not reflect any official position of the American Scientific Affiliation.

Concerning MANUSCRIPTS, address: Editor, *Journal ASA*, 753 Mayfield Ave., Stanford, California 94305. All manuscripts should be typed double-space on good quality 8 1-2 x 11 paper, with references collected at the end, and with an Abstract of not more than 100 words. Duplicate copies of manuscripts are requested. Figures or diagrams should be clear, black and white line ink drawings or glossy photographs suitable for direct photoreproduction, with a caption provided separately.

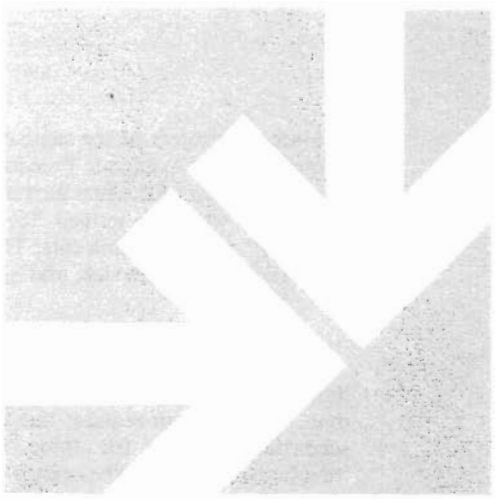
REGULAR PAPERS represent major treatments of a particular subject relating science and the Christian position. Such PAPERS should be at least 10 pages and not more than 20 pages long. Accepted PAPERS will be published within 18 months.

COMMUNICATIONS represent brief treatments of a wide range of subjects of interest to the readers of the *Journal ASA*. COMMUNICATIONS must not be longer than 9 pages. Accepted COMMUNICATIONS will be published within 9 months.

LETTERS represent correspondence received by the Editor which comments on previous publications in the *Journal*. All correspondence received by the Editor is deemed suitable for the LETTERS category, unless the writer expressly requests that his/her letter be not published. LETTERS will be published within 6 months of receipt.

Concerning BOOK REVIEWS, address: Book Review Editor, Dept. of Chemistry, Houghton College, Houghton, N. Y. 14744. To avoid duplication in reviews, prospective reviewers should notify the Book Review Editor of their intentions at an early date.

JOURNAL OF THE
AMERICAN
SCIENTIFIC
AFFILIATION



MARCH 1981 PRINTED IN THE UNITED STATES OF AMERICA VOLUME 33, NUMBER 1

Editorial

AN ACT TO PROTECT ACADEMIC FREEDOM AND TO PREVENT FEDERAL CENSORSHIP IN SCIENTIFIC INQUIRY FUNDED WITH FEDERAL TAX MONIES

It is the nature of most persons to want simple answers to every problem that arises. Unfortunately there are few that can be solved with one neat statement. No one should be more aware of this than those who claim to be scientists.

An illustration of the dilemma which arises from oversimplification is the work of a group called Citizens Against Federal Establishment Of Evolutionary Dogma. Recently in a news release they tell of a question being sent to every member of Congress and to each presidential and vice-presidential candidate: "Do you agree that the evolutionary theory of origins must stand or fall strictly on scientific merits?"

The question is redundant. That is what science is all about. Theories are proposed and are either accepted as working models or not on the basis of scientific investigation. A theory is "a system of assumptions devised to explain the nature of a specified set of phenomena." Since the Greeks proposed some ideas which could be considered evolutionary in their concept, to the present time, theories explaining origins have been subject to scientific study. This has been especially true since Darwin made his contribution in 1859. The present evolutionary theories are a great deal different from those of Darwin's time. The point is, however, that theories are not truths. They are working models. They are the subjective analysis of the data available. Three scientists (or a hundred) might examine a series of observations and each arrive at a different theory which he thought was justified by the data. Some of these conclusions might seem to be better working models for future investigation and so be more likely to be accepted. Others of the theories might seem to have little relevance and so be passed over. The discarded ones might prove in the future to be more nearly correct.

A second project of the same organization is a bill to be proposed in Congress. It is to be known as the "Academic Freedom in Scientific Inquiry Without Federal Censorship Act." The main thrust of the first part of the bill is that federal funds should be awarded in the same amount to what are termed "evolutionist scientists," "creationist scientists," and "other scientists" research applicants. The same criteria should apply to federal grants to museums, the National Park Service, and curriculum development.

One paragraph states that "no federal funds shall be used for any theistic, non-theistic, humanistic, or other religious doctrine about the origin of the universe, the earth, life, or man." Section four requires that House and Senate hold committee hearings to "delineate the scientific evidence for these models." Section five defines "science-creation" and "evolution" models. The science-creation model includes "belief in explanation of the earth's geology by catastrophism, including the occurrence of a worldwide flood; and a relatively recent inception of the earth and living things."

Several problems would arise if such a bill were to be included in our laws. One is the difficulty of having a creation with a creator who is divine. Thus despite the attempt not to do so, this bill brings religion into the matter of dispersal of federal funds.

Secondly, although the title of the bill states it is an act to protect academic freedom, the stipulation that an equal amount of monies is to be allotted to each of the three categories of scientists means there will not be academic freedom for a large number whose research cannot be funded until a sufficient number of worthy proposals are submitted by an admitted minority of scientists.

An even greater problem is in the definition of a "creationist scientist." It is our observation that very few Christians who are trained in science could be placed in this category. These scientists are Christians because they believe in God who, as described in the first chapter of John made all things and also came to this earth in the form of man and became the Savior. They believe, as the Bible says, that one becomes a Christian by belief in Christ, not by accepting scientific theories.

If one accepts the concept that God created *ex nihilo*, then a discussion of creation vs evolution is meaningless. To evolve, there has to be something to change. The evolutionary scientist, whether Christian or not, still has to believe something was created, or at least acknowledge he does not know the origin of the particles which make up matter.

And finally, the picture this bill presents becomes ludicrous when one thinks of a committee of the U. S. House of Representatives and another one from the Senate holding hearings to try to decide which model of origins is true. The two committees will have a large number of models presented to them. It is possible the one chosen by the House committee will be different from the Senate's choice. Will there then be a joint House-Senate committee to reach a compromise by taking parts of each model?

Donald C. Boardman

17021 Tesoro Drive
San Diego, California 92128

Donald C. Boardman is Emeritus Professor of Geology from Wheaton College, Wheaton, Illinois, and served as President of the ASA in 1971 and 1972.

Reflections on the Practice of Outworn Creeds

WALTER R. THORSON

Department of Chemistry
University of Alberta
Edmonton, Alberta, Canada T6G 2G2

Science is Concerned with Truth

I want to thank the ASA executive committee, and all of you as ASA members, for this opportunity to speak to you on a subject which is of very great concern and interest to me. Although I have never been an active member of the ASA—largely due to my enormous capacity for neglect and procrastination—I *have* been very much aware of the ASA's creative influence in bringing together a community of scientists who are also Christians. Over the years, what has seemed especially valuable about the ASA is the evident commitment of the association, and its leadership, *to the principle that the scientific enterprise, and the knowledge of reality which it is able to discover, can have an authenticity and inner integrity which commands our respect*, even when we are most aware of our fallibility as creatures, and in spite of the fact that we do *not* know in advance what the scope or implications of such knowledge might be. Such respect, and such a commitment, have kept the ASA from various sterile fixations inspired by dogmatic preconceptions; and they have enabled it to keep a vital and relevant grasp of the issues, the problems—and, may I say, the joys—which arise for people who not only believe that we can see a divine handiwork around us, but *also* believe that it has great worth as an object of true knowledge in itself.

Perhaps paradoxically, I am convinced that this attitude of openness, which so often seems to ask questions rather than provide answers—this willingness to face up to truth wherever we may encounter it—springs ultimately from faith in the greatness of the true and living God, and not from unbelief at all. It is faith of the sort that inspired our father Abraham to move into pioneering adventures beyond the limits of his theological understanding—and led him eventually to a *clearer* theological understanding. Such a faith formed the underlying dynamic for many of the early scientists. When we hear Johannes Kepler exclaim with delight that he is convinced he has seen the divine pattern in the orbits of the planets, surely the creative response from us is *not* to remark how sadly misled he was, or to point out how technically incomplete or imprecise his "truth" was. Surely rather we thrill to that same excitement, precisely because we know so well now how much more staggering were the insights and discoveries which were yet to come after Kepler, drawing on his work. We can recognize in such men as Kepler the dynamic of the same hope and faith in a divinely given order which inspires and fascinates all of us who really study science today; and I believe that hope and that faith are ultimately from God, and are finally sustained by the conviction of *His* reality as well.

A Personal Background

For me this belief is not in the first instance academic but intensely personal. I can remember when, in my second year of undergraduate study, there suddenly came to me the recognition that, *firstly*, I took the enterprise of science seriously and believed passionately that in it I was dealing with knowledge of a real truth, even though it might be of limited scope. I think one of the great things about Caltech in those days was the naive and almost evangelical fervour with which some of the great scientists who taught us communicated the sincerity of their own passion for science. I do *not* mean that they postured arrogantly as some *philosophers* of science do, with all sorts of outlandish formal and logical arguments and claims. What they did was to share their enthusiasm and admiration for what could be seen and done. It was contagious, and I received it in an equal naivety and sincerity. Secondly, I realized also that this sort of truth *might* possibly force me to re-examine my theological beliefs—and I found that very disturbing. At the time, I was *not* looking for reasons to be skeptical, or doubting my Christian beliefs at all. Somehow, though, I was able to see that the answer to my sense of disturbance could not be a *purely intellectual* one. I reached the simple conclusion that I ought to have nothing to fear from learning the truth, since God is who He is, in Himself, and not what I think Him to be: therefore, by a continued openness I had nothing to lose—and perhaps a great deal to gain. For me this was fundamentally a declaration of faith and a personal trust, not merely an intellectual posture. I think it is important that in making it, and in the commitment so declared, *I made no attempt to circumscribe, even in principle, the possible implications of scientific knowledge.* That the truth of science has some limits of scope, I now see very clearly; but arguments to that effect were then quite beside the point. God, if He exists, is the source of all Truth; therefore, insofar as science could acquire a knowledge of truth at all. . . .

In the years of adventure both intellectual and spiritual since then, I have never had the slightest reason to doubt the soundness of that commitment.

However, I can hardly appeal to you all to share my out-

This is the first of three keynote addresses presented at the Annual Meeting of the American Scientific Affiliation on August 8-11, 1980 at Taylor University, Upland, Indiana.

People do not understand what is being said, but they think they do; as a result they discount much of what is being said, in much the same way that we react to a television commercial.

look and philosophical convictions about science and the problem of knowledge on the basis of such a very personal experience. Doubtless many of you have had equally powerful and formative experiences involving faith and commitment, but with different intellectual issues as the focal point. In relating this personal background, therefore, I am trying only to make it *intelligible* to you that I should think as I do, so that you will understand my passion for the view—which I share with Kepler, too!—that science *is* concerned with truth, after all. When Michael Polanyi was asked why he chose to abandon a creative career in physical chemistry to pursue economics, sociology, philosophy, and so on, he said his real reason was that it was a return to *normal*; he said "We all started with being interested in the *whole* world; it's the only genuine interest we can have."[1] He saw science, not as *irrelevant* to a whole universe, but as *incomplete* without that whole. Somewhat similarly, if I by my early life and upbringing had come into contact with reality and a knowledge-relation to reality in the two very *different* dimensions of scientific inquiry and the Christian religion, it was inevitable that I should look for a common ground, in which those realities are brought together as a "whole world." Incidentally this may also explain why I feel a fundamental affinity with much of Michael Polanyi's thought.

My talk today is called "Reflections on the Practice of Outworn Creeds." The plural creeds to which I refer are Christianity and the scientific tradition, and for most of us here that double commitment is characteristic and important. I also especially have this audience in mind in referring to the *practice* of such creeds, because for many of us this involvement is not merely an idealized abstraction, but a living reality, however badly we may feel we are managing in our tasks. The ASA exists because you are aware, not only of particular issues and problems which arise in the context of this dual involvement, but also of valuable insights and experience which can be drawn out of it. I believe that from such insights and experience there are especially important contributions which this community is uniquely fitted to make to certain crucial questions facing the church and indeed our whole culture at this time. In these talks I hope to indicate what these contributions might be, and to encourage some among you to take up the challenge of making these contributions.

"Outworn" Creeds

In speaking of these creeds as *outworn*, I am not being entirely facetious or satirical. Very specific difficulties face people who believe in something real, when they live in a culture which thinks it understands what that something is all about, that it has "outgrown" such belief, and that the reality in question does not exist. These difficulties are different from those which arise for an enterprise at its historical beginning.

For some time now Christians have known what it is like to live in a creed regarded by society as "outworn." Our modern world assumes that the foundational doctrines of Christianity have no objective reality to which they refer. While to some (increasingly limited) extent the culture grants acceptance of Christian moral values, it refuses to accept that these values are necessarily linked to the foundation truths; the consequence *in* culture is that the moral *authority* of Christianity is rejected whenever it is really challenged because it is assumed that the doctrines of Christianity regarding reality have been disproved or invalidated.

In such a "post-Christian" situation, the problem of *communication*, for example, is in some ways worse than it is when a message is historically new. People do not understand what is being said, *but they think they do*; as a result they discount much of what is being said, in much the same way that we react to a television commercial. Because terminology has been emptied of its specific content by erosion, criticism, and caricature, it becomes extremely difficult to use it at all; yet without specific content in words we cannot communicate. To illustrate, I might ask you whether you feel comfortable in using the terms *saved* or *salvation* except within a predefined context?

In addition to the problems of communication between a believing and practicing community and the society which considers its creed outworn, there are internal problems and stresses *within the community*. Any community and its enterprise are carried on by transmission of beliefs and practice to new members; in a non-receptive culture, self-doubt becomes the frequent accompaniment to any efforts at individual growth. The *possibility* of a transition from beginner to maturity has less credibility as a personal option. After all, if "nobody is doing it any more," there is great pressure to conclude it must have been discredited.

Evangelicalism

Evangelicalism is a vital reaction to the situation in which Christianity is seen by the culture as an outworn creed. Its main characteristics are, a highly specific (orthodox) theological content, an emphasis on the authority of Scripture, and lastly the conviction that Christianity must be tried out at a personal and practicing level if it is to be known as a reality. The issue of the authority of Scripture as the vehicle of divine revelation, "the word of God," is peculiarly central to evangelicalism and indeed to Christianity as a whole, and, as you know, discussion about the nature and function of this authority has become very marked at the present time. I do not want to comment on that issue here; what I want to point out is that it cannot be divorced, *as an abstract issue*, from its evangelical contextual partners, i.e., a *specific theological content* and a *primary emphasis on personal commitment and practice*.

Evangelicalism insists that the truth of Christianity cannot be assessed through an abstract inspection of doctrines, and that the power of that truth cannot be known in the absence of an actual commitment. In fact, such insistence is the essential background to the proclamation of any message with specific content, and this is why evangelicalism is able to sustain its theological content: only a vague liberal theology can afford the luxury of being purely theoretical.

Content and Commitment

Anyone who has been trained into the discipline and practice of scientific study and research will appreciate this intimate connection between specific logical content and practicing commitment: for example, we all know that students do not truly understand specific scientific concepts until they can repeatedly apply them in the open context of problem solving; and, at the research level, many of us know first-hand that the power of a new idea to evoke creative vision of further implications and applications is experienced only within the framework of commitment, when, as Michael Polanyi has put it, we "indwell" the idea in order to see the world from its perspective. These are only two of many aspects of the interplay between specific theoretical content and practice-in-commitment. Probably no one in this audience will dispute this general principle. However, I am stating the obvious *because I do not want you to overlook it*, and I want you to appreciate that it is a *general epistemological principle*, that is, it has importance for our understanding of the *problem of knowledge*. I introduced this principle when I stated that evangelicalism's insistence upon a practicing commitment is one of its primary and vital characteristics, precisely because such practicing commitment is essential to the real acquisition and retention of specific theological content.

I am not so sure that other sectors of the evangelical community would so readily accept such an epistemological outlook. At least some of the formulations of a Christian philosophy and theology with which I am acquainted appear to me to be extremely uncomfortable with this emphasis on a practicing commitment as the context for knowledge, wishing to downplay it, at any rate; and still others seem to me to reject the principle entirely, in favor of what I would regard as purely rationalist theories of Christian truth and our knowledge of it. Those of us evangelicals who are also practicing scientists should realize that an operating principle that we take for granted either is not so evident to, or is even rejected by, some evangelical thinkers. Here then is a first example of distinctive insight and experience arising out of our dual involvement in Christianity and the scientific traditon: if we recognize the vital importance of practice in commitment in maintaining and fostering scientific knowledge, should we not also try to contribute toward the formulation of an evangelical theology with a similar emphasis? I was attracted to Michael Polanyi's approach to the problem of knowledge because it comes to grips with the central role of commitment in relation to scientific knowledge, and I realized that only such an approach could make sense of its even more vital role in Christian knowledge. I see development of an evangelical theology sensitive to these questions as one of the most important tasks to which concerned people from this community could devote themselves; theology is too important to be left to the theologians. But, again, I am getting ahead of my subject as a whole, although I hope to return to this particular topic in some depth in the later talks.

The End of the Present Age of Science

Earlier I have implied that the scientific tradition has also become an "outworn creed" in relation to the present culture (and to its future development). No doubt some of you have been wondering what I mean by that, and what relevance it may have to our major concern as Christians.

Most of us recognize that we are entering a period of crisis in Western culture. As Christians we recognize that this crisis may be the coming of the apocalypse, though we cannot be certain; but in any case the present age is coming to an end. The last period of revolutionary cultural change in the West occurred in the century or so around 1500 A.D. when the structures of the Medieval period broke up under the impact of the Reformation, the humanist Renaissance, and the scientific revolution. Each of these movements left its mark on the present age, but it is especially the consequences of the scientific revolution which have shaped its outward form. Thus in a very special sense the age now coming to its end is the *age of science*. During this period science and the idea of scientific knowledge not only form-

Walter R. Thorson is Professor of Theoretical Chemistry at the University of Alberta in Edmonton, Canada. His professional interests are in quantum mechanics, especially its application to problems in the theory of atomic collisions and molecular dynamics. He is a member of the American Physical Society, Canadian Association of Physicists, and the American Scientific Affiliation, and has published about 50 professional papers. He is actively interested as a layman in theology and Christian apologetics, especially in topics bearing on the epistemology of science and its relation to religious knowledge. He is a frequent lecturer at Regent College, Vancouver, B.C., where he is Adjunct Professor of the Philosophy of Science. Dr. and Mrs. Thorson and their family reside in Edmonton.

ed the main focus for creative intellectual activity, but they also became religious idols to which the culture looked for final deliverance. This idolatry has made a proper appreciation of science very difficult for the church, since her first obligation is to the one true God.

Now, however, along with the many other changes involved in our present crisis, has come the smashing of these idols and the development of a different sort of religious consciousness, *which is alien to both Christianity and the scientific tradition*. In my essay, "The Spiritual Dimension of Science" (published in the book *Horizons of Science* edited by Carl Henry[2]), I have described some of the ways in which present cultural changes undermine the scientific enterprise and may cause science (as distinct from technology) to die out in our culture. In a future age (if there is one), science and the scientific enterprise may appear much as the medieval university or the monastic tradition seem to us: i.e., they will appear as institutions and traditions whose very reasons for being are irrelevant, unnecessary, and based on mistaken goals. To the extent that we here today would disagree with that opinion of pure science, we shall be—indeed, we have already become—believers in an outworn creed.

I should make it clear that I distinguish sharply between *science* and *technology* in terms of the dynamic motivations for those activities. I do not intend any particular evaluation of technology, either good or bad, and I do not forget that many of us are able to participate in the scientific tradition only because of possible applications to technology. But the motivation for *technology* is instrumentalist and utilitarian; *it springs from the desire to achieve previously defined ends, using a pre-existing conception of reality*; *operation*, not *explanation*, is its goal. As a result it does not normally lead to a new understanding of the world. I have no immediate anxieties about the survival of technology, though I fear the consequences of its direct coupling with the political and economic will to power. By contrast I would describe the motivation for *science* as philosophical and inquisitive, i.e., *it springs from the desire "to see things as they really are"*—in the hope of arriving at new visions and understanding, at present either inconceivable or only dimly perceived. The belief that "truth" in at least some sense is the goal of this activity is essential to maintaining it.

I have the impression that many evangelical thinkers would react to the death of the scientific tradition by throwing a party, and, had I time, I could give you examples illustrating that reaction from my own experience. I am not even sure that there is not some ambivalence among ourselves, who have an appreciation for science, as to whether we should be among the chief mourners or attend the party, too. It should be clear to you from the titles of my talks that I myself can find no reason for rejoicing in the death of science. An "outworn creed" it may be, but it is one to which I am wholeheartedly committed—essentially for *theological* reasons. In order to explain my reasons for concern about the "outworn creed" of science, and what I take to be the essence of that creed, I must first talk about the attitudes of evangelical thinkers to science.

Evangelical Critiques of Science

Most discussions of the relation between science and Christianity—by Christians and non-Christians—have been based on the assumption of *antithesis*: science and its tradition have been seen as actual or potential opponents of Christian claims regarding an ultimate reality. This is understandable, since both Christianity and science make some claims regarding the material world, and some tensions between them are inevitable, at least in the short run. Sometimes scientific discoveries have forced Christians to recognize that traditional or literalist interpretations of some Christian doctrines are too naive. Sometimes the arrogant and extravagant claims of earlier scientific conceptions of the world have been abandoned as the deeper complexity of the creation became apparent.

Because of the idolatry of scientism so prevalent until very recently, antithetically motivated critiques of science were sometimes very necessary. Particularly serious and offensive were the extreme claims of positivist and logical positivist philosophies of science (perhaps epitomized best in the "logical atomism" of Bertrand Russell). These asserted (1) the uniqueness, permanence, and absolutism of scientific knowledge as an impersonal, objective knowledge; (2) the exclusive and distinct character of the scientific method as a means to obtaining such knowledge; and (3) the exclusive and pre-emptive character of materialist, causal explanations for phenomena (all other descriptions of events are "untrue" because they are "subjective").

If such claims could be substantiated, they would make Christianity an indefensible creed. *It is absolutely essential that the claim of Christian theology to describe an objective reality be justifiable*. Evangelicals may not take refuge from the force of positivist claims by adopting an existentialist theology; the creedal statements of Christianity point beyond themselves to a real reference point which is external to the subject affirming them, and are not merely describing symbolically the inner experience of that subject. I regard it as very important that our theological language maintain its clarity on this issue, and, as I will try to indicate, a *right* appraisal of the objective nature of scientific knowledge is an important element in helping us to do so. This is a second point at which our dual commitment to Christianity and the scientific enterprise may enable us to make distinctive contributions to current theological issues.

Critiques of science motivated by the assumption of *antithesis* may be broadly divided into three categories:

(a) Those which argue in various ways that the conclusions of science are not final or binding, and therefore may never be used in criticism of Christian beliefs;

(b) Those which emphasize that science and the scientific method have intrinsic limits, i.e., the scope of scientific meaning is neither exhaustive nor primary;

(c) Those which deny the claims of positivism that scientific knowledge has an exclusive, distinct character which sets it apart from all other kinds of knowledge—especially, the claim to objectivity *via* an impersonal procedure.

I leave aside *critiques of accommodation*, which try to

make room for the truth-claims of Christianity and of science by employing dual or multi-level models of meaning—e.g., "science answers the 'how' but not the 'why' questions." These are extremely useful pictures, that can provide important insights about the meaning of such truth-claims. However, I find them ultimately unsatisfying because, taken by themselves, they provide no unifying concept to bring the "two worlds" together, and they do not give any account of *coupling* between the spiritual and physical realities, as we have to think about when, for example, we look at the problem of miracles. In addition, if such views are carried to extremes, they may lapse into a subjective existentialism on the theological side, which for me would amount to abandoning true Christianity.

A Sympathetic Critique of Science

I now come to the main issue in my talk today: Critiques of science should, in the end, be supportive, rather than destructive, of *both* of our "outworn creeds," even if their immediate motivation arose from antithesis. I think that in the long run any critique that is erosive and undermining to the creativity and vitality of the scientific tradition, will ultimately be erosive and undermining to the vitality of an evangelical Christianity. *Antithesis* alone is *not* an adequate standpoint for understanding the relation between Christianity and science; there is a more fundamental basis, which is also historically older, which recognizes that the scientific enterprise draws its fundamental inspiration and ideals from basic Christian beliefs, and is therefore a kind of spiritually rooted activity. If this is so, then we must assess the value of the various categories of critique listed earlier according to their essential harmony, or disharmony, with the underlying rootedness of science within a Christian understanding. My own views on the merits of these several categories are directly related to this criterion.

It is even more important for us to recover a fundamentally sympathetic critique of science, now that the culture is coming to regard its ideals as an "outworn creed."

An examination of the rise of modern science in the sixteenth and seventeenth centuries leads us to appreciate that there *is* a more fundamental standpoint for understanding science than the critique of antithesis. As a rule, it is a sound principle that the motivations and outlook which *create* a new enterprise provide the best clues to the true dynamic of the enterprise; indeed our concern as evangelicals for the recovery of a biblical understanding of Christianity is another application of the same principle.

In my second talk, I argue for a view of science and its goals and meaning that I believe is compatible with the outlook of the pioneers of the scientific tradition, particularly their conscious roots in Christian beliefs about God, man, and the world as a created order. Here I would like to summarize certain elements in their outlook which, I think, support the claim that a sympathetic critique of science is more fundamental than one of antithesis. In this connection, may I call your attention to the extremely valuable study by R. Hooykaas entitled *Religion and the Rise of Modern Science*.[3]

I have the impression that many evangelical thinkers would react to the death of the scientific tradition by throwing a party.

Roots of Science in Christian Beliefs

To begin with, we all recognize that there are certain extremely important theological ideas in the Judaeo-Christian tradition which are vital to any conception of the scientific enterprise at all, and that these ideas are notably lacking in some other religious systems; in this sense it is no accident that science arose in the Judaeo-Christian tradition. This has been pointed out by a number of writers, of whom A.N. Whitehead is perhaps best known. Belief in *one* God who is Creator of everything real, together with the repeated emphasis on the idea of His unchanging and faithful character, encourages belief in an ordered universe based on unchanging principles (think of Psalm 19 as the epitome of such a belief!). The doctrine of the transcendence of God and the recognition that He is distinct from His creation removes any sense of religious awe from the material world ("you shall not fear other gods or serve them") while the identity and role of man as made in God's image sets him free to explore the limits of his own creativity and agency as having a responsible dominion over earth. The biblical emphasis on the value and freedom and responsibility of the individual encourages an active rather than a passive or fatalistic attitude to events in the world. These are only the most basic elements providing a cultural soil for the germination of the scientific enterprise.

But more particularly, the individual pioneers of that enterprise were themselves deeply religious men, for the most part, who were quite consciously aware of a theological justification for what they were trying to do. Robert Boyle, third son of the Earl of Cork, is typical of many others less famous: when he was sent to Cambridge he promptly became a Puritan and also became interested in science. The two commitments went together, and there was no thought of antithesis. Kepler had no doubt that the pattern he and Tycho discerned in the planetary motions was a divinely created order; indeed the belief that such an order would be revealed to study inspired and sustained his work. Bacon spoke eloquently for the whole tradition when he drew the parallel between God's revelation in Scripture and another revelation in nature, stressing that we must read both books to see what they actually say, rather than carry on rationalistic arguments. The pioneers of science felt comfortable in their new enterprise *because* of their conscious Christian commitment—not in *spite* of it.

On the other hand, they *did* have a sense of antithesis with the medieval past, and with the Church where it represented that tradition. Bacon's impatience with scholastic rationalism and its preoccupation with logic-chopping is typical; something of the reasons for that impatience is exemplified in the story of the work on barometric pressure,

culminating in the discoveries of Torricelli and Pascal, over against the sterile dictum "nature abhors a vacuum" and its vain defense by philosophers of the medieval tradition; or, the (partly legendary) story of Galileo and the Aristotelian axioms regarding falling bodies. In all these controversies there is the growing conviction that one may test the *actual* truth (or falsehood) of an idea about the real world by an appeal to experience, to phenomena. As the necessary obverse side of the same coin, there is also the conviction that rationally ordered conceptions of the world *can* have a power to comprehend it as it "really is." It is in this sense that the Copernican hypothesis was revolutionary; not because of its specific content (similar views were familiar from classical times), but because Copernicus claimed that his hypothesis—as over against the Ptolemaic model—was *actually true*. Copernicus' work was published posthumously and, ironically, an early edition contained an apologetic preface written by Osiander, a Lutheran theologian, in which Osiander advanced, *completely contrary to Copernicus' intention*, the old medieval doctrine of "saving the phenomena"—that is, the Copernican view should be acceptable as an alternative accounting for the same data as are explained by the Ptolemaic theory, but that *neither* should be considered as being "actually true." The astronomers rejected Osiander's opinion with utter contempt, but, as Michael Polanyi points out, for more than 150 years they had no convincing experimental data that could justify such a prejudice on the grounds of *explained phenomena*. This story shows that (1) they explicitly rejected the medieval doctrine of "saving the appearances," in favor of the view that a scientific theory may be considered as actually true (or false); and (2) their reasons for favoring one theory over another were *not* instrumental or utilitarian, but were based on their inarticulate sense or expectation, evoked by the Copernican hypothesis (but not by the other), of a larger whole, containing as yet unspecified further consequences. The best name for this attitude is *faith*.

Four hundred years and a great deal of philosophy later, we may, if we choose, find this sort of belief about the objectivity of scientific activity to be touchingly naive. However we should realize that the stakes involved in *abandoning* such a belief are very high indeed, for to do so strikes not merely at the possible validity of scientific conclusions, but more basically at the dynamic motivation for the scientific enterprise itself. This may not matter to you, if you conceive of the relation between science and Christian faith in terms of *antithesis* alone; but if you conceive of the scientific enterprise as stemming from, and motivated by, the essentially Christian concept of creation as a book to be interpreted by man, then a loss of such belief essentially weakens our other and far more important commitment to Christianity.

Here then is what I mean by the "outworn creed" of the scientific enterprise: the belief that by honest inquiry we can formulate ideas about the creation around us that not only account for the observable phenomena, but, by their power to evoke within us an awareness of vision of yet a greater whole, of which they form but a part, can command our respect and responsible commitment as being actually faithful to the objective reality they attempt to describe. To explain this statement in depth would take a long time, but, in spite of the difficulties, I think those of you who are practicing scientists can understand its basic meaning. Thomas Torrance has put it very well from the standpoint of theology: "Nature itself is dumb, but it is man's part to bring it to be word, to be its mouth through which the whole universe gives voice to the glory and majesty of the living God."[4] Both Torrance and I have certain definite biblical paradigms in mind here as descriptions of science; and I hope to return to the topic in some depth in my second address.

I have said that philosophical views which attack the validity of our "outworn creed" of science are also, in the long run, erosive of Christian belief, and I should like to develop that subject a bit further, in the remainder of my talk today. I would also like, in the process, to examine the three types of "antithetical critique" I mentioned earlier, in relation to this question.

In the long run any critique that is erosive and undermining to the creativity and vitality of the scientific tradition will ultimately be erosive and undermining to the vitality of an evangelical Christianity.

Comparison with Positivism

If you would compare what I have tried to describe as the "outworn creed" of science, with the extreme position I outlined earlier as characteristic of positivism, you will find that in some respects they are completely different, but that in other respects they have a great deal in common. Some of the important *differences* are,

(1) We do not conceive of science as an *autonomous* activity, but one carried on in a particular context, the context of man as a creature, made in the image of God, looking at what *God* has made. The fundamental *expectations* of science concerning order and rationality in the perceived universe are ultimately an expectation concerning the divine character; as such they do not need to be derived or proved as if they sprang from man himself alone. In other words, we forsake the Cartesian scheme of building up reality on our own, and consciously return to the recognition that our activity is carried on in the larger context of our Christian presuppositions about ourselves and the world, where, in fact, the enterprise itself was originally conceived.

(2) It follows that we recognize limits to the scope of science and do not see it as all-comprehensive knowledge; and,

(3) It also follows that we cannot conceive of scientific, material explanations as exclusive and pre-emptive descriptions of reality.

(4) We reject the concept of knowledge as impersonal,

and the concept of objectivity as being grounded in an impersonal procedure; this in turn implies that scientific knowledge is *not* a distinctly different kind of knowledge from other kinds of knowledge, as far as methodology, objectivity, or even subject matter are concerned, but at some level forms a continuum with all that of which we are, or may become, aware.

But the things we have in common are also important:

(1) We affirm the existence of a consistent, external *objective* reality, to which the statements of science have reference, and we are prepared to argue grounds for belief in "objectivity."

(2) We believe that scientific concepts and conclusions *are* capable of truthfully describing some aspects of reality and therefore that we are subject to the potential authority of that truth to alter and enrich our understanding of the world and ourselves as creatures in it.

(3) Although we recognize that revolutions of horizon and perspective occur in the development of science, we fundamentally agree with the positivist belief that, on the whole, the knowledge achieved through the scientific enterprise is cumulative and ultimately aims at a consistent, unified account of the objective realities with which it is concerned; in particular, we do not pretend that no real progress toward such a goal has been made, nor can we entertain multiple incompatible and inconsistent conceptions of the world as being finally satisfying to us, even if they do meet instrumentalist or utilitarian criteria. The recent interest in the problem of the interpretation of the quantum mechanics exemplifies this point; Einstein was only the first of many physicists who have a vague sense of dissatisfaction because the quantum mechanics (as we currently understand it) *might* contain inherent dualisms associated with its probabilistic nature. We shall always *endeavour* to look behind dualisms to an underlying unity; no man can serve two masters.

Because of these claims, I think some people would describe such a view of science as "positive." I will accept this name, properly understood, but I don't like it any more than you like being called a "fundamentalist"—there is a problem of guilt by association. In *Personal Knowledge,* Michael Polanyi described his epistemological ideas as "an attempt to demythologize positivism," that is, he considered that there are within positivism certain beliefs essential to the character of science but that these had been buried in the form of beliefs and statements of a mythical, i.e., literally false, nature. The implicit reference to a Bultmannian view of Christian theology is unfortunate, because I do not think Polanyi was really interested in an existentialist interpretation of theology. It was Polanyi's purpose, as it is mine, to defend and establish the concept of an *objective reality,* to which our valid *knowledge* may be understood to refer, by a careful examination of the grounds for believing that we actually have such knowledge. He recognized that for Western thought since 1600 the problem of scientific knowledge and its proper justification presented the proper *focal* point at which such a study could begin; that by seeing scientific knowledge, *not* as *antithetical* to all other kinds of knowledge, but as fundamentally of the *same* type, one could recover a basis for understanding what it is to know any external *objective* reality, and thus also recover a proper appreciation of Christian beliefs and calling for modern man. This task, like science itself, he recognized to be far beyond the achievement of any one thinker, but he realized his responsibility to begin it.

Modern Attack on Objective Reality

Now, we must realize that it is just this concept of an *objective reality* that is coming under attack and denial in the great changes now taking place in the religious and cultural consciousness of the West, and that this is happening not only at a philosophical and intellectual level but at the level of everyday expression and action. This entails not only the death of science but also the final erosion of *all* concepts of an objective authority to which meaningful commitments could, even in principle, be made, i.e. Christianity would become, even more than at present, *incredible.* The emergence of all kinds of superstition, belief in occult power, and a deliberate will to evil becomes possible. Emphasis on "cool," non-verbal forms of communication, which can totally distort factual truth in favor of subjective impressions, can make it almost impossible to present the word of God. Forms of religious thought, derived from existentialism and oriental mysticism, which deny the reality of the external world and turn the mind inward, can make people passive, fatalistic, ultimately unconcerned with the world outside them. Technological manipulation of human beings to achieve arbitrarily defined ends could be perceived as "beyond good and evil." For many people today it is not belief in the Christian religion, but belief in the picture of an objective, external universe operating according to scientific laws, which is the last bulwark to such an alternative cultural age; the scientific world-view is the last trace for them of the Judaeo-Christian past, and it is under attack.

In *The God Who Is There,* Francis Schaeffer[5] outlined growing apostasy in Western culture in terms of a progressive denial of objective reality or value, firstly in respect to God and His word, then in man's own existence; he described how this has led to man's loss of personal identity, to meaninglessness and despair, manifesting itself in every aspect of society and artistic culture. I do not think Schaeffer entertained the idea that the process might also lead to a denial of the concept of a consistent, objective, real world behaving according to laws of nature, yet logically this is the next stage, and I believe it is now in prospect, in the "age of Aquarius."

In view of what I have just been saying, I think you can see that those critiques of science, *motivated entirely by antithesis,* which argue that the conclusions of science can never be considered to have any authority, or that science can never know actual truth, are really not helping Christianity but hindering it, in the long run. They are incompatible with the dynamic motivation behind scientific endeavor, and they ignore the spiritual roots of that endeavor in Christian belief. Yet it is just these critiques and arguments which are most prevalent in evangelicalism to-

It is just this concept of an objective reality that is coming under attack and denial in the great changes now taking place in the religious and cultural consciousness of the West.

day, and, regrettably, they are heard more frequently now than a few years ago. I am sick and tired of hearing preachers, who know nothing about physics or its development, confidently proclaiming that the opinions of physics change completely every fifty years, or similar stuff; this is a gross misrepresentation of the truth—not to mention the fact that it presumes some rather odd ideas about the way in which human beings can expect to learn anything. For the same reasons, I have no sympathy at all with views such as Henry M. Morris and his colleagues have consistently advanced: attacking the idea of consistent, invariant laws of nature, which can at least be closely approximated by inference from observed phenomena, not only undermines the very heart of scientific endeavor and makes it pointless, but, in view of the roots of the idea in the biblical conception of a faithful Creator, appears to me almost blasphemous in its implications. Such views can be traced back to the medieval doctrine of "saving the phenomena," and the presuppositions behind its use are also entirely medieval. I believe it is high time the Church recognized that the medieval view of God, man, and the world was abandoned, because it is really an inadequate one, not simply because of apostasy.

There is a more sophisticated class of arguments in this category which appeal to relatively modern philosophical views of science—the instrumentalism or operationalism of thinkers like Mach or Percy Bridgman—to argue that science can never—even in principle—know "truth." Professor Gordon Clark has written a number of books and articles presenting this view.[6] In my next two talks, I make clearer why I cannot agree with it: part of the problem concerns the semantic *reservation* implied by this view for the concept of truth (versus what I would describe as a "functional ontology" of truth), and part of it concerns the fundamental question of how human beings learn and know anything.

Emphasis on the Limitations of Science

The second category of critiques of science, those which emphasize the limitations to its scope and meaning, are more nearly neutral or even sympathetic to it as an enterprise, but I do not think they enable us to come to grips with the crucial questions about knowledge which concern us in relation to both science and Christianity. In teaching lectures on the relation between science and Christian faith, I have often found it useful to give a brief survey of the limitations of science, by way of introducing the setting for issues and problems; but I do not think such an approach is broad enough to be supportive and unifying in respect to our "outworn creeds." A general discussion of these types of critique is outside my purposes in these talks. A good example, perhaps the best exposition, of such a critique is given by MacMurray, who grounds it in the concept of *persons* as *agents,* rather than as abstract *knowers.*[7] Once this fundamental point of departure is established, then science as an activity can be seen to have limits of scope and meaning arising from the specific *methodologies* and *intentions* of the *agents* involved in such activity.

However, such a critique ultimately emphasizes the *division* of subject matter, methodology, and language appropriate to science, art, religion, etc., and does not lead us to understand the common and unifying thread involved in these activities; for that reason I have found it unsatisfactory as a fundamental analysis. While such a critique may appeal to us because it leaves room for an orthodox Christian faith, like the critiques of accommodation it could equally well be used to justify an existentialist interpretation of theological language, and a much more liberal or "mythological" view of Scripture and its inspiration and function than I think right. As I will try to show later in these talks, the biblical focus on the concept of *word of God* as the medium of revelation implies certain fundamental parallels in relation to the role of concept and rational, logical structure, between science and Christian faith. Christian religion is not simply a wordless communication of persons-in-relation, nor are words in personal communication mere symbols emptied of specific referential and conceptual meaning and structure. It is therefore necessary for us as evangelicals to go further toward understanding *science* as conceptual, rational, and *objective,* if we believe (as I do) that the Christian religion requires us to present and express it in conceptual, rational terms referring clearly to an *objective reality;* the parallelism between Christian knowing and scientific knowing needs to be developed as more fundamental in some ways than the distinctions. It was to the epistemological aspects of this fundamental similarity that Bacon and the early pioneers of the scientific enterprise pointed when they spoke of the books of nature and of Scripture as requiring our careful reading.

I may anticipate a question in some of your minds by remarking that on the other hand I do *not* conceive of the similarities between the problems of scientific knowledge and those of Christian knowledge and Christian theology as extending to a complete *congruence.* Torrance has already anticipated the main point of difference, in the remark I quoted earlier: "Nature is *dumb,* but it is man's part to *bring it to be word...*" and he of course is using the expression of Scripture itself in Psalm 19:3: "there is no speech, nor are there words; their voice is not heard:..." But this is obviously *not* an appropriate description of Scripture, for there we have God (not man) *speaking* to us in *words,* even though the words and voices are human; and it is in this peculiar and unique role of God's revelation in the word of God that an ultimate distinction between science and theology as activities will be significant. I do not attempt here to explore this distinction or to formulate what I would regard as an adequate view of scriptural inspiration, although it is a problem in which I am deeply interested. In this sense, the emphasis placed in my talks here, *on a fun-*

damental continuity and unity in relation to knowing in science and in Christian faith, I take to be a necessary *prolegomena* or *foundation* to an equally necessary further distinction in respect to the nature of the revelations given in creation and in Scripture. I would hope this would reassure some of you who may otherwise feel that I have not recognized the importance of a unique and objective revelation of God as the source of Christian beliefs.

As the other side of the same coin, however, I would equally strongly insist that we cannot interpret and frame our doctrines of revelation and of Scripture in a manner which is purely medieval and rationalistic, because such an approach does *not* do justice to the way in which truth functions as authority in the lives and thought of human beings; nor does it recognize that this functional authority is mediated in the context of an imperfect knowledge; nor does it give any account of the essential role of commitment and practice as the means by which truth may be held. Yet it seems to me that, in the main, evangelicalism still works within a medieval rationalism as the *epistemological* framework for its doctrinal beliefs. The astonishing success of the scientific enterprise in demonstrating the functional authority of the truth of science showed clearly that important elements are lacking in the medieval view of the relation between truth and knowledge, and from the beginning what it has really called for is a deeper appreciation of how it is we *actually* relate to truth through our understanding and faith. As the age of science draws to a close, I see this as a task both possible and, indeed, imperative. To continue to found our conceptions of *Christian* knowledge, versus *all other* knowledge, in a basic epistemological dualism, is to continue to encourage the idea of antithesis between faith and knowledge, to the eventual erosion of both of our precious creeds. Only by showing that the true nature of an objective knowledge is grounded in persons in fundamentally the same way, whether the content of that knowledge is theological *or* scientific, can we hope to mutually support both our faiths and offer a sound refutation of the growing heresy of existentialist subjectivism—the denial that Jesus Christ comes in the flesh.

REFERENCES

[1]Michael Polanyi, quoted in R. Gelwick, *The Way of Discovery,* p. 29. Paperback edition, Oxford University Press, New York (1977).

[2]W.R. Thorson, "The Spiritual Dimensions of Science," an essay in *Horizons of Science: Christian Scholars Speak Out,* C.F.H. Henry, Ed. Paperback edition, Harper and Row, New York (1978).

[3]R. Hooykaas, *Religion and the Rise of Modern Science.* Paperback edition, Scottish Academic Press, Edinburgh/London (1973).

[4]Thomas F. Torrance, *Newton, Einstein and Scientific Theology,* the Eighth Annual Keese Lecture, University of Tennessee, Chattanooga, Tennessee (1971).

[5]Francis A. Schaeffer, *The God Who is There.* Paperback edition, Inter-varsity Press, Downers Grove, Illinois (1968).

[6]Gordon H. Clark, "The Limits and Uses of Science," an essay in *Horizons of Science: Christian Scholars Speak Out,* C.F.H. Henry, Ed. Paperback edition, Harper and Row, New York (1978). See also *The Philosophy of Science and Belief in God.* Craig Press, Nutley, N. J. (1964).

[7]a. J. MacMurray, *Religion, Art, and Science: A Study of the Reflective Activities in Man.* Liverpool University Press, Liverpool, U.K. (1961) (out of print).

b. J. MacMurray, *The Self as Agent.* (1953 Gifford Lectures) Faber and Faber, Ltd., London (1957).

c. J. MacMurray, *Persons in Relation.* (1954 Gifford Lectures) Faber and Faber, Ltd., London (1961).

In this view justice is therefore very different from the false assumptions our society has gained, for example, from Roman law. The Roman idea of fixed, inalienable rights, such as the law of property, of dominium, *is foreign to the Old Testament. Man has no rights, for he is a creature, not the Creator, and therfore only a steward of the earth. It is therefore because of the application of Roman law that our civilization is now being fragmented by the breakdown of consensus, in which each pressure group demands its "rights," while our earth is ravaged and raped by the law of* dominium. *The rhythm of sabbath, seventh year and year of jubilee reminded the Israelite that man is only a tenant on the earth, accountable to the justice and judgment of his Creator. There is no absolutism of rights, nor of property.*

James M. Houston, *I Believe in the Creator,* Wm. B. Eerdmans Publishing Company, Grand Rapids, Michigan (1980), p. 165.

1984: A Scenario

In a critical scene in George Orwell's 1984, *the hero, Winston, is being tortured for his unwillingness to accept the state's definition of reality. His persecutor, aptly named O'Brien, argues that "reality is not external. Reality exists in the human mind, and nowhere else. Not in the individual mind, which can make mistakes, and in any case soon perishes; only in the mind of the Party, which is collective and immortal. Whatever the Party holds to be truth* is *truth. It is impossible to see truth except by looking through the eyes of the Party."*[1]

For the Christian, and especially the Christian scientist, this is the pivotal question: What is the nature of reality? Winston takes the part of the individualist and the scientist. Although O'Brien rejects such ideas, he doesn't insist that Winston accept the Party's view. Under torture, Winston finally states his inability to discern reality. O'Brien is satisfied and confident that Winston will subsequently accept the Party's definition of both reality and truth.

Parallelling this theme of the nature of reality is the question of man's humanity. Referring to 1984, *Erich Fromm phrases the question in this way: "can human nature be changed in such a way that man will forget his longing for freedom, for dignity, for integrity, for love—that is to say, can man forget that he is human?"*[2] *According to Fromm, Orwell does believe the destruction of humanity within man, while not easy, is possible.*

In 1984, man has no freedom nor should he desire any. The party replaces the individual simply because it assumes the human capacity to discern reality. And if there is no understanding of reality, there is also no reason for responsibility, except as it may be given to the Party. Both freedom and responsibility are absorbed by the state and its capacity to control human will.

The scenario, of course, is of a totalitarian state. Commenting on totalitarianism in our century, Richard Lowenthal attributes it to "an unprecendented pace of social change."[3] *He claims that "the functioning of any society depends on a set of common beliefs and institutions which together characterize a civilization. As social chanage occurs, the institutions have to be adapted and the beliefs reformulated; but there must be continuity in the fundamental values underlying all the changing formulations and institutional forms if the civilization is to survive."*[4]

But this controlled change has not occurred in the West. Because it has sought a "free society," Western Civilization has produced a pluralistic society in which political, economic, and spiritual powers are scattered, leaving it open to random and accelerated social change. With these conditions, "the survival of a free society is always precarious. For where the necessary adjustments fail to be made, the official institutions and beliefs cease to correspond to the evident facts of social life and thus lose their binding force—their hold over the minds of men."[5]

If we have not reached this mindless condition in 1980, we are rapidly approaching it. With Winston many are unable to discern reality and are open to any definition offered them. In Orwell's world, the Ministry of Peace wages war and the Ministry of Love maintains law and order. In ours, we speak of happiness in marriage as divorce rates soar and treat limited resources as though they were inexhaustible. Knowing these problems, we are not always able to solve or even understand them.

Much of the truth provided by Christianity and science in western civilization has been eroded by social change. The one is giving way to secularization and the other to scientism. And much of what we have known as freedom and responsibility in our culture is undergoing radical change. We may never have to experience the totalitarianism of Orwell's world. But the shadow is there and we will continue to live in it.

[1]Howe, Irving (ed.), *Orwell's Nineteen Eighty-Four, Text, Sources, Criticism,* New York: Harcourt, Brace & World, Inc., 1963, p. 110.

[2]p. 206

[3]p. 251

[4]p. 252

[5]p. 253

Russell Heddendorf

1984 Symposium:
The Future Becomes the Present

Freedom in 1984: Facing up to Our Dilemmas

RICHARD PERKINS

Houghton College
Houghton, New York

We are plunging headlong into an unknown future, dragging with us the outworn slogans, attitudes, and institutional apparatus of a world that is vanishing.

John Gardner

Whether a nation is or is not classified as a liberal society depends primarily on the nature of its economy and polity. Those economic arrangements historically associated with the term liberal have been based on open markets, free labor, private property, and commercial credit: in short, capitalism. The political arrangements associated with a liberal society consist of "universal" sufferage, representative government, and a relationship of "checks and balances" between intra-governmental functions: in short, republican democracy. In both cases, the chief characteristic of liberalism is the absence of external restraint.

America serves as the proto-typical example of the "free country." Historically, our citizens have enjoyed the freedom to initiate economic relationships with minimal governmental "interference." They have also been free to elect legislators to represent their interests in the formulation of laws. These basic freedoms and their derivatives are cherished as fundmental parts of the western worldview; yet there is an ever-increasing realization that something is fundamentally wrong with the system.

As individuals, most of us seem to be doing well; collectively, we're not so sure. For example, in the early seventies all but 3% of a national sample reported that they were at least "fairly happy" with their personal circumstances. Yet nearly 60% also said that they were "dissatisfied with the direction America is generally headed."[1] Most of these personally optimistic but publicly pessimistic citizens seem to have little understanding of the root causes of their own split evaluations. As a nation we seem intent on maintaining a system in which we only half-believe; it's working well for each of us individually but as a system it seems to be faulty in some fundamental way.

The Social Mechanisms of Liberalism

The major task that Seventeenth and Eighteenth Century social philosophers assigned themselves was to discover the mechanisms and processes on which societal order rests. Buoyed by the assumptions derived from the Enlightenment, these optimistic souls believed that a proper understanding of society would reveal certain natural laws. By means of these laws society could be rationally and radically refashioned to facilitate evolutionary progress and to maximize human happiness. They helped to fashion the ideological basis for certain mechanisms which promised to overcome the greatest of all barriers to this end—mechanisms which promised to rationally coordinate the actions of free individuals in such a way as to promote orderly progress. In the feudal world view—still very much in evidence at the time—social order was perceived to be the result of firm centralized control, whether in the form of monarchialism or mercantilism. From this perspective, it was inconceivable that anything other than anarchy could be generated by loosing the citizen from these ties, but this is precisely what the advocates of liberalism proposed.

Liberalism is a world-view which promises that competition and social order, self-interest and public welfare, task specialization and coordinated effort are ultimately compatible. In short, rather than being contradictory to the collective good, individualism actually promotes this end. but this does not result automatically. Specific political and economic mechanisms—based on individualism, and allowing the great promise of progress to be fulfilled—needed to be fashioned.

The political mechanism designed to promote both the natural rights of citizens and the need for public order was, of course, the federal republic. It represented a delicate balance between a federal government which, (at least ori-

Capitalism is a system designed to operate best in an environment blessed with infinite resource.

ginally), didn't do much of anything outside of national defense, and a collection of state governments which did just about all the governing that needed to be done.

In 1787, James Madison, author of Federalist Paper #10, started his defense of the newly proposed constitution by facing squarely the inherent problem between individual rights and public order. He stated that the inevitable product of democracy is the creation of factions. In turn, factions just as inevitably generate chaos and, as a result, invite certain tyranny. Madison's solution: a representative legislative body capable of acting as a buffer between divisive interest groups and the legal process.

By means of the republican mechanism, liberality is promoted while orderly progress is insured. By this means, each group is allowed to pursue its own interests. Let selfishness reign—the nation politically regulates itself, not in spite of selfishness but because of it.

What the American political system described here gains in liberty, it loses in inefficiency and the incapacity for long range planning. However, while America remained a technologically unsophisticated nation, these dilemmas did not appear to be too serious. In 1787 the republic promised a solution to the problem of private liberty and public order; the dilemmas it created would go unnoticed for many years.

In the realm of economics the same problem presented itself. What economic mechanism could both protect the freedom of the merchant while promoting the common good? In 1776—11 years before Madison published his solution to the political problem—Adam Smith gave his answer to the economic problem in *The Wealth of Nations*: the self-adjusting market. Let each individual property owner pursue his own self-interest and the wealth of the nation (namely, its productivity) would correspondingly increase. This would happen without anyone deliberately setting out this policy, for each indvidual property owner

> . . . neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security, and by directing that industry, in such a manner as its produce may be of greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention . . . . By promoting his own interest he frequently promotes that of the society more effectually than when he really intends to promote it.[2]

Again, let selfishness reign—the economy will regulate itself, not in spite of selfishness but because of it. Private greed, public good: in both economic and political affairs liberalism, based on individual freedoms, worked reasonably well . . . for a while.

The Problem of Scale

Technology created the social structures whereby liberal mechanisms could flourish. But technology is not static; the social structures it once promoted, it is now eroding, and liberalism must erode with them.

The genius of capitalism is represented in its unsurpassed productivity. The genius of a republic is represented in the art of political compromise. But each benefit remains such only under certain rather limited structural circumstances. As the systems become more and more technologically sophisticated and thus structurally complex, we can watch both aspects of liberalism self-destruct. The basic point is this: the extent of liberalism's decline can be measured in terms of the degree of rationality required to coordinate action within the system. This is not to say that liberalism is not rational: only that a rational system cannot indefinitely continue on its developmental course without the appearance of some profound dilemmas. Both political and economic liberalism succumb to what will be called the problem of scale—linked directly to the growth of rationality.

Capitalism is a system designed to operate best in an environment blessed with infinite resources. But, since infinity is never possible, the system must at least appear infinite. America's frontier (the west, its "boundless resources," its colonies, outer space, etc.) has provided this illusion for about as long as could be expected. Until recently, we have been operating on what Philip Slater rather indelicately refers to as "the toilet assumption"—i.e., we can flush away any undesirable consequence of our way of life: throw it in the river, bury it in the earth, hide it in the ghetto, or simply avoid it in any way possible. But we can't ignore the refuse of our system anymore. It won't stay down. "There simply isn't any 'away' to throw things anymore."[3]

Any social system—capitalism and republican democracy included—represents an adaptation to specific, rather limited, circumstances. As these circumstances change, the viability of the system must be altered as well. Thus, what may be seen as a benefit of a system during one phase of a system's development may be seen as a vice during another. For example, the capitalist's sense of responsibility for his own property is seen as a virture as long his search for personal profits does not generate unwanted costs for others, e.g., pollution. Should this unwanted effect result in widespread ecological disruption, the perceived benefit of productivity may be devalued in favor of ecological concerns. Under these changing conditions, virtues (responsibility, productivity) may be redefined as vices (irresponsibility, greed). Furthermore, contemporary capitalism is a system which inevitably produces problems like unemployment and inflation—problems which can be counteracted only by more production (i.e., "growth").[4] The causal relationship is such that perpetual growth becomes necessary—a "solution" grounded more on religious faith than anything else.

The basis of the capitalist's faith is technology. However,

technology represents a mixed blessing. Its virtues need not be extolled here; they are obvious to all. But its dangers are also becoming obvious—e.g., acidic rain, indisposable by-products of the industrial process, an unappeasable appetite for non-renewable resources, etc. However, the dynamic lying behind these problems—linking technology to the issue of freedom—is less obvious.

After a certain point, technology becomes self-augmenting.[5] That is, it ceases to be a means regulated by human volition and becomes an end in itself, promoting its own exponential growth. There are several reasons for this, but the main dynamic involves the undesirable effects of unintended, technologically-induced consequences. For example, a series of dams are built for an agricultural irrigation project. The water carried to the fields not only waters the crops (desired, anticipated aim) but re-enters the river downstream after picking up various minerals from the substratum—which turns it unto salt water unfit for further irrigation (undesirable, unanticipated consequence). The desalinization of the river requires the further application of technology, and so on.

This sequence is necessitated by the fact that we live in a system in which every part is somehow connected to every other part. Thus, technological interference in one part of the system produces unanticipated repercussions in other areas. The sophistication of present technologies and the complexity of both biological and sociological systems guarantee a furtherance of this troublesome spiral. The problem of scale—represented by the technological capacity to fundamentally alter our ecological and social systems—has uncovered the basic dilemmas of liberalism: continued freedom threatens to undo the order on which our society rests.

But the self-augmentation of technology is not the only relevant feature of modern society. Another feature concerns the operation of industrial systems which Garrett Hardin has recently popularized as "the tragedy of the commons." The term "commons" refers to any potentially scarce resource freely used or consumed by the public. The word is used to denote the fact that everyone privately benefits from the resource but no one actually owns it; that is, there is no inherent responsibility for its consumption built into the system. Thus, the sense of responsibility inherent in ownership (ordinarily found in capitalism) is lacking when resources are publicly utilized. In fact, a logic inherent in the operations of any commons inevitably generates deliberate irresponsibility. The logic—again, linked to the problem of scale—operates as follows.

The people who use the commons all benefit privately. Their benefit may be as a result of resource consumption (e.g., using the water of a river to power generators), or it may be the result of using the commons to avoid more expensive costs (e.g., by dumping wastes into the air, water, etc.). Either way, the benefit of the commons is a private matter. But all social and biological commons have a parameter, or "carrying capacity," which—if exceeded—will fundamentally alter the commons: e.g., a few more cars on the road results in a traffic jam; a little more waste in the river and it becomes polluted; fewer whales in the ocean and they fail to reproduce themselves, and so forth. In other words, roads, cars, whale herds and the like represent a commons, and all have a carrying capacity restricting their usage or consumption to certain mathematically defined limits.

The destruction of the commons which occurs when its carrying capacity is exceeded will, of course, harm everyone. But since the use of the commons privately benefits each consumer, each one will be impelled to continue his use: the real (here-and-now) private benefit of continued growth to the consumer will always appear more profitable than private voluntary restriction for a hypothetical and future public good. Furthermore, Hardin convincingly argues that any voluntary effort to limit consumption of the commons will ultimately fail. In short, irresponsibility is guaranteed by the very dynamics of the commons system.

This inescapable logic and its destructive potential can be altered in one of two ways. First, a set of norms internalized by all the consumers could cause them to sacrifice their own immediate interests for the long range welfare of the group. Needless to say, capitalism is unlikely to generate this sort of moral perspective. In fact, it promotes just the opposite sentiments: envy for the accomplishments of others, fear of encroaching competition, and greed for a larger share of the goods. To be sure, a religious ethos can provide a collectivistic orientation, but these two orientations are inherently contradictory and cannot long endure together. This is the conclusion of a number of scholars,

Richard Perkins has a BA from Wheaton College, Wheaton, Illinois, and received his PhD in sociology in 1978 from the University of Massachusetts, Amherst. He has taught at Washington and Jefferson College, Washington, Pennsylvania, and at Westminster College in New Wilmington, Pennsylvania. He is now Associate Professor of Sociology at Houghton College, Houghton, New York, where he heads the Sociology Department.

like Robert Bellah, who has

> surveyed the antagonism between religious collectivism and the somber reality of the American political economy. Unless its tendencies to destroy every genuine element of culture and community are brought under control, all else is in vain. The prospect does not give rise to great optimism.[6]

There is a second way to control the process whereby our system self-destructs: external coercion. Such coercion inevitably comes in the form of bureaucratically organized governamental regulation. Of course, precisely this outcome has been evolving for about a century, and quite deliberately since the Second World War. As a result, we now have a political economy which differs dramatically from the liberal (republican) model with which we started the Nineteenth Century. The new system has been variously named "the New Industrial State"[7], "America's Second Republic"[8], or "Post-Industrial Society"[9], but all agree that a centralized, planned economy is here to stay, largely because of the problems of scale we have already outlined.

Even so, the old liberal ideologies are still very much of the American worldview. If the structures of capitalism are slowly being refashioned by centralized political control, the ideologies of federal republicanism and capitalism are not. This puts us into a very real bind, for we are defining our system in such a way that changes will either be perceived as illegitimate (and hence make coercive mechanisms necessary) or they will be grudgingly accepted as the only solutions to one or another crisis that frequently arises. Thus, we bail out Lockheed and Chrysler, apply governmentally-enforced environmental controls, and regulate interstate commerce—all with a realistic but reluctant sense that if we didn't do this the system simply would not stay together.[10]

In short, the pressures of technologically induced growth and the resultant tendency to exceed all sorts of carrying capacities—environmentally and otherwise—will cause the demise of the self-adjusting market, the federal republic, and the measure of economic and political freedoms that went along with them.

New Definitions of Freedom

If we define freedom in the classic Eighteenth Century sense—that is, as liberation from external restraint—then we must be pessimistic about the coming decade. It is inescapable that the problems of scale—i.e., the forces of self-augmentation and the logic of the commons—will further restrict our ability to pursue individual economic and political self-interests (i.e., to maintain our "rights").

We can credit the general demise of liberal democracy and capitalism to the same force which originally laid the social foundation for their emergence: technology. The world has become too complex to permit the continued excesses of liberalism. For example, who among us thinks that the average voter is capable of deciding whether or not more nuclear power plants should be built? If the plants provide jobs and less dependence on foreign energy sources, we're for them. If their use raises taxes, threatens to blow us up, or makes us all glow in the dark, we're against them. There's surely some wisdom to all this, but what about other more complicated issues? Are nuclear facilities a better investment than the alternatives? How are we to calculate costs in order to answer such a question? Are they safe? How is the average voter to know—except to take the word of physicists hired by either the corporations which build the plants or the government regulatory agencies.[11]

However, there are those who argue that democracy will survive because in the long run it is the most efficient form of government. Philip Slater is one of these persons:

> . . . democracy is not a luxury but the most efficient mode of organization under conditions of great complexity and chronic change . . . . The "efficiency" Americans usually attribute to autocratic systems applies only to situations involving simple routine tasks. Such systems function poorly when the world becomes intricate and shifting. They have an awkward tendency to run a "tight ship" which nevertheless sinks.[12]

I hope Slater is correct, but I fear he is not. First, he assumes we will enjoy a future "long run." During this extended period of time the slow grind of political compromise can work out its ingenious solutions. However, I doubt whether a "long run" exists at all, mostly because available technology can already blow up the world—given the present global tensions, the rapid spread of thermonuclear weapons to all sorts of countries, and the ease with which these can be delivered.[13]

Secondly, he compares existing democracies (like America) with existing autocracies (like the Soviet Union). This assumes a few things that are not true. Aside from the issue of whether or not America is more than just superficially democratic, he assumes that the Soviet Union represents all that autocracy has to offer. But the clumsiness and brutality of Soviet autocracy contrasts sharply with what analysts like Ellul and Marcuse call "technocratic autocracy"—a system that is now developing throughout the world. Such a system of control will be "soft" rather than harsh. It will precisely control all spheres of human activity and, through the techniques of propaganda and what Marcuse calls "one dimensionality," the average citizen will want—even demand—what it has to offer. Therefore, comparing American to Soviet efficiency is misleading.

Finally, Slater has a faith in the analytical insights of the average citizen that is shared by very few other commentators. Representing a contrary point of view, Ellul observes that:

> The public, unable to see the real problem . . . because it gravitates unerringly to glaring superficialities and wavers between unreasoning fear and false security, never penetrates to the heart of the problem of modern society.[14]

For these reasons, Slater's argument about the efficiency of democracy is less than convincing.

If technological "development" will drastically reduce our freedom from external restraint—a development which, aside from all-out global disaster, is unstoppable for

reasons already discussed—then what can be our response?

One is to deny that humans have lost control over technological development and to insist instead that we still call the shots. Hardin, for example, receives great encouragement from the fact that the American Congress refused to build the SST. He concludes from this one instance that "the Technological Imperative" is false.[15] But to stop development of one airplane is one thing; to stop the development of aerospace technology is quite another. Futhermore, Hardin restricts his analysis to technology. Had he considered the broader implications of Ellul's arguments regarding *technique,* his conclusion would have to be reversed. For example, Hardin's own analysis of the commons logic leads to the conclusion that the individual's freedom from restraint is increasingly intolerable from a systems standpoint:

> The logic of the commons should be plain enough. In a crowded world the freedom of the commons leads to an intolerable and tragic end; we can avoid the tragedy only by relinquishing that kind of freedom.[16]

But relinquish it to what or to whom? Why to a bureaucratically organized central government, what else? However, bureaucracy is the most important of the social techniques discussed by Ellul. Moreover, Ellul correctly argues that *technique* (and thus bureaucracy) is inherently tyrannical: *technique* is the embodiment of rationality and rationality is the antithesis of spontaneity and choice—the essence of freedom.

Another response is given by those analysts who do recognize this dilemma; they ordinarily respond by redefining freedom. They give the *coup de grace* to liberalism—based upon its concept of freedom from restraint. This response is based upon the issue of scale; these theorists recognize that in 1780 it was possible to define freedom in terms of individual rights. But technological changes over the last 200 years have caused freedom to degenerate into license—a public license on the part of individual citizens, interest groups, and nations which threatens to do us all in. Accordingly, freedom must no longer be defined exclusively in terms of individual rights. Karl Mannheim, who argued three decades ago that our notions of freedom have been antiquated by the effects of technology, states:

> If men who had been molded by (liberal ideologies) had been told that by coordinating social institutions they could bring order out of chaos, they would have felt that this was not only a foolhardy suggestion but an attack upon the freedom of mankind. Although the blind play of social forces is destroying humanity, they regard this destruction as part and parcel of their freedom, simply because it is synonymous and directed by the invisible hand of history.[17]

When he says "coordinating social institutions," Mannheim is referring to centralized government planning. But are planning and freedom compatible? Rational planning is an indisputable necessity today. But will such planning—inevitably centralized and bureaucratized—promote any kind of freedom, however the term is re-defined? The crux of this issue has not escaped Mannheim's attention: "All depends on whether we can find ways of transferring

The world has become too complex to permit the continued excesses of liberalism.

democratic . . . control to a planned society. If this control is destroyed in the effort to establish a planned society, planning will be a disaster, not a cure."[18] The question is straightforward: can we retain democratic freedoms while ridding ourselves of the disruption caused by economic liberalism?

No, says Ellul: technological progress is inevitably antidemocratic.

> The democracy of popular "control" is purely formal. The situation in this respect is the same in all representative democracies in which all things technical are taken out of the control of the electors, who must thenceforth repose their faith in an ideology of political function superior to all others and encompassing every human activity.[19]

Ellul refuses to redefine the situation. We must have a rational economy, and we can no longer afford a political system based on the average citizen's profound technological ignorance. The old libertarian system allowed people to make mistakes: "therefore, what is at stake here is all of man's liberty, the liberty to make mistakes."[20] The inevitable conclusion follows: "The exercise of democracy was the exercise of choice. Where there is no longer any choice, dictatorship exists."[21]

A second negative response to Mannheim's question is given, for altogether different reasons, by Milton Friedman. "Democratic socialism . . . is a delusion . . . for a society which is socialist cannot also be democratic, in the sense of guaranteeing individual freedom." This is because "economic freedom is . . . an indispensable means toward the achievement of political freedom."[22] There are many examples of tyrannical regimes operating on a capitalist economy, but there is no known case of "a society that has been marked by a measure of political freedom, and that has not also something comparable to a free market to organize the bulk of economic activity."[23]

The reasons for this are straightforward. Freedom, to Friedman and Ellul, essentially means choice. In political terms, it means the possibility of opposition. But political opposition is expensive. "If economic power is joined to political power, concentration seems almost inevitable."[24] Thus, the only persons wealthy enough to sponsor effective political opposition movements are the political elite—the very persons who are most likely to discourage opposition. Moreover, the appeal to large numbers of less wealthy persons will fail because the appeal itself is expensive.

Another aspect of the same issue is what Hardin calls "the *Quis Custodiet* problem."[25] Planning calls for regulation, and regulation calls for regulators: i.e., experts who understand technology enough to at least pretend to chart its course. But who will watch the watchers themselves? "For the foreseeable future the *Quis Custodiet* prob-

Technology has created a social system that can no longer tolerate the excesses generated by an economy and polity based on individual rights.

lem—still largely unsolved—will be a major political problem of our lives."[26]

In short, technology has created a social system that can no longer tolerate the excesses generated by an economy and polity based on individual rights. Yet the alternatives to liberalism threaten to eliminate not only the excesses of irresponsibility but also those aspects of liberal societies that guarentee at least a minimum amount of self-initiative and individual dignity. Therefore, we are caught in a dilemma in which the major alternatives now facing us are equally undesirable: the suicidal irresponsibility of individualism or the tyrannical excesses of collectivism. It is crucial that we realize, however, that both the irresponsibility of individualism and the tyranny of centralized planning are the effects of uninterrupted technological development.

Summum Non-Bonum

Redefining freedom—from "the absence of external coercion" to "the capability of centralized coercion"—is not a very satisfying exercise. If freedom is the recognition of necessity, then it appears necessary to give up our 18th century delusions about freedom. The system is self-destructing; we can choose to maintain a national economic system based on individual competition (and an international system based on the same principle—with the individuals now being nations, regardless of the political economy of each), but the price for this is eventual disaster. In addition, we cannot hope for technology to pull us out of this trap; technology got us into it to begin with, and promises only to dig us in deeper.

But to overcome the idiocy of national and international competition calls for a cure that in some respects is worse than the disease. A political system capable of coordinating the economy must own and operate that economy. Ellul is correct: such control is a dictatorship—whether welcomed by the populace or not. And Friedman is correct: such control eliminates the possibility of political opposition, which is the essence of political freedom. It is doubtful that Ellul and Friedman agree on anything else, but on this point they are univocal: liberalism is finished if the planners take control. And they *are* taking control.

It is incorrect to assume that we are heading towards a less free society in 1984 because evil persons have plotted to deprive us of our rights. Rather, we are watching the demise of liberalism because the source of our greatest hopes—technology—has revealed the basic dilemmas on which liberalism has rested for two centuries. Our liberal mechanisms, which promised to deliver freedom and order simultaneously, have not so much failed as they have simply been transcended. They no longer apply, and we are the worse off for it.

There's no big surprise in all this for the Christian. If one sneaks a peek at the end of The Book one learns that in the end the world order will be destroyed. The big question for Christians ought not to be "How can we keep the system running for a little while longer?" for we were told not to get attached to it in the first place (Luke 12:13-34). Rather, we should be asking, "What kind of people ought we to be?" Peter tells us clearly:

> You ought to live holy and godly lives as you look forward to the day of God and speed its coming. That day will bring about the destruction of the heavens by fire, and the elements will melt in the heat. But in keeping with his promise we are looking forward to a new heaven and a new earth, the home of righteousness (2 Pet. 3:12-13).

REFERENCES

[1]Ben J. Wattenberg, *The Real America,* New York: G. P. Putnam's Sons, 1976.

[2]Adam Smith, *Wealth of Nations,* 2 vols, Edwin Cannan, ed., London: Methuen and Company, 1904, p. 421.

[3]Garrett Hardin, *Exploring New Ethics for Survival: The Voyage of the Spaceship Beagle,* New York: Penguin Books, 1973, p. 18.

[4]For example, the Secretary of the Treasury, G. William Miller, recently stated: "Increased productivity is the best prospect for breaking the vicious cycle of wages chasing prices and prices chasing wages". Conference on American Productivity, Jamestown, New York, Fall, 1979.

[5]Jacques Ellul, *The Technological Society,* New York: Vintage Books, 1964, chapter 2. Ellul's focus is on *technique,* a more general concept involving the sum total of all rational methods used to obtain maximal feasible efficiency - a concept which includes technology but extends well beyond it. For example, propaganda and bureaucratic organization are both non-technological techniques.

[6]Robert N. Bellah, *The Broken Covenant: American Civil Religion in Time of Trial,* New York: Seabury, 1975, p. 111.

[7]John Kenneth Galbraith, *The New Industrial State,* New York: Houghton Mifflin Company, 1967.

[8]Theodore J. Lowi, *The End of Liberalism,* 2nd edition, New York: W. W. Norton and Company, 1979.

[9]Daniel Bell, *The Coming of Post-Industrial Society, New York:* Basic Books, 1973.

[10]The discrepancy between what Americans are forced to do and what we still believe is analyzed in George C. Lodge's insightful book, *The New American Ideology,* New York: Alfred A. Knopf. 1975.

[11]Those who are unconvinced can read Thomas Dye's *Who's Running America?,* Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1979 or G. William Domhoff, *The Higher Circles,* New York: Random House, 1970.

[12]Philip Slater, *The Pursuit of Loneliness: American Culture at the Breaking Point,* Boston: Beacon Press, 1976, p. 162.

[13]See, for example, Robert L. Heilbroner, *An Inquiry into the Human Prospect,* New York: W. W. Norton and Company, 1975, pp. 43-45.

[14]*Op. cit.,* p. 387.

[15]*Op. cit.,* p. 213.

[16]*Loc. cit.,* p. 128.

[17]Karl Mannheim, *Man and Society in an Age of Reconstruction,* New York: Harcourt Brace and Company, 1951, p. 370.

[18]*Loc. cit.,* p. 375.

[19]*Op. cit.,* p. 209.

[20]*Loc. cit.,* p. 277.

[21]*Loc. cit.,* p. 212.

[22]Milton Friedman, *Capitalism and Freedom,* Chicago: University of Chicago Press, 1962, p. 6.

[23]*Loc. cit.,* p. 7.

[24]*Loc. cit.,* p. 8.

[25]*Op. cit.,* Chapter 16.

[26]*Loc. cit.,* p. 140.

1984 Symposium:
The Future Becomes the Present

Freedom in 1984: The Foundations of Totalitarianism

RUSSELL HEDDENDORF

Geneva Gollege
Beaver Falls
Pennsylvania

Freedom in the Historical Context

The American Revolution was fought with the passionate notion that freedom was not possible as long as a king ruled. As an unholy link in the Great Chain of Being from God to the lowest created being, a king was unnatural and an impediment to righteous government. To be truly free, a new people could be ruled only by law and not by a king.[1]

What the American Revolution did was to instill in the citizen the idea that freedom was natural. This notion of the inherent nature of freedom remains as an enduring part of our democratic way of life. Freedom is lost, we believe, only when some authoritative figure or force is intruded into our political system. The idea that freedom takes some other form or has some other genesis has found little support on this continent.

The classic sociological view of freedom, however, places the problem in a historical and not a political context. In an earlier age, the argument goes, life was simple with few alternatives open to us. With increased complexity in society, values increase in number and vie for our approval. The loss of freedom begins when we tacitly accept values deftly intruded into our lives by any of society's representatives. The maintenance of freedom depends on individual perception of the erosion of freedom and the proper exercise of responsibility in resisting that erosion.

As the sociologist *par excellence,* Max Weber linked the rise of modernization with the potential loss of freedom. With the increase of values, modern man had to develop a moral responsibility in his decision making if he were to remain free. His claim was "that freedom consists not in realizing alleged historical necessities but rather in making deliberate choices between open alternatives."[2] Echoing this sentiment, John Dewey suggested that "any doctrine that eliminates or even obscures the function of choice of values and enlistment of desires and emotions in behalf of those chosen weakens personal responsibility for judgment and for action. It thus helps create the attitudes that welcome and support the totalitarian state."[3]

Although the builders of the nation recognized the need for people to be free from external control, they also feared the inability of the people to govern themselves. "A government dependent on the character of the people would be fragile. If the people abandoned simplicity of manners and succumbed to luxury, the government would become corrupt and tyrranical."[4] Inherent in the idea of freedom was this notion that a basic morality was needed in the decision-making of everyday life. Indeed, it was not uncommon for Fourth of July orators to declare: "To be free we must be virtuous."[5]

It was that French prophet, Alexis de Tocqueville, however, who understood the wider meaning of freedom in a democratic state as few others did. Instead of warning against the encroachment of political despotism or urging virtuous living, he expressed a greater concern for the loss of freedom in a thoroughly benevolent society:

> It would seem that, if despotism were to be established among the democratic nations of our days, it might assume a different character; it would be more extensive and more mild; it would degrade men without tormenting them . . . .
>
> I think, then, that the species of oppression by which democratic nations are menaced is unlike anything which ever before existed in the world: our contemporaries will find no prototype of it in their

> memories . . . . The first thing that strikes the observation is an innumerable multitude of men, all equal and alike, incessantly endeavoring to procure the petty and paltry pleasures with which they glut their lives. Each of them, living apart, is as a stranger to the fate of all the rest, - his children and his private friends constitute to him the whole of mankind, as for the rest of his fellow-citizens, he is close to them, but he sees them not; he touches them, but he feels them not; he exists but in himself and for himself alone; and if his kindred still remain to him, he may be said at any rate to have lost his country . . . .
>
> Above this race of men stands an immense and tutelary power, which takes upon itself alone to secure their gratifications, and to watch over their fate . . . . For their happiness such a government willingly labors, but it chooses to be the sole agent and the only arbiter of that happiness; it provides for their security, foresees and supplies their necessities, facilitates their pleasures, manages their principal concerns, directs their industry, regulates the descent of property, and subdivides their inheritances: what remains, but to spare them all the care of thinking and all the trouble of living? . . .
>
> Thus, it every day renders the exercise of the free agency of man less useful and less frequent; it circumscribes the will within a narrower range, and gradually robs a man of all the uses of himself. The principle of equality has prepared men for these things; it has predisposed men to endure them, and oftentimes to look on them as benefits . . . .
>
> After having thus successively taken each member of the community in its powerful grasp, and fashioned him at will, the supreme power then extends its arm over the whole community. It covers the surface of society with a network of small complicated rules, minute and uniform, through which the most original minds and the most energetic characters cannot penetrate, to rise above the crowd. The will of man is not shattered, but softened, bent, and guided; men are seldom forced by it to act, but they are constantly restrained form acting: such a power does not destroy, but it prevents existence; it does not tyrannize, but it compresses, enervates, extinguishes, and stupefies a people, till each nation is reduced to be nothing better than a flock of timid and industrious animals, of which the government is the shepherd . . . .
>
> Subjection in minor affairs breaks out every day, and is felt by the whole community indiscriminately. It does not drive men to resistance, but it crosses them at evey turn, till they are led to surrender the exercise of their own will. Thus their spirit is gradually broken and their character enervated . . . It is in vain to summon a people, who have been rendered so dependent on the central power, to choose from time to time the representatives of that power; this rare and brief exercise of their free choice, however important it may be, will not prevent them from gradually losing the faculties of thinking, feeling, and acting for themselves, and thus gradually falling below the level of humanity.[6]

It is unlikely that Orwell himself could have painted a more frightening picture of 1984. The loss of freedom comes with the dedication and development of a democratic state, and not with its demise.

Freedom in the Social Context

If the national experience provides us with a limited conception of freedom, we may benefit from the advice of that contemporary French prophet, Jacques Ellul. Echoing de Tocqueville, he says:

> To say that freedom is graven in the nature of man, is to say that man is free because he obeys his nature, or, to put it another way, because he is conditioned by his nature. This is nonsense. We must not think of the problem in terms of a choice between being determined and being free. We must look at it dialectically, and say that man is indeed determined, but that it is open to him to overcome necessity, and that this *act* is freedom. Freedom is not static but dynamic; not a vested interest, but a prize continually to be won. He is most enslaved when he thinks he is comfortably settled in freedom.[7]

While Ellul emphasizes the fact that freedom is often lost when least expected, he also points to those conditions whereby freedom becomes slavery. The problem of maintaining freedom is partly structural and partly perceptual. What is required is an understanding of how people unwittingly surrender their freedom, especially in a modern society in which perception is confused by a welter of conflicting values.

Although the empirical research on freedom is sparse, what is available supports Ellul's contention. Studying groups with common living quarters, Hillery tried to understand how the perception of freedom was influenced by structure.[8] He found that residents in monasteries, boarding schools, and sororities experienced freedom but for different reasons. While the monk was willing to give up one form of freedom to gain the freedom to do what he wanted to do, the boarding school students perceived their freedom in the greater options to do what they wanted to do. It is quite likely, then, that students would have defined the freedom perceived by the monks as slavery.

In a monumental effort to study "the authoritarian personality," differing syndromes were found among the high scorers on the authoritarianism scale.[9] These authoritarian types of persons varied in the intensity of their hatred of outgroups as well as the manifestation of authoritarianism. One type, labelled "Manipulative," and considered to be potentially the most dangerous syndrome, has the most importance for us.

The continuing loss of freedom in a bureaucratic society must be seen as the prelude to totalitarianism.

Described as schizophrenic, the Manipulative personality is characterized by a break between the internal and external worlds with "a kind of compulsive overrealism which treats everything and everyone as an object to be handled, manipulated, seized by the subject's own theoretical and practical patterns . . . . The emphasis is on doing things, with far-reaching indifference towards the content of what is being done."[10] This pattern, the authors claim, is found in many businessmen, managers, and technicians as well as in the Fascist mind. What characterizes these persons is an "organizational way of looking at things (which) predisposes them to totalitarian solutions."[11]

Weber recognized this totalitarian tendency in organizations in his path breaking study of bureaucracy. Noting the parallel rise of bureaucracy with democracy, Weber argues that bureaucratic forms become part of the entrenched machinery of democratic organizations. The sheer efficiency of bureaucracy makes it indispensable to rulers. But if bureaucracy weakens the freedom of a citizenry enmeshed

Russell Heddendorf has a BA from Queens College (CUNY), an MA from Columbia University, and a PhD from the University of Pittsburgh. His special interests are in the area of social theory and the sociology of religion, particularly in the integration of sociology and the Christian faith. He taught at City University of New York and at Dickinson College before coming to Geneva College in 1964. He is on the steering committee of the Christian Sociology Society, has initiated the meetings held annually by the Sociologists Teaching in Christian Colleges, and has served as a Consulting Editor of the Journal ASA *since 1958. This Symposium was conceived and organized by Dr. Heddendorf.*

in restrictive policies, it has the same effect on the bureaucrat who recognizes no organizational alternatives. The bureaucratic process becomes autonomous and supreme over the ruled and the ruler as well.[12]

The work done by Stanley Milgram lends considerable weight to Weber's theory and the idea of an authoritarian personality.[13] Studying the attitudes of subjects required to shock others failing to give correct answers in an experimental situation, he found fully half of them willing to apply a dangerous shock of 450 volts even while believing the subject's safety and welfare were jeopardized. Milgram is quick to point out that these persons were not sadistic. Caught up in the experimental situation, they lost the necessary contact with the individual and became a willing, though protesting, cog in the scientific machinery. Submitting to the experimenter's claim that they "had no choice" but to shock the subject and to continue the experiment, these persons well represent the manipulative personality. Indeed, the true loss of freedom might best be summed up: "But I had no choice."

Whether freedom is inevitably lost with the development of bureaucratic structures is a moot point. If, as Ellul claims, freedom is not inviolate or natural, then it must be thought of as a process susceptible to the constant pressures of change. We tend to think of the final stage of a totalitarian state as the loss of freedom. In fact the continuing loss of freedom in a bureaucratic society must be seen as the prelude to totalitarianism.

Commenting on Weber's theory as it applied to the rise of Hitler's Germany, Frederick Burin suggests that the Nazis reshaped the bureaucracies they inherited.[14] Using the bureaucratic machinery but removing its traditional authority, the Party gained the loyalty of bureaucrats who barely dicerned the transfer of power. Indeed, as Weber predicted, Hitler depended on the technical expertise of the existing bureaucracies for "impairment of the efficient functioning of the military and administrative machines would have invited domestic chaos."[15]

What evolved was a new bureaucracy of mass irrationality and violence in place of the former bureaucracy of rational law. This "ideological bureaucracy" replaced the state and the law with the party and charismatic authority. Nevertheless, the bureaucratic system was maintained and reached its zenith with the SS police force. Unlike Russia after the Revolution, the social structure of Germany remained virtually intact although the authority system for that structure was radically altered. As part of the machinery, bureaucrats deprived others of freedom while unaware of their own enslavement. The perception of officials had been dulled to such an extent that they lost that which they thought they were preserving.

The Prelude to Authoritarianism

Describing the past decade, Arthur Schlesinger describes it as "a decade of exhaustion." There is "a need for some leader to believe in, someone who could restore a sense of confidence and end the pervasive feeling of national malaise."[16] Indeed, the situation may not be unlike that experienced in Germany prior to the rise of Hitler. A tired democracy is open to totalitarianism when a charismatic leader is seen as the answer to the nation's problems.

Freedom, Hillery claims, requires a definition of a situation to support it.[17] Since freedom is not natural or inherent, people need to perceive some person or social situation as necessary for the maintenance of freedom. With Weber, Milgram, Adorno, and others, Hillery agrees that freedom requires that the highest value be given to the person. Any commitment to a task above and beyond the needs of the person reduces freedom as it has been traditionally perceived.

But if freedom demands a high value of the person, it is Zimbardo's opinion that this national malaise has produced an "Age of Indifference."[18] By this he means that interest in people has been replaced by a fascination with things. He warns that this change is not temporary or developmental but systemic and strucural. A clear example of the problem is a divorce rate that revolutionizes society as much as it destroys personal lives. Nor does Zimbardo hesitate to put the problem in a religious context:

> The Devil's strategy for our times is to trivialize human existence and to isolate us from one another while creating the delusion that the reasons are time pressures, work demands, or economic anxieties . . . . Fostering in us the illusion of self-reliance, that sly Devil makes

These three conditions leading to totalitarianism are prominent: indifference to other humans, reliance on technique to attain ends, and the inability to discern reality.

us mock the need for social responsibility and let's us forget how to go about being our brother's keeper—even if we were to want to.[19]

In this time of transition, an accurate perception of our situation is needed if wise decisions are to be made. Zimbardo's emphasis on the delusions of the day is especially disturbing, for if we believe the solution is within ourselves, we're on the road to failure. And that road might very well lead away from freedom.

If the cultural exhaustion now permeating society rouses our collective spirit instead of lulling us to sleep, we have two options. On one hand, we could believe the answer is to be found in a leader, one to guide the nation through the desert. On the other hand, our confidence could remain in our own hands with the technology used to solve past problems. In either case, freedom is jeopardized. Zimbardo leaves no doubt as to his opinion. "The message of 1984 may not be Orwellian but Garbo-esque: Big Person is *not* watching you. He doesn't have time to care about you anymore. She'd rather be alone."[20]

Assuming the latter choice is made, technology assumes a crucial importance in the prelude to authoritarianism. Weber saw technology as one of the correlates in the process of rationalization. "Weber thus identifies bureaucracy with rationality, and the process of rationalization with mechanism, depersonalization, and oppressive routine. Rationality, in this context, is seen as adverse to personal freedom."[21]

Ellul is more specific: "No technique is possible when men are free."[22] Technique requires a predictability and specificity destructive of human qualities. The person must become a technical animal to live in a world of technique. Ellul does not refer only to machinery which remains external to man, for technique has now become independent of the machine and has taken over all man's activities. The result is that "technique transforms everything it touches into a machine."[23]

In modern society, efficiency is the measure of everything and efficiency demands technique. Everything becomes means in the search for the best way to attain some end. This obsession with means, Ellul claims, is the modern form of rationalization that separates itself from everyday life and acquires an autonomy not unlike the organizational and manipulative situations surrounding the authoritarian personality.

Weber believed that rationalization led to the acceptance of a self-appointed charismatic leader who could become a despot. But Ellul sees the state, not the leader, as the inevitable threat to freedom. In a complex society, the individual is not rational enough to make necessary policy decisions. Only the state with its array of techniques and power can act with decisiveness. To facilitate its task, the state must transform the unpredictability of the person into the predictability of the quantitative. Ellul claims technique becomes totalitarian with the process of quantification "and when the state becomes technical, it too becomes totalitarian."[24]

Is there any defense against totalitarianism? Weber claims that in political matters "what is decisive is the trained relentlessness in viewing the realities of life, and the ability to face such realities."[25] But social conditions produce and even encourage those illusions which hide such realities from us.

Zimbardo reminds us that we avoid the fact of personal separation from others because we trivialize them.[26] Only when isolation results in mental illness does the reality of indifference to others become apparent. In fact, Ellul would say, the human bond between men has been replaced by technique. They communicate with each other only through the agency of common, shared technique.

Indeed, we have become so accustomed to surface relations that any justification for our failures is accepted. This "explanatory myth," Ellul claims, extends into all life and makes sense of a complex world which otherwise lacks meaning and comprehensibility. "Man does not want to see himself in the real situation which the world constitutes for him . . . . The dramatic characteristic of this epoch, in this sphere, is that man no longer grasps anything but shadows . . . . Reality disappears, the reality of man for himself, and the reality of the facts which surround him."[27]

Totalitarianism feeds on modern man's inability to perceive reality. In such a climate, freedom to choose is limited to those illusions to which man is enslaved. Can we believe, for example, that the campaign promises offered by political candidates offer any real choice or are linked to real possibilities? It is in this sense that Nisbet reminds us of the importance of language and the need to use it accurately in the description of reality. "It was with full and sensitive awareness of what he was doing that George Orwell made the corruption of language, the final breakdown of the authority of language, indeed, the key to the terrifying society he described for us in 1984. And what is Newspeak but a rather easy development of the language around us today in America"?[28]

Conclusion

Of those conditions leading to totalitarianism, these three, at least, are prominent: indifference to other humans, reliance on technique to attain ends, and the inability to discern reality. All three conditions characterize modern society and confirm de Tocqueville's warning of 150 years ago; we lose our freedom in a democracy when we fail to exercise it in our daily decisions.

But freedom can never be "natural" while we live in an "unnatural" world. Bube is correct when he states: "Freedom can be experienced and developed only within the confines of created structure."[29] When man constructs his own world of indifference, technique, and myths, he is robbed of a proper understanding of his relationship to God, people, and things. Indeed, Ellul states that people "can only meet in each the myth they themselves believe, and this myth is only an artificial creation . . . created in order to prevent modern man from going mad."[30]

Only in God's created world can man find the choices he needs for the life given to him. The simplicity of such an Eden is bounded by God's own mandates. To exceed those bounds or even to question them is to impose a new order on the world, an order constructed by man for the convenience of his own desires. Any conception of freedom outside of God's creation is merely a reflection, indeed, even an illusion of what God intended for man.

It is our human conception of freedom and nothing more that is eroded in man's world. Instead of living in a world of simple solutions, we are enmeshed in a tangle of paradoxical possibilities. To solve those problems, man relies on the easy answers offered by technology and myths. And with that reliance, he loses his freedom.

The problem of freedom does reach its zenith in the complexity of competing definitions of reality offered by contemporary society. The inclination of modern man is to accept any plausible conception of reality offered to him by a despotic leader or a totalitarian state. But he is no more enslaved by such political solutions than he is enslaved by the confusion of realities befuddling his mind. A step into 1984, then, merely trades off one form of slavery for another.

The problem of freedom can be solved only with a clear perception of an enduring reality, one which remains changeless and perfect in the answers given to men. Bube reminds us that an appreciation of that reality is necessary for an accurate understanding of Jesus Christ who authorized that reality in creation.[31] In that sense, we can claim the promise: "If therefore the Son shall make you free, you shall be free indeed."[32]

REFERENCES

[1]Ronald Takaki, *Iron Cages: Race and Culture in Nineteenth Century America,* New York, Alfred Knopf, 1979, p.8

[2]H. H. Gerth and C. Wright Mills, *From Max Weber: Essays in Sociology,* New York: Oxford University Press, 1946, p. 70.

[3]Quoted by Gunnar Myrdal in *An American Dilemma,* New York: Harper, 1944, p. xlvii.

[4]Takaki, *Op. cit.,* p. 9.

[5]*Loc. cit.,* p. 10.

[6]Alexis de Tocqueville, *Democracy in America,* translated by Henry Reeve, Vol. 2, New York: The Century Company, 1898, pp. 390-395.

[7]Jacques Ellul, *The Technological Society,* translated by John Wilkinson, Nw York: Alfred A. Knopt, 1964, pp. XXXII-XXXIII.

[8]George A. Hillery, Jr., Charles J. Dudley, and Pulas C. Morrow, "Toward a Sociology of Freedom," *Social Forces* (March, 1977), pp. 685-700.

[9]Theodore W. Adorno, et. al., *The Authoritarian Personality,* Vol. 2, New York: John Wiley & Sons, Inc., 1964, pp. 753-771.

[10]*Loc. cit.,* p. 767.

[11]*Loc. cit.,* p. 767-768.

[12]Gerth and Mills, *op. cit.,* pp. 228-230.

[13]Stanley Milgram, *Obedience to Authority,* New York: Harper and Row, 1974.

[14]Frederic S. Burin, "Bureaucracy and National Socialism: A Reconsideration of Weberian Theory," in Robert Merton, et. al. *Reader In Bureaucracy,* Glencoe, Illinois: The Free Press, 1952, pp. 33-47.

[15]*Loc. cit.,* p. 36.

[16]Article in *Beaver County Times,* Thursday, December 13, 1979.

[17]George A. Hillery, Jr., "Freedom and Social Organization: A Comparative Analysis," *American Sociological Review* (February, 1971), pp. 51-65.

[18]Philip G. Zimbardo, "The Age of Indifference," *Psychology Today* (August, 1980), pp. 71-76.

[19]*Loc. cit.,* p. 74.

[20]*Loc. cit.,* p. 72.

[21]Gerth and Mills, *op. cit.,* p. 50.

[22]Ellul, *op. cit.,* p. 138.

[23]*Loc. cit.,* p. 4.

[24]*Loc. cit.,* p. 287.

[25]Gerth and Mills, *op. cit.,* pp. 126-127.

[26]*Op. cit.*

[27]Jacques Ellul, *The Presence of the Kingdom,* New York: The Seabury Press, 1967, p. 99.

[28]Robert Nisbet, "The Nemesis of Authority," The Intercollegiate Review (Winter/Spring, 1972), p. 7.

[29]Richard Bube, "A Proper View of Science Corrects Extremist Attitudes," *Universitas* (March, 1973), p. 3.

[30]*The Presence. . . ,* pp. 113-114.

[31]*Op. cit.*

[32]John 8:36.

1984 Symposium
The Future Becomes the Present

Responsibility in 1984

DAWN WARD
Department of Sociology
Trinity College
Deerfield, Illinois 60015

JACK BALSWICK
Department of Sociology
University of Georgia
Athens, Georgia 30602

It would not be an exaggeration to say that one of the greatest impacts of social science at the popular level of consciousness has been its influence on how people explain their actions. Particularly in explaining their negative actions, people commonly refer to the influence of their parents, family background, social situation, or cultural deprivations. In addition, there are a number of societal conditions which have resulted in a dulling of our sense of responsibility—impersonalization, industrialization, urbanization, routinization, bureaucratization, etc.

In the emergence of our impersonal mass society the individual begins by feeling and ends by believing that one is not personally responsible for societal conditions nor for one's action within it. A good example of this is the recent testimony of a medical doctor who had been convicted of Medicaid fraud. In an appearance before a Senate investigating committee, this doctor frankly stated that it was the Medicaid system itself which so strongly invited corruption. Thus his defense was that he had *no choice* in the matter. In essence, he was blaming the legislators for setting up a system which was too tempting and in the process denying any personal responsibility for his actions.

In Orwell's *1984* life was lived in a totalitarian state in which individuals had no freedom and thus, by implication, no responsibility. As Heddendorf has pointed out in his introductory statement, western civilization has sought a free society, and has assumed that the individual is responsible for his actions. Although modern society cannot be strictly described as a totalitarian state in the Orwellian sense, it is still a society in which people increasingly believe that they cannot do anything about the societal problems engulfing them.

While we can point an accusing finger at the doctor convicted of Medicaid fraud, we are all tempted to feel that there is nothing that we as individuals can do about the problems of water pollution, air pollution, energy shortage, poverty and hunger, etc., and instead blame these conditions on the "system." To make matters worse, if we want to be completely rational about placing the blame for societal problems, we are probably right—the fault is with the system, and although we are a part of the system there most likely is little we as individuals can do about these immense societal problems. The effectively subtle way in which the concept of responsibility has been eroding in modern society may even rival Orwell's *1984* in its efficient pervasiveness.

A more intellectualized source of the erosion of responsibility is found in the view of social determinism. For the rigorous determinist, the concept of responsibility may seem useless. It makes little sense to hold someone responsible for an action in which he or she has no choice. In particular, it makes little sense to hold someone responsible in the sense of "punishing" them. Why should we punish determined individuals? We do not punish computers, we repair them. Similarly, a determinist might argue that we should not punish people but "repair" them through some type of rehabilitative "therapy" or resocialization. The rigorous determinist might then deal with the issue of responsibility by throwing the concept out.

In the modern world, the notion of responsibility is problematic not only for the determinist, but for all who take the social scientific perspective seriously. It cannot be denied that we are all greatly influenced by our sociocultural context. In view of this, how should the Christian deal with the issue of responsibility? The structures of modern society make the issue of responsibility extremely complex. Social scientists are not unanimous in their approach or in their conclusions regarding the nature of human responsibility. There are many different questions to ask. Before examining several differing sociological perspectives, we attempt to clarify some important dimensions of the meaning of responsibility.

The Concept of Responsibility

There are three dimensions of responsibility with which we should be concerned: (1) being responsible; (2) holding

responsibility; and (3) taking responsibility. The first dimension equates responsibility with the concept of freedom. Persons are said to be responsible for their acts when they have made some real choice in constructing those acts. Evans speaks of this type of responsibility in discussing the deterministic image of man:

> In this framework are men not responsible for their acts in precisely the same sense in which machines (computers?) are responsible for their "behavior," or in which an apple tree is responsible for producing the fruit which it does? Does the notion of moral freedom demand not merely that the person could have done otherwise *if* some things had been different (his genes, his background, his character), but that the person has at least some alternatives among which he may choose, even if nothing about the causal nexus prior to that point of decision had been different? When we hold a person morally responsible do we not say to him, "You could have done otherwise *even given* your past and present?"[1]

In this sense, being responsible is a type of moral self determination or freedom within a nexus of biological and social influence. When we speak of being responsible we are speaking of a nearly universal characteristic of human persons. There are certain persons in society who are presumably not morally responsible: infants, persons with certain psychological disorders, persons who are senile, etc. The existence of these persons opens the door for the question: who can be held responsible?

When we hold an individual or a group responsible for their acts, we presume that it is appropriate for them to suffer (or enjoy) the consequences of those acts. In holding someone responsible for the death of another person, we suggest that he/she should suffer some punishment. If someone has worked very hard, he/she should enjoy the economic benefits. This notion of "holding responsible" is perhaps the most problematic in modern societies. Holding people responsible seems to hinge on their being responsible, the first notion we discussed. Yet, social science, as well as modern societies themselves have challenged this notion. It is difficult to argue that persons should be held responsible or rewarded if they had no choice in their acts.

We can observe people holding other people responsible in many contexts, but the issues involved are most readily observed in the legal context. In western societies, legal responsibility has generally been based on the notion of moral responsibility. For this reason, small children and the mentally incompetent are not held responsible when they commit criminal acts.

Currently, in our society, we are witnessing the notion of legal responsibility being questioned because its foundational concept of moral responsibility is being shaken. Some examples that illustrate this are the Patty Hearst bank robbery trial, the trial of a young boy who killed an elderly woman in Florida, and membership in religious "cults." In all three cases "brainwashing" is said to be involved. In the case of Patty Hearst, kidnapping and deliberate brainwashing were involved. In the case of the young boy, brainwashing was described in terms of an overdose of television violence. The argument in both these cases is that environmental influences negate moral responsibility and should in turn negate legal responsibility. In the case of the religious "cults," members are said to have joined because of subjection to brainwashing techniques. The claim is made by angry parents that their cult children should not have legal rights because they are not responsible for themselves.[2] These examples point to one side of the dilemmas of the modern legal system: who can be held responsible for their actions?

There are three dimensions of responsibility with which we should be concerned: being responsible, holding responsibility, and taking responsibility.

On the individual level, defense because of "innocent by reason of insanity" or "temporary insanity" has been stretched to its limits causing some legislatures to reject it. In its place, the argument, "guilty, but insane" has been substituted, thus allowing the judicial system to hold more people responsible. On the corporate or group level, the issues may be even more complex. How can motivations or responsibility be established when decisions are made bureaucratically? Can nations or groups be held responsible for actions committed in the past—when those presumably responsible are no longer leaders or even alive? Who can be held responsible for the unintended (or intended) consequences of technological development, e.g., pollution, occupational diseases, mechanical failure in airplanes, etc.? When the issue of responsibility emerges, "each person can now point an accusatory finger towards others or toward a faceless massive monolith—the corporate structure of modern society. We seek to find guilt in the other, to excuse or justify our own behavior and most often we are inert."[3]

Based on this all too brief discussion we suggest that *being responsible* is a given—that we are responsible unless certain circumstances, e.g., extreme illness, senility, interfere with our moral decision making abilities. *Holding responsible* is a social process—it is the attempt to assign responsibility and its consequences to an individual or a group. *Taking responsibility* is also a social process, which involves an individual or a group accepting responsibility for some past action or actively pursuing involvement in the future outcome of some situation. Taking responsibility includes a recognition of moral responsibility and a willingness to be held responsible. In taking responsibility, a person exercises his/her moral freedom, recognizing the limits of his/her sociocultural and biological situation.

Most social critics living in the shadow of 1984, however, have relegated the concept of responsibility to the same status as that of sin and guilt. Few social scientists consider the concept of responsibility as appropriate or useful in understanding our society and its problems. Yet, as our knowledge of social structures and processes increases, our sense of power over these structures and over our lives seems to diminish. Although society has never been able to

Dawn Ward received her PhD in Sociology from the University of Georgia in 1974. Since then she has been teaching sociology at Trinity College in Deerfield, Illinois. Her special interests include contemporary sociological theory and the sociology of religion. One of her professional goals is to develop a sociological perspective that is both essentially Christian and sensitive to contemporary thought and culture.

control sin, in modern society we seem even incapable of developing a coherent conception of sin and evil.

As Lyman suggests, "What is missing in the relation of evil to sin in the contemporary era is a tissue of guilt and responsibility that connects individuals and groups to institutions and corporate structures."[4] Although no sociology has offered a conclusive understanding of the individual and modern society which would help restore this connective tissue, it would seem helpful to briefly consider three of the most popular competing sociological perspectives in order to better understand the issues involved.

A Sociology for 1984

One of the efficiently unique features of Orwell's *1984* is the way social scientific theory is utilized as an ideological support of the official state view. One way to assess the degree to which modern society approximates Orwell's *1984* is to examine the way in which responsibility is handled in contemporary sociological theories. Based on the differing moral and methodological assumptions that they hold, as well as the differing types of questions that they raise, we have selected three differing sociological perspectives on the issue of responsibility.

Structure-Functionalist Sociology. Structure-functionalism was the dominant sociological perspective during the development of the Welfare State and centralized bureaucracies in the United States during the 1950's and 1960's. Even though structure-functionalism offered no definitive statement on the issue of responsibility, theorists in this perspective do share certain assumptions regarding individual and collective responsibility that spring from a basically deterministic view of persons.

In structure-functionalism the focus on responsibility shifts away from the individual to the social system. The social system is said to be *responsible* for the adequate socialization of individuals who can function within the social system. When deviant behavior occurs which is harmful to the social system, certain aspects of the social system are held responsible. In this view social programs can serve as sources of social change that can potentially produce more adequately socialized individuals.

Interpretive Sociology. Interpretive sociology began to challenge the dominant structure-functional perspective in the late 1960's and may become the dominant perspective in the sociology of the 1980's. Rather than seeking for an answer to the question of ultimate responsibility for human actions, interpretive sociologists prefer to leave this question to philosophers, theologians or any persons who think they can clarify the issue. Instead, they focus on the uses that social actors make of "responsibility," "responsible" and related terms in social discourse.

In the interpretive view, our understanding of responsibility is a social construction that develops through social discourse over time in a series of socio-historical contexts. The issue of responsibility emerges when some behavior occurs that is exceptional, unexpected, or demands an explanation for some other reason. An interesting possibility in this perspective is that we engage in "responsibility talk" in ways that minimize our own responsibility and maximize the responsibility of other persons and groups.

A soldier in combat, for example, may justify killing other men by defining them as enemies deserving of their fate, or he may excuse these killings by reasoning that he was under orders to do so and therefore does not share in the responsibility. Negotiation of responsibility in this way takes place in social structures where individuals generally have assigned social roles: parent-child, teacher-student, doctor-patient, etc. Often there is a power struggle involved and something to be gained if we can assign and take responsibility in certain ways. Discourse regarding responsibility can become a competitive struggle in which the powerful take credit for the good in society and the powerless are blamed for the bad in society. The tables can be turned, of course, and a third sociological perspective, critical sociology, would like to help turn them.

Critical Sociology. Critical sociologists sense two dangers regarding responsibility in contemporary society. One is the phenomenon of "bad faith"—a denial or loss of the sense of being responsible.[5] A person exercises bad faith when he/she attributes his/her actions to his/her role and says in effect, "I had no choice but to act as I did."

A less subjective danger is the centralization of responsibility in decision making and reality construction. In an

		Action Being Evaluated	
		Positive	*Negative*
Person to Whom Responsibility Is Applied	*Oneself*	A. Having Humility	B. Take Responsibility
	Another	C. Give Encouragement	D. Be Understanding

Figure 1. *Applying the concept of responsibility to oneself and to another for both positive and negative actions.*

analysis of the mass media, T. R. Young, for example, argues that the construction of social reality is now concentrated in the hands of advertisers and others who control the media.[6] Such a concentration of reality defining power inhibits persons from taking responsibility for the development of their communities. Instead, people are content to be passive consumers of reality via the mass media and mass produced goods via the capitalist economy. Such passive behavior goes hand in hand with bad faith and alienation, and is the antithesis of responsible behavior.

Critical theorists then, are concerned with the problems people confront in attempting to take responsibility for the structure and quality of their lives. Underlying their analysis is the belief that responsible participation by individuals is crucial. They do not believe that responsible participation is possible for the vast majority of persons living in society as it is presently structured. For the critical sociologists 1984 is near, and they are seeking to offer a sociological view which will diminish the possibility of Orwell's prophecy becoming a reality.

Responsibility in Interpersonal Relationships

The concept of responsibility should be used differently depending on whether we are applying it to ourselves (taking responsibility) or to another person (holding responsible). In this context we are not using the concept of being responsible (as it is related to freedom) as an explanatory concept, but as a response that we make to ourselves and others as we act in ways that we evaluate both positively and negatively.

We are all aware that we act in such ways. Sometimes one act may be evaluated both positively and negatively. We may, for example, do a good deed but question our motives. For the sake of our analysis here we consider actions where we evaluate an act as either positive or negative, not both.

How should we respond in terms of responsibility when we or someone else acts either positively or negatively? In Figure 1, cell A represents the case where we recognize that we have acted positively—we feel good about what we have done. Perhaps we are excelling in our given vocation. We suggest that the proper response is humility. Humility involves giving credit to others that share the responsibility for our success both in the past (in our development) and in the present (our fellow workers). We do not deny our own responsibility but neither do we emphasize it. Finally we should avoid generalizing a judgment about ourselves so as to avoid pharisaism or inflated egos.

There is ample biblical support for a person having

Jack Balswick is Professor of Child and Family Development and Sociology at the University of Georgia. His books include Social Problems in the United States *and* Why I Want to Say 'I Love You.' *Together with Dawn Ward, he is currently writing a book on the relationship between sociology and Christianity. He is a former Fulbright Scholar to Cyprus, and is currently (March-July 1981) serving as a Fulbright Scholar in Korea.*

humility as a responsible response to a positive self-induced action: "The fear of the Lord is a training in wisdom, and the way to honour is humility."[7] "Do not be conceited or think too highly of yourself; but think your way to a sober estimate based on the measure of faith that God has dealt to each of you."[8] "Then put on the garments that suit God's chosen people, his own his beloved: compassion, kindness, humility, gentleness, patience."[9] "Thus Scripture says, 'God opposes the arrogant and gives grace to the humble.' "[10]

Cell B represents the situation where we recognize that we have acted negatively—we have failed to fulfill a responsibility, committed a sin (an everyday occurrence), or committed a crime. We suggest that a proper response involves taking responsibility for the action even though this may require repentance or punishment. We should attempt to understand the social context or influence if this is thought to be helpful, but not use this understanding as an excuse or thorough explanation for our actions. This would be a case of "bad faith," the failure to accept the fact that we have any self-determination whatsoever. We should be open to change and avoid fatalism.

Finally we should avoid generalizations about ourselves that lead to low self-esteem. Certainly we are sinful, but we should not be misled into thinking that others have achieved heights of righteousness which are beyond our capacity. There are numerous biblical examples which could be given in support of the Christian's duty to take responsibility for his or her own negative behavior, two of the most outstanding of which are David calling upon God for forgiveness following his act of adultery and the prodigal son returning as an unworthy servant to his father.

Cell C represents those instances when another person has acted in a positive manner. Perhaps they have been successful or helpful in some way. That person should be encouraged. Perhaps that seems obvious but it is not easy. Encouragement may take the form of praise or gratitude. Again we should avoid generalization about the goodness of this person so as to avoid both envy and hero worship. The right manner of giving encouragement can be seen in the way the apostle Paul encouraged his fellow workers, Timothy, Barnabas, Apollos, and Silas.

Cell D represents those cases that constitute the primary reason for this entire analysis: those cases where we judge that another person has acted negatively; perhaps they have committed a crime or sinned in some way. As an example, let us consider that person who appears to be a practicing alcoholic. Understanding is perhaps the key response. Understanding involves many things. It involves understanding the other person's situation, both socially and psychologically. This may help us to avoid self-righteousness, and pious solutions. We should avoid judgmental attitudes. The Scriptures teach that judging others to be less good than ourselves is serious business.[11]

We are also to avoid categorical judgments of other people and primarily consider our own responsibilities and weaknesses. We see the tendency for people to make categorical judgements of others especially when the other is in a lower status. For example, the lower status person may be labelled a hopeless "alcoholic" while the upper or middle class person is simply admitted to the hospital for "alcohol abuse" or "misusing controlled substances." This does not suggest however, that we do not hold the other person responsible or accountable for their actions. Understanding does not imply excusing the other person. This encourages "bad faith" on the part of the other person.

Finally, we should not hold the individual solely responsible for his own actions or condition. We should consider the possibility of our collective and individual responsibility with regard to that person. In accepting our responsibility, however, we should realize our limited capacity to help another person change his behavior.

A Balanced Perspective

We need two perspectives on responsibility: an individualistic and a collective perspective. We need an individualistic perspective which states that ultimately each person is responsible for his or her acts that are not determined. This should not be mistaken for a "self-made man" philosophy. The primary manifestation of this individualistic perspective is that we take responsibility for our own acts, particularly for our "sinful" acts, and for our own lives. We do not persist in rationalizing our failures by reference to our socio-cultural conditioning. It is helpful to understand the socio-cultural factors that have influenced us, but nonproductive to blame our situation on other persons and events.

Another manifestation of the individualistic perspective is that we hold other persons responsible for their acts. Are we here falling into a form of "judgmentalism?" Hopefully not. In holding others responsible we acknowledge that they can be self-determining individuals and offer them hope. It is unlikely that any society could function without some system of reward and punishment. However, reward and punishment should be for particular acts. We should avoid labelling certain persons as "good" and others as "bad." The labelling theory of deviance suggests that by labelling certain persons as "criminal" we decrease their chance of finding alternatives to criminal living.

In holding others responsible, we should not confuse "deviance" with "sinfulness." That is, we must not confuse our society's definition of sin with sin itself. Society's definition of sin or wrongdoing is constantly changing, e.g., the abortion issue, and cannot be used as a yardstick. Society often punishes the sins of the poor and rewards the sins of the rich. For example, the car thief is considered criminal while the producer of sugar coated cereals (a promoter of tooth decay and sugar addiction) is rewarded with windfall profits.

A final manifestation of the individualistic perspective is

that we will be humble in any attempt to "rehabilitate" other people. We realize the limits of reform based on a change in external circumstances and honor the other person as self-determining.

In addition to the individualistic perspective we need a collectivistic perspective on responsibility. This refers primarily to our responsibility for other people, both those we are responsible for directly (our family, friends, etc.) and indirectly (members of other social groups). We are responsible for creating environments in our families, in our churches, in our neighborhoods, in our economic and political institutions, etc. that do not oppress certain groups of people while giving other groups unfair advantages. In an individualistically oriented society, this kind of "collective responsibility" is often difficult to comprehend and even more difficult to accept and act upon. It is difficult to understand how we can take responsibility for the plight of poor people living in ghettos and on reservations whom we have never seen. Once we have been convinced of our responsibility, we become frustrated when we realize that there is little we can do individually to change the situation even if we are willing.

Although there are similarities between modern society and Orwell's *1984*, perhaps nothing more graphically illustrates their differences in regard to responsibility than the extent to which Americans of various religious and political persuasions are taking responsibility for societal conditions which they deem undesirable, and together with likeminded others trying to do something about them. For

We need two perspectives on responsibility: an individual and a collective perspective.

those who fatalistically accept the notion that no amount of collective activity will bring about fruitful change, 1984 has already arrived. For the Christian living in modern society the problem is not only to decipher what is Caesar's and what is God's but also to know how much of society can be changed and perfected through Caesar and how much can be changed and perfected only by God.

REFERENCES

[1]Stephen Evans, "Christian Perspectives on the Science of Man", *Christian Scholar's Review* 6 (1976), p. 104.

[2]Thomas Robbins and Dick Anthony, "New Religions, Families and Brainwashing", *Society* 15 (May/June 1978), pp. 77-83.

[3]Stanford M. Lyman, *The Seven Deadly Sins: Society and Evil*, New York: St. Martins Press, 1978, p. 269.

[4]*Loc. cit.*,

[5]Peter Berger, *The Sacred Canopy*, New York: Doubleday, 1968.

[6]T. R. Young, *The Division of Labor in the Construction of Social Reality*, Red Feather Institute, 1978.

[7]Proverbs 15:33.

[8]Romans 12:10.

[9]Colossians 3:12.

[10]James 4:6.

[11]See Matthew 7:1-5, Luke 6:37, Romans 14:10-12.

1984 Symposium
The Future Becomes the Present

The Person in 1984

LARS I. GRANBERG

Hope College
Holland, Michigan

George Orwell's Vision

Winston Smith lives with fear and longs for death. He is confused about the past and finds the future "unimaginable."[1] Caught in the grim present without history, purpose or norms — except the Party's current version of truth and reality — Winston receives neither comfort nor distraction from companions and friends.[2] "There is no one to talk to. No one to share one's inner thoughts, confusion and doubts. No one to contradict or to confirm one's thoughts. No one can be trusted.[3] Everyone must be regarded as a possible betrayer, unless it is O'Brien, an inner Party member, who "had the appearance of someone that you could talk to . . . ."[4]

Winston is expected to be observable, to participate in collective projects, yet to be alone in the midst of people. All genuine community has been destroyed. A solitary stroll or private hobbies imply the heresy of individualism (*Newspeak:* "own life"). Intimacy has been reduced to collective devotion to Big Brother and to joyless, impersonal sex relations, the latter tolerated by the party as a concession to human weakness so long as no real pleasure is gained and no bonds of loyalty formed.[5]

Winston feels crushed in the Party juggernaut. The life it allows is mean, mindless and a cheat. What is worse, there is no way out. "We can't win," is one of the few things of which Winston is certain. So his moods are dominated by a pervasive sense of helplessness, hopelessness and confusion. He is confused because there is no way to validate either his memories of different or better things nor his skepticism of the Party's evanescent versions of past and present. By destroying human community the Party has eliminated the possibility of having one's recollections validated by another. In its on-going program of rewriting history to conform to the current twist in official doctrine, a practice in which Winston participates as a rewrite man, and in its destruction of all records to the contrary, the Party denies to its members the other source and validation of human memory. Life, the Party says, has always been exactly as it is today.

Winston is satisfied neither with his life, with the state of things nor with the Party's fluctuating version of truth and reality. He records his rebellious outrage in a personal diary, enters into an illicit love affair with another Party member and seeks to join the subversive underground. Predictably, he is tortured first into confessing every crime of consequence, then is brainwashed and benumbed by glib, authoritarian assertions of the subjectivity of truth, with the Party as its only reliable arbiter. Finally, he is terrified into betraying Julia, his beloved. We leave Winston a gin-soaked zombie, penitentially shedding tears over his belated discovery that he loves Big Brother. So prophesied Orwell.[6]

Christopher Lasch's Vision

Is this the way it is with persons in the U.S. today? Quite to the contrary, says Christopher Lasch.[7] Persons, to be sure, are deeply troubled and in trouble. Not, however, as the result of a totalitarian invasion of persons. Rather, untrammeled self-centeredness and self-indulgence dwarfs and warps personal development and destroys human community. Lasch blames capitalism and the culture of competitive individualism it generates for this deplorable state of things. Individualism, says Lasch, has reached the extreme of war of all against all and the pursuit of happiness the dead end of narcissistic self preoccupation.[8]

In its dying throes, Lasch maintains, bourgeois individualism regards its narcissistic strategies of survival as emancipation from the repressive conditions of the past: the authoritarian family, repressive sex morality, the work ethic, and guilt-riddenness. The new moral climate arises out of self-absorption. Lasch labels the prototypic person of our time as "the new narcissist."[9] The narcissist, preoccupied with personal matters, lives for the moment. Cut off from past and future, his inner life is impoverished. Preoc-

cupied with immediate gratification of boundless desires, he lives in a state of restless, unsatisfied desire. Permissive, he suffers from anxiety rather than guilt. Lacking a sense of meaning, the narcissist is a prime candidate for interminable psychoanalysis, to which he turns in search of a religion or way of life. Youth, beauty, charm and celebrity form the basis of self-regard, so that aging poses special terrors. Sexual promiscuity rather than repression is characteristic of the narcissist. Close personal relations are avoided, making it easier to exploit others as instrument for one's gratification. Appearances, not substance, are of parámount significance — nothing succeeds like the appearance of success. The prostitute, says Lasch, now best exemplifies the qualities needed for success in American Society: she attempts to move others while remaining unmoved herself, she is a predatory loner who exploits the ethic of pleasure, and she symbolizes supremely the character of contemporary hedonism in which the most intimate encounter becomes the means for exploitation.[10]

This is seen as a dangerous world. In it, one must struggle continually to survive. It is not uncommon for this struggle for survival to take the form of hedonistic anesthesia, for the future holds out ever-diminishing possibilities and expectations. Life becomes a war of all against all. Success depends upon skill in the psychological manipulation of others for one's own pleasure and gain by skillfully exploiting the techniques of interpersonal relations. People become interchangeable objects whose significance is chiefly as instruments of satisfaction or frustration. It is as though the Marquis de Sade's radical individualism and its accompanying loss of individuality have been realized.[11] Little wonder that such a society with its uninvolved bystanders allows fellow humans to be robbed, beaten, debauched and even murdered.[12]

Orwell's and Lasch's views of personal life today are grim indeed, and superficially quite unlike. Where are we and our contemporaries? With the terrorized captives of *1984*, sated and alone, or among the fleshpots of narcissism? Do we find ourselves to be trapped in a meager, joyless existence under the control of an ubiquitous, ruthless, omnipotent state under constant threat of a dehumanizing rape of our most private thoughts and hopes? Or are we, as Lasch claims, stupified self-servers, resigned to trivial work shoddily done, and finding our satisfactions in leisure pursuits? The answer, it seems, is neither and both. On the surface, the two visions seem quite dissimilar. It is clear, however, that the end product of freedom that is given over to self-preoccupied, hedonistic, self-indugence is bondage to bewildered meaninglessness, a purposeless entrapment in immediacy which is as enslaving and depersonalizing as the totalitarianism of 1984.

Support for Orwell

Are we nearing *1984*? In some respects, it would seem so. In a recent speech the chairman of the U.S. Chamber of Commerce said, "The leaden weight of bigger and bigger government suppresses freedom and destroys economic incentive."[13] This might be dismissed as the routine protest of the business community against efforts to insure responsible operation in relation to consumers, worker safety and health and environmental quality. But Robert Crandall, a senior fellow at the Brookings Institute, builds an impressive case for the Chamber of Commerce chairman's charge.[14] Crandall points out, for example, that at least twenty agencies regulate the conduct of business, including the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), and the Consumer Product Safety Commission (CPSE). While cleaner air and water and fewer mining accidents certainly testify to the need for these agencies, balanced against gains are thousands of highly detailed regulations which are confusing, costly, often ill-conceived and contradictory that contribute to a severe reduction in productivity. Lack of accountability encourages government regulators to set arbitrary standards without careful consideration of either cost of likely gains achieved. Our staggering economy and rising unemployment, Crandall argues, result in part from "the heavy-handedness of federal regulation."

Religious freedom is apparently under siege as well. The federal court decision to investigate the fiscal affairs of the World Wide Church (Pasadena, California) generated dismay not only among regular contributors to the World Wide Church but in much of the religious community. Yet the Jonestown tragedy provides impetus to those who clamor for the federal government to cull out those

Lars I. Granberg has a BS degree from Wheaton College, and an MA and PhD degree from the University of Chicago. He is currently General Director of Interdisciplinary Studies and Peter and Emajean Cook Professor of Psychology. Now in his third period of service at Hope College, he has also served Fuller Theological Seminary as Dean of Students and Associate Professor of Pastoral Counseling and Psychology, and as President of Northwestern College in Iowa, also a college of the Reformed Church in America. His writing has dealt chiefly with Christian marriage and family life and with aspects of pastoral counseling and the psychology of religion.

religious imposters and spurious religious organizations that exploit First Amendment protection to gain tax exemption and the prerogative of freely preying on the lonely, the gullible and those who seek spiritual significance for their lives.[15] Nevertheless, the prospect of federal officials determining the credentials of religious leaders or associations is not a comforting one.

It is, however, the state's encroachment into family life that I find most disturbing. One court decision after another chips away at parental authority. Recently the U.S. Court of Appeals in Cincinnati ruled that parents have no constitutional right to be notified that their children are receiving contraceptive devices at public health clinics. The ruling was on a suit filed by Lansing, Michigan, parents to prevent the Lansing Tri-County Family Planning Center from giving contraceptives to minors. Giving contraceptives to minors without notifying parents is reported to be common practice at public health clinics in Michigan. The decision is under appeal to the Supreme court.

The issue, however, is what properly constitutes parental insufficiency? Is, for example, a biblical view of sex and the conviction that sexual chastity is valuable for human well-being a sign of sexual repressiveness, an indication that parents holding such views are insufficient to rear children well? Most movements aimed at improving marriage and the family seem designed to bring them into line with the favored theories of child care and psychopathology and so do such court decisions as the one handed down in Cincinnati, which denies to parents the right to know that a public agency is providing contraceptives to their children. This is another illustration of the trend to impose as normative and binding the liberal humanistic social philosophy and view of human nature that dominates the academic community and federal social planning.

1984? Hardly! It seems more accurate to recognize these movements of the government in part as the effort to deal with genuine abuses, and in part as the tendency of overzealous public servants to develop either a Big Mama bent or an ambitious attempts to extend their spheres of control. Milton Friedman argues compellingly that efforts of the public sector to do good have a way of consistently resulting in "brilliant achievements in mischief,"[16] but there seems no ready alternative for dealing with serious problems that pervade our society. Moreover, the determined efforts of tens of thousands of Cubans, Haitians and Southeast Asians to gain admittance to the United States is clear testimony that our country is still perceived as an alternative to 1984.

Support for Lasch

Will these refugees from 1984 find, in place of security police, kangaroo courts, and severe food shortages, a nation of sybaritic narcissists such as Lasch describes? Have we Americans largely succumbed to the pursuit of personal advantage over others and virtually unrestrained self indulgence? Trends toward narcissism are readily observable in our society, especially if we are satisfied with an external perspective on the words and actions of our neighbors. A Campus Crusade leader asked one of the top student leaders at a major university, "What qualities do you think make a man a leader?" The answer he received was, "able to get drunk, take drugs, stay out all Friday and Saturday nights, have wild sex, and answer the telephone the next morning and sound coherent. That is my kind of man." Surely an answer designed to evoke a responsive nod from Christopher Lasch.

Untrammeled self-centeredness and self-indulgence dwarfs and warps personal development and destroys human community.

Drug use among the privileged as an expression of chic is apparently wide-spread. This practice can be seen, as Lasch does, as an expression of hedonism. But it may also be seen as a quick getaway from inner emptiness and boredom. Whatever the cause, these people contribute to a severe and growing national problem. We have been described as a drug-oriented society. At any given time, one of every seven Americans is taking a psychotropic drug prescribed by a physician. One of eleven adult Americans suffers a severe addictive problem. In 1975, alcohol treatment and related problems cost the United States 43 billion dollars.[17] That same year, drug abuse and drug-related problems cost an additional 10.5 billion dollars. The total cost, 53.5 billion dollars, represented 2.5% of that year's gross national product. Nicholas Cumming's response to the extensive reliance on drugs and alcohol in our society is to propose:

> It may be that the mental health movement has promised the American people a freedom from anxiety that is neither possible nor realistic, *resulting in an expectation that we have a right to feel good.* We may never know to what extent we [mental health specialists] have contributed to the steep rise in alcohol consumption and to the almost universal reliance by physicians on the tranquilizer.[18]

The flight from stress, pain and the gnawings of emptiness generates other forms of addictions. Cummings continues,

> In the United States, we have unfortunately created a legion of therapy addicts who constantly pursue psychotherapy, individual growth, and every new fad that emerges, in the firm belief, somewhat analogous to the Santa Claus fantasy, that the next encounter will produce the desired insight and state of narcissistic peace.[19]

Cummings is I believe, on target. Our society has bought deeply into a viewpoint that reduces issues of right and wrong to problems, problems believed to be mainly caused by the repression of desires and harsh superegos. A vision of ideal parenthood has been reinforced by frequent recounting of the disastrous psychological effect of parental mistakes. Experts in the solution of these problems long

have counseled permissiveness as the proper alternative. Parents should let children express themselves freely. Throwing the sand out of the Kindergarten sandbox should be seen as the release of hidden tensions which could be explicated by experts.

Several years ago, *Esquire Magazine* ran a special section on the growing trend among married couples not to have children. "Child free" is the word these couples use to describe themselves. Some couples surveyed explained their decision on the ground of ineptitude: "I don't want to mess up my children's lives the way my folks messed up mine." Most couples, however, saw children merely as freedom-destroying intruders and resource-consuming leeches.[20] "Child free" served them as a flight from responsibility. Were such hedonism genetically based, lack of reproduction would at least have the virtue of not perpetuating it.

Little wonder that children who feel pushed out and neglected often lose respect for their elders and the authority they should properly represent. Little wonder, either, that people so irresponsibly nurtured seek relief from the pain of premature freedom in self-centered partying to cover over their growing loneliness, rooted in fear of personal intimacy. Many students of contemporary sexual behavior have commented on the widespread use of sexuality either as a counterfeit intimacy or in lieu of interpersonal intimacy. Lasch, for example, says,

> The most prevalent form of escape from emotional complexity is promiscuity: the attempt to achieve a strict separation between sex and feeling . . . . The progressive ideology of 'nonbinding' commitments and 'cool sex' makes a virtue of emotional disengagement . . . .[21]

Hit and run sex will not, however, meet an individual's needs for intimacy and community. It will not alleviate loneliness. Robert Weiss maintains that each person needs two fundamental social arrangements: a sense of attachment, which is best attained in an intimate relation with spouse, family or lover, and a sense of community, which is best attained by a network of friends with whom one may share concerns and interests.[22]

It is the state's encroachment into family life that I find most disturbing.

Lonely people hunger for shared intimacy and often pursue it obsessively but ambivalently. They keep looking for that "right" person who will totally expunge loneliness through instant intimacy. But they not only fear rejection or exploitation by others, they also fear affection and the depth of commitment it invites. The lonely tend on the one hand to overwhelm a potential friendship with the unrealistic expectation that this person alone can take away loneliness.

On the other hand, the lonely one's gnawing fear of being exploited or abandoned often leads to a defensive, hence shallow, commitment to the other. Frustration and disillusionment become inevitable. Small wonder that large numbers of these despised, fearful, lonely people turn to authoritarian cults that promise security, an assured place in a loving community, deliverance from decisions, ("escape from freedom"), and even deliverance from self through drugs, mystical experience or identification with the community or with the leader, the cult hero.

The Decline of Modernity

What, then, of Christopher Lasch's vision of the person in 1984? Clearly it is nearer to the present state of things in the United States than 1984 totalitarianism. Lasch describes modernity gone to seed—modernity, "the overarching ideology of the modern period," that fosters autonomous individualism, secularization, naturalistic reductionism and narcissistic hedonism.[23] Modernity assumes that currently favored methods of ascertaining truth are far better than those of earlier ages.[24] It also assumes that people are free to create their own meaning and values.

With the self-sufficient self its culture hero, society has become atomized and personal relations shallow and utilitarian. Sex is reduced to a consumer experience with emphasis on technique. The inevitable diminishing returns from sex when it is treated as a thing in itself sends practitioners of casual sex in frantic pursuit of more and more exotic forms of sexual expression, forms that until recently were regarded in individuals as perverse and in a society as the mark of decadence, but which today are democratized as "alternate life styles." Little wonder that the manic confidence and promises of the Jim Joneses, or for that matter, of the pop-therapists, draw thousands into their webs. Sampson, in fact, lays heavy blame on psychology, which, he argues,

> . . . has become the new popular ideology, religion and justifier for a variety of social programs . . . including the role psychological thinking plays in confirming an individualistic, self-contained ideal. Excessive individualism leads to alienation and estrangement; it isolates person from person; it separates us from the very nutrient soil out of which we were cast in the first place. Interdependence is inbred early as we form our basic attachments to parents and others; yet we see the breakdown of those attachments espoused as an ideal in the island-like ethos of our contemporary culture.[25]

We see, then, that the significant portion of our population that consciously or tacitly operates on the premises of modernism finds itself trapped in, moving toward, or anesthetizing or distracting itself from a bondage of confusion and meaninglessness even more binding and depersonalizing than that of *1984*. Freedom, interpreted as autarchic self-indulgence, has come full circle. An intense inner hunger for meaning, purpose and direction draws people voluntarily and eagerly into mindless servitude to demagogues and tyrants.

Clearly the Apostle Paul's description of the consequences of the quest for human autarchy speaks as accurately to evident trends in our culture today as it did of

the Mediterranean world of his day.[26] Consequently, Robert Heilbroner has been moved to predict a totalitarian future as binding as that of the most tyrannical Caesars. Reasoning from the continuing depletion of the earth's resources, diminishing productivity, inflation, a shrinking economy, and especially the apparent unwillingness of people to discipline themselves and forego their luxuries and pleasures, Heilbroner says,

> A high degree of political authority will be inescapable in the period of extreme exigency we can expect a hundred years hence . . . The deification of the state, whatever we many think of it from the standpoint of our cherished individualist philosophies, seems . . . the most likely replacement for the deification of materialism that is the unacknowledged religion of our business culture.[27]

A grim prospect, indeed. And Heilbroner receives support for his conclusion from Francis Schaeffer. Schaeffer believes that the overriding value Americans place on their own affluence, comfort and serenity will push them into ready acceptance of a political order with a strong fascist bent. As Schaeffer sees it, economic and personal well-being will assume higher priority than personal freedom. In this state of mind, then, people will accept burgeoning state-ordered regimentation so long as it promises to let them continue to live in their perferred way.[28]

The Wheat and the Weeds

The foregoing, regrettably, seems to fit many educated, talented and affluent members of our society. The values of modernity filter into the consciousness of multitudes of Americans via the ubiquitous radio and television talk shows which promulgate self-indulgence, autarchy, and personal feelings and desires as the norm for morality. But is this all there is to say of significance concerning the person in 1984? Must we acknowledge Christopher Lasch, Robert Heilbroner, Ernest Becker[29] and Herbert Hendin[30] as the definitive prophets of our time?

Much as I respect their perceptiveness, I believe they have not fully shed the blinders of those they so penetratingly describe. A more appropriate paradigm, I believe, may be found in Jesus' parable of the Wheat and the Weeds.[31] Our contemporary prophets have described our society's weeds with agrostological precision. They have said nothing of the wheat. To talk accurately about the person in 1984 requires consideration of the wheat as well. The religious revival of the early to mid-1970's affected thousands. The result caused some to speak of "the age of the Evangelical." If there is extensive evidence of decadence, there is also impressive evidence of large scale efforts at Christian outreach and influence. The Christian Community, for all its shortcomings and its preoccupation with its intramural feuds, provides at least a modicum of salt and light in the world. Love of family, neighborliness and good will have by no means disappeared. "Let both (wheat and weeds) grow together until the harvest,"[32] instructed the Owner. It remains to be seen whether harvest time is upon us. Meanwhile, let us consider some indications that the wheat, the community of the Faithful, continues to exert a wholesome influence.

Consider first the family. Many have virtually written it off and seek effective substitutes. Serious family problems with their attendant human wreckage certainly are in evidence, but there are grounds for regarding the social scientists' epitaphs for the nuclear family as greatly exaggerated. Dennis Wrong tartly demurs,

> One may readily doubt that the family is actually weakened as Lasch contends, even among the educated and affluent who are receptive to the advice of applied social science, let alone among workers and most sections of the middle class. Parents still control almost exclusively the child's life and growth for his or her first three years, the crucially formative period according to psychoanalysis. If the decline of the extended family was exaggerated by Parsons and his followers, as indicated by several sociological studies Lasch cites, it is even less credible that the nuclear family itself has been fatally debilitated, however much this outcome may have been desired by advocates of 'liberated life-styles' abetted by family sociologists and 'permissive' therapists. The family is a tough and resilient social formation not likely to succumb to the shafts of trendy shrinks and pop sociologists.[33]

The continuing efficacy of the family in spite of growing divorce rates and the *in loco parentis* prerogatives assumed by the state and the public schools suggests that however entangled its roots may be with the roots of weeds, the wheat still flourishes. Other evidence may be seen in the humanitarian concern volunteered to the Hiroshima Maidens and the Ravensbrueck "Lapins," disabled victims of the hydrogen bomb and of Nazi medical experimentation. Transportation, medical care and a home with friends was provided which enabled these women to live productive lives.[34] Neighborly concern and good will such as this is still taken for granted in rural areas and is by no means unknown in urban areas. Basic religious beliefs still are widely adhered to, as any number of recent surveys have attested to. A certain number of those seeking meaningful religious experience have turned to Eastern Religions or to the cults, but Evangelicalism gives evidence of flourishing as never before The readiness with which audiences spring up in response to religious radio and television programs gives evidence that spiritual hunger abounds in our land.

In recounting these signs of healthy, dynamic elements still flourishing in our society, I have been laying the groundwork for the observation that the evidence for advanced personal decadence presented by our contemporary prophets may suggest that we are approaching Armageddon, but not necessarily. Harvest time may be almost upon us. On the other hand, we may be participating in one of history's great transitions such as the fall of the Roman empire or the Renaissance, the kind of time when morality, authority, conceptions of human nature, human community and human priorities are in a state of upheaval. Consider, for example, Barbara Tuchman's summary of "the calamitous 14th Century" which she has labeled "a distant mirror:"[35]

> . . . a succession of wayward dangers; of the three galloping evils, pillage, plague, and taxes; of fierce and tragic conflicts, bizarre fates, capricious money, sorcery, betrayals, insurrections, murder, madness, and the downfall of princes; of dwindling labor for the fields, of cleared land reverting to waste; and always the recurring black shadow of pestilence carrying its message of guilt and sin and the hostility of God.

> Mankind was not improved by the message. Consciousness of wickedness made behavior worse. Violence threw off restraints. It was a time of default. Rules crumbled, institutions failed in their functions. Knighthood did not protect; the Church, more wordly than spiritual, did not guide the way to God; the towns, once agents of progress and the commonweal, were absorbed in mutual hostilities and divided by class war; the population, depleted by the Black Death, did not recover. The war of England and France and the brigandage it spawned revealed the emptiness of chivalry's military pretensions and the falsity of its moral ones. The schism shook the foundations of the central institution, spreading a deep and pervasive uneasiness. People felt subject to events beyond their control, swept, like flotsam at sea, hither and yon in a universe without reason or purpose. . .
>
> . . .the cult of death flourished at its most morbid. Artists dwelt on physical rot in ghoulish detail. . .A mocking, beckoning gleeful Death led the parade of the Danse Macabre around innumerably frescoed walls. A literature of dying expressed itself in popular treatises as *Ars Moriendi*, the Art of Dying.
>
> Associated with the cult of death was the expected end of the world. The pessimism of the 14th century grew in the 15th to the belief that man was becoming worse, an indication of the approaching end. As described in one French treatise, a sign of this decline was the congealing of charity in human hearts, indicating that the human soul was aging and that the flame of love which used to warm mankind was sinking low and would soon go out. Plague, violence, and natural catastrophes were further signals.

Turbulent times such as we are experiencing are indeed trying, but because of the openness they create, they are also times of unusual opportunity either for good or for ill. Arthur Koestler, among the more astute observers of our time, expresses the conviction that something will have to change humanity if it is to survive.[36] His hope, however, is in the psychoactive drugs. He clings to the possibility that research might uncover an enzyme that would enable the cerebral cortex to veto the follies of the archaic brain. History notwithstanding, Koestler thus clings desperately to untrammeled human reason as the sole basis of hope for humanity. The Christian message points out, correctly, I believe, that reason participates at least as much in humanity's fatal flaw as does the so-called animal nature. Hence, if human nature is to be restructured around truth, love, peace and justice, persons must indeed undergo a fundamental change, but the needed change can be brought about not through research or reasons of ascendancy but only through a divinely effected recentering at the core.

Koestler might well respond that this message has been available for almost two millenia during which humanity has muddled its way into a greater and greater capacity for global destruction. It is not enough, I think, for the Christian community to respond to Koestler with, "Wide is the gate and broad is the road that leads to destruction . . . . But small is the gate and narrow the road that leads to life, and only a few find it."[37] If individualism-gone-to-seed is destroying individuality in our society, then the Christian Community must join in the *mea culpa*. The church, especially Protestantism, has marched in lock step with Western culture in embracing, then baptizing the individualistic emphasis of the Enlightenment. The communal character of the church and the corporate character of human society have been deemphasized, resulting in a fractionating bent in both church and society. People do not become persons alone. Individuals become persons when in a proper relation to one another. Christians do not mature as Christians alone. The divine pattern is person in community.

Our contemporary prophets have described our society's weeds with agrostological precision. They have said nothing of the wheat.

If the person, in 1984 or any other year, is to discover his or her productive potentials along with productive priorities and channels for them, then he or she needs to find a Christian community that understands its organismic nature as definitively explicated for the church by the Apostle Paul.[38] There is among some Christians an unfortunate sense of hopelessness and helplessness, a kind of grim resignation toward the state of the world, "unfortunate" because it encourages introversion, irresponsibility and self-in-dulgence. Individual salvation, "plucking brands from the fire," then receives priority over the life of the community. Individual rights assume greater moment than public duty. There is also a tendency to reduce the Christian faith to a self-serving religion of some sort. If, as members of the Christian community, we are genuinely concerned for the well-being of persons today and in the future, we would do well to acknowledge that our Christian understanding and relationships have been choked by the weeds of the Enlightenment and to consider Eugene Heideman's reminder that God speaks through the totality of the Scriptures:

> The dynamics of the spiritual life must include as primary elements God's passion for the renewal of the world and its peoples as well as the regeneration of the individual . . . . So long as evangelicals continue to separate the doctrine of justification by faith from justice, so long as they continue to ignore the Old Testament's primary emphasis upon the election and mission of Israel, 'liberals' will continue to protest in favor of social action. One can only hope (the church) will discover anew the whole biblical doctrine of justification and justice which lies beyond both evangelicalsim and liberalism.[39]

Should a significant portion of the Christian Community take to heart Heideman's challenge, it could do signal service in helping persons avoid entrapment in either Orwell's or Lasch's vision through discovery of the freedom that is in Jesus Christ.

REFERENCES

[1]George Orwell, *1984*, New York: Harcourt Brace Jovanovich, 1949, p. 25.
[2]*Loc. cit.*, p. 43.
[3]*Loc. cit.*, p. 25.
[4]*Loc. cit.*, p. 13.
[5]*Loc. cit.*, p. 57.
[6]*Loc. cit.*
[7]*The Culture of Narcissism: American Life in an Age of Diminishing Expectations*, New York: W. W. Norton & Co., Inc., 1979.

[8]*Loc. cit.*, p. 21.

[9]*Loc. cit.*, p. 22.

[10]*Loc. cit.*, p. 125.

[11]*Loc. cit.*, p. 131-133.

[12]See, for example, the account of the public murder of Kitty Genovese in Abraham Rosenthal, *Thirty-eight Witnesses*, New York: McGraw-Hill, 1964.

[13]*Holland Evening Sentinel*, May 26, 1980.

[14]Robert Crandall, "Is Government Regulation Crippling Business?", *Saturday Review*, (January 20, 1979), pp. 31-34.

[15]Norman Cousins, "The Reign of the Religious Fanatic," *Saturday Review*, (January 6, 1979), p. 10.

[16]Milton Friedman and Rose Friedman, *Free to Choose: A Personal Statement*, New York: Harcourt Brace Jovanovich, 1980.

[17]"1975 Statistical Report of the National Institute of Alcoholism and Alcohol Abuse," Mental Health Administration Clearinghouse, 1978.

[18]Nicholas Cummings, "Turning Bread into Stones: Our Modern Antimiracle," *American Psychologist* 34 (December, 1979), pp. 1110-1129. Emphasis mine.

[19]*Loc. cit.*, See also Cyra McFadden, *The Serial*, New York: The New American Library, 1978.

[20]"Do Americans Suddenly Hate Kids?", *Esquire* 81 (March, 1974), pp. 77-79.

[21]*Op. cit.*, p. 339.

[22]Robert Weiss, *Experience of Loneliness: Studies in Emotional and Social Isolation*, Cambridge, Massachusetts: MIT Press, 1974.

[23]*Op. cit.*, p. 330.

[24]Thomas C. Oden, *Agenda for Theology*, New York: Harper and Row, 1979. See also C. S. Lewis, *The Abolition of Man*, New York: Macmillan, 1962.

[25]Edward Sampson, "Psychology and the American Ideal," *Journal of Personality and Social Psychology* 35 (November, 1977), pp. 779-780.

[26]Romans 1:21-31.

[27]Robert Heilbroner, *Business Civilization in Decline*, New York: W. W. Norton, 1976, pp. 119-120. See also his *An Inquiry into the Human Prospect*, New York: W. W. Norton, 1974.

[28]Francis A. Schaeffer, *How Should We Then Live?*, Old Tappan, New Jersey: Fleming Revell, 1976, p. 227.

[29]Ernest Becker, *The Denial of Death*, New York: The Free Press, 1973.

[30]Herbert Hendin, *The Age of Sensation*, New York: W. W. Norton, 1975.

[31]Matthew 13:24-30.

[32]*Loc. cit.*, v. 30a.

[33]Dennis Wrong, "Bourgeois Values, No Bourgeoisie?", *Dissent* 26 (Summer, 1979), p. 310.

[34]Norman Cousins, "Visit With the Ladies," *Saturday Review* (October 27, 1979), p. 10.

[35]Barbara Tuchman, *A Distant Mirror: The Calamitous 14th Century*, New York: Ballantine Books, 1978, pp. 587-580.

[36]Arthur Koestler, *Janus: A Summing Up*, New York: Random House, 1979.

[37]Matthew 7:13b, 14.

[38]1 Corinthians 12.

[39]Eugene P. Heideman, "Toward Renewed Evangelical Unity," *Reformed Review* 33 (Spring, 1980), p. 162.

1984 Symposium
The Future Becomes the Present

The State In 1984

WILLIAM C. JOHNSON

Professor of Political Science
Bethel College
St. Paul, Minnesota

Politics is so central in modern life that one could scarcely imagine a future without a prominent place for some kind of governing structure. Yet, those who seek to anticipate the future differ widely on what that government of 1984 (and the decades to come) will be and ought to be. George Orwell's *1984* has been so useful to students of the future and of politics because it has stimulated them to think criticaly about their expectations and values.

The purpose of this article is to survey the modes of futurist thinking essential to profit from *1984* and similar works, to identify major options for government in coming years, and to suggest principles which Christians should consider in favoring one option over another. The author assumes that the future is not predetermined, at least during the period prior to the personal return of Christ. Rather, it is chosen by an intricate chain of human decisions, often random and unconnected, but which interact to create successive worlds for man to live in. One future can be chosen rather than another, and a future that appears likely from one point in time can be avoided and replaced by another. It is this discipline of choice making which *1984*, above all, ought to cultivate.

Three Modes of Futurist Thinking

The most common approach to thinking about the future is to view it as a set of *probable* conditions and events. The effort is to forecast these from present trends and commitments, often attaching a probability estimate to them. This is not rigidly predeterministic, since an honest forecaster cannot call anything certain. However, to call a future "95% probable by year N" is to say that its likelihood is great in view of the commitments to it that now exist. Such a forecast implies that we (as a society, or as individuals) had better prepare for its coming, to solve the problems it will bring or exploit its opportunities.

This approach is one plausible response to *1984*. For example, David Goodman, a research scientiest, has identified 137 specific predictions of scientific, technological, social, and political conditions in that book. By 1978, he claimed, more than one hundred of them had come true, and he concluded, "*1984* describes a future that is clearly possible."[1] Many have argued that the political and technological choices of the past forty years have led down a road of no return toward totalitarianism. A nation may choose only to travel faster or slower, but that destination cannot be avoided. So viewed, *1984* is a scenario of a future that the Western nations have already chosen in large part, even if unwittingly.

A second mode is to consider the future as a wide range of *possible* conditions and events. While this is not to deny that some are more likely to occur than others, the focus is on the alternatives to the "probables," the futures that could be attained if certain choices were made now. This mode resists the mood of inevitability that clings to the first one. It also seeks to learn what steps must be taken year by year to arrive at the various alternatives and the larger consequences of taking them.

In encountering *1984* and other dystopian scenarios, futurists concerned with "possibles" admit that they do portray the product of one set of public decisions. The more pessimistic may even concede that the realm of Big Brother is more probable than any other. But they go on to assert that there are many features of Western civilization, many choices now being made, that could lead in other directions if properly followed up. They point to significant efforts to protect privacy, expand citizen participation in governmental and business decision making, and enlarge opportunities for disadvantaged persons. Popular movements against militarism and nuclear power dovetail with the "small is beautiful" ethic of E. F. Schumacher and his disciples.[2] Many things are still possible, they conclude, and present choices do count.

Third, one can study the future to identify *preferable* events and conditions. It is an exercise in comprehending and analyzing values in both the present and future scenarios. One might place the range of possible futures on a scale from the most desired—in conformity with the values one holds—to the least desired. Each one can be studied as the logical outgrowth of certain values present in today's culture, and so enable us to assess current normative choices in the perspective of a longer time frame.

Again, *1984* offers a setting for analysis of the preferable. Orwell's state is based on an ethic that places military dominance and political stability at the top of the value pyramid. All other norms—truth, beauty, human autonomy—are so subordinated that they are lost completely. This is the most natural evolution of what the political scientist Harold Lasswell called in 1941 the *garrison state*. In that system, "the specialists on violence are the most powerful group in society."[3] For Orwell, this violence was not only military but also psychological. Lasswell further envisioned "an energetic struggle to incorporate young and old into the destiny and mission of the state."[4] Oceania sought not only to neutralize or eliminate dissent, but also to mesmerize its key citizens into a "love" of Big Brother. Finally, Lasswell anticipated rapid technological advancement when it would serve the garrison state's purposes.[5] Orwell portrayed the telescreens and brainwashing techniques in precisely this way.

These parallels between the garrison state and *1984* raise disturbing questions about the likely products of present value systems. Many Americans appear to have a deep, primitive faith in violence as the only solution to foreign and domestic problems; to what end can that lead? Some trends are devitalizing the autonomy and responsibility of individuals in the drive for economic growth, political order, and social solidarity. But countertrends to these appear as well, confusing the picture. The danger may not be so much in the conflicting choices between value systems, as in the anomie that society may collectively feel in facing them. After throwing off its traditional beliefs in order to be "modern," it may be unable to select replacements. A society that can no longer make such choices and commit itself to them will become like Oceania's proles, mindlessly slaving in the service of anyone with a strong purpose.

Alternative Models for the State Beyond 1984

The next step in this inquiry is to apply these modes of thought to identifying some major alternatives for political development that are realistic choices today, and exploring their roots in current trends. These alternatives encompass not only structures of government and the distribution of its power, but also the policies it makes, particularly about economic issues. They may take many forms, but this analysis greatly oversimplifies them for the purposes of contrast.

Consider two opposing trends of development for the system of governmental authority and power. On one side, there is the option of centralization, in which the reins of control are held by the few who are most skilled and knowledgeable. These elites take advantage of vast information banks, a monopoly of decision-making capacities, and control of the communication media. Other groupings in society, whether business enterprises, labor unions, universities, or churches, are either integrated into the state or stripped of independent influence. The amount of coercion and violence may vary, from *1984*'s brooding oppression to a willing acceptance of such a system by most citizens for the protection and prosperity it promises.

The jurisdiction of this leviathan need not be limited to its present national borders, but it can imperialistically expand to resemble the three combatants in *1984*, if not a global empire. Many rationales could be used to justify this centralization, from the desire for world order and to share material wealth more equitably, to the ambitions of one person or group to build a utopia or enthrone Truth and Right.

The countertrend to this is a devolution of political and economic power away from national governments and multinational corporations and alliances. The beneficiaries are smaller units that are geographically dispersed and more subject to control by their citizens and workers. At first glance, this appears as a futile effort to reverse the powerful historical trend of the past millennium in the West. Modern economic productivity and technological innovation have drawn the hitherto independent villages and communities into a web from which their citizens clearly benefit. Even so, the proponents of this alternative argue that emerging circumstances will make this not only desirable but inevitable.

This decentralization trend can take several forms, with varying plausibility. A moderate view is of an incremental shift in the powers of government (and probably business as well) to enhance the initiative and diversity of state and local governments and the various elements of the private sector. As this proceeds, government still plays a significant role in both regulating the economy and in providing social services, but expects smaller enterprises, universities, and nonprofit agencies to take the lead in innovation, human development, and supply of material needs.

A more radical form of decentralization can follow a Jeffersonian view of society, with its control dispersed among local communities that enjoy a high degree of self-sufficiency. Although lacking a central command system, these units (which may contain from a few thousand up to several hundreds of thousands of people) can communicate with each other readily by means of audio, video, and data links, and exchange such goods as they need. William Ophuls has described such a "minimum, frugal steady state" as the ideal response to the coming age of scarcity.[6]

No discussion of political futures can be complete without a parallel view of economic constraints and choices. The democratic processes that most Western nations have established are interdependent with their affluence and high resource use. These economic conditions were made possible by both an abundance of natural resources relative to the population and a technological system that could transform and apply them at relatively low cost. The following dichotomy of choices exists because some observers claim that the age of abundance is still in an early stage of its history, while others argue that it is now near its end.

From one perspective, the economic policies of the state of 1984 will be oriented to maximum production and consumption of goods and services and their distribution throughout the world to raise living standards for all. To be sure, there will be dislocations and adjustments, particularly in substituting renewable energy sources for fossil fuels. But the rapid pace of innovation will supply the new products and techniques as they become necessary. The most cautious forecasters anticipate economic fluctuations and some continuing amount of unemployment, inflation, and international competition. However, such optimists as Herman Kahn foresee that in the longer run those difficulties will be only chapters in history books as man finds technological and institutional solutions for them as well.[7]

The opposite position, often called the "limits to growth" thesis, is that the pace of consumption must decline sooner or later.[8] The earth has only so much "carrying capacity" for food production, resource exploitation, and absorption of pollution. When this capacity is exceeded in much of the world, various catastrophes will result, abruptly forcing down population and living standards. Prudence naturally directs public policy toward an economy which recognizes those limits and restrains production within certain levels. While some advocates of this position hold that necessity alone makes it a virtue, others welcome these limits as compelling mankind to return to the simple humane values and relationships that were smothered by the rampant materialism of the past century.

Model I for the Future: Affluence and Technology

From these contrasting options for political and economic development emerge four models for the state of the future. Model I combines centralization in political processes with economic policies oriented to maximum production and consumption. Its society has set the highest priority on affluence and technological innovation to conquer the limitations imposed by nature. Further, it expects government to be the director and guarantor of such prosperity, responsible to secure raw materials at home and abroad, organize or regulate industry, distribute its products, and inhibit any dissent that may arise to those priorities. A government must have a high concentration of power at the center to make such economic plans and implement them effectively.

This model can take both socialist and capitalist forms. In the former, government owns and manages all production and distribution directly, in the name of the people whose prosperity it seeks. A small elite political party with an ideological mission determines the priorities and standards and chooses the leaders. The capitalist variant could be an advanced form of what John Kenneth Galbraith identified as the "new industrial state," in which the largest manufacturing, service, and financial enterprises come to occupy the organs of government and use its legal powers to serve their own purposes.[9] Supplying the state with its key officials and shaping its policies, they build a community of political/economic interests that achieves this centralization under the banner of free enterprise.

Model I can also vary in its coerciveness. If a government chooses to destroy old institutions and practices that stand in the way of its policies, as Stalin did with the prosperous

Russian peasantry in the 1920s, violence is inevitable. On the other hand, the social democracies of western Europe have built incrementally on the existing capitalist and cooperative institutions and avoided such coercion. For the nations that have known stable democracy, a more likely version of Model I is what Bertram Gross has called "friendly fascism." In his scenario, the United States reacts to international threats and domestic conflicts by establishing an impersonal complex of "warfare-welfare-industrial-communications-police bureaucracies" which develop an empire rooted in "a technocratic ideology, a culture of alienation, multiple scapegoats, and competing control networks."[10] The threat of violence remains in the background, available to keep in line those who do not regard it as "friendly."

Among the current trends in the United States that point toward the emergence of Model I are the growing role of government in economic regulation, its fiscal controls aimed at reducing inflation while stimulating production and maintaining employment, and its extensive computer banks that facilitate monitoring of private activities. When Washington acts to revive or bolster a faltering Lockheed or Chrysler Corporation, and continues to support a large share of basic scientific research, it builds such a mutual dependence with the business and educational communities that any problems which appear are most logically solved by greater centralization. This scenario represents the most probable of the four model futures, although it is far from clear which variant is most likely to triumph.

Model II for the Future: Affluence with Decentralization

Model II retains the expansionist economic policies of Model I but builds them on a decentralized approach to government. The picture resembles the United States and Great Britain in the 19th century, with their rapid economic growth under the aegis of a permissive state. The priority is also on affluence, but unlike Model I, the belief is that only a free economy and decentralized governing order can be flexible enough to solve the adjustment problems. Government acts only within a limited realm of powers to protect the value of money, enforce contracts, keep internal order, and render selected aid to the entrepreneurs at their request. Foreign policies are to guard the nation against military or economic aggression and protect the sources of what raw materials the nation must import.

Coercion is likely to be minimal in the Model II state. Its government lacks the extensive powers to impose a tyranny. The economic order, decentralized among competing enterprises, may try to suppress workers' and consumers' movements, but such actions would be localized. To be sure, government would find it difficult to prevent racial, religious, and sexual discrimination by the private sector, and what injustices ensue may be unremediable by law. There is no assurance that the benefits of prosperity will be distributed equitably, and a wide disparity in wealth contains the seeds of instability and revolt.

Four models for the future: affluence and technology, affluence with decentralization, centralization and shortages, decentralized steady state.

There are few, if any, trends toward Model II today. Some would point to the movements in many urban neighborhoods to claim decision-making power that is now held by big-city governments. Yet they are too isolated and dependent on other large institutions—notably the Federal government—to represent a genuine trend of this sort. The Libertarian Party in the United States holds to a version of this model, particularly the sharp reduction in powers of government at all levels, but its electoral and philosophical impact to date is not impressive. Public opinion polls of recent years show a marked distrust of government and a desire to "get Washington off our backs" but the accompanying demands for many kinds of public benefits offer little hope to advocates of Model II.

Model III for the Future: Centralization and Shortages

Model III represents the centralized government that must cope with serious material limits and shortages. Essentially, it develops as dwindling supplies of food, energy, and raw materials drive up prices and large segments of the population find their living standards dropping with no hope of recovery. Internal conflicts flare up between those who can still buy what they desire and those who cannot afford even the necessities. Similar violence grows on a global scale, as "have-not" nations reach out to seize their share from those which have surplus grain, oil, and minerals. To respond to these demands, government must consolidate its power in order to allocate scarce goods on some basis that it

William C. Johnson has a BA from Wheaton College, an MA from the University of California, Berkeley, and the PhD from Claremont Graduate School. He has served at Bethel College since 1969. He is an active member of the World Future Society and the Minnesota Futurists, and of the Shoreview (MN) Planning Commission.

In the potential of the kingdom yet to come the Christian futurist finds hope.

deems fair, and suppress the opposition of those who disagree with that standard of fairness. Yet it is never very successful at this, for its citizens comply with the laws only when coerced to.

This unappealing alternative, in its extreme form, was labeled by economist Gary Gappert a Hobbesian future, after the English philosopher who described the lives of people in a similar state of semi-anarchy as "solitary, poor, nasty, brutish, and short."[11] It most closely resembles *1984*, in which what wealth Oceania possesses is sacrificed to war, and a tyranny over the mind forces compliance with law. Those who hold the limits to growth thesis foresee the rise of this kind of state in the ecological catastrophes that would result from the unrestrained pursuit of affluence. The economist Robert Heilbroner has judged this future to be most probable for the western nations.[12]

Thus far, the industrialized democracies have avoided the supply crises that could produce this alternative. However, some plausible scenarios beginning with a Middle East war that shuts off all oil shipments to the West give this model a haunting degree of possibility. As a government must ration out a stock of oil that is cut by one-half or more, it will be hard pressed to respect the traditional liberties and democratic processes.

Model IV for the Future: Decentralized Steady State

Finally, Model IV portrays the decentralized political/economic system in a limited-resource economy which has attained a steady state in production and consumption. The priorities of society are set on preservation of nature, personal development, and social harmony rather than competition for material acquisition. Disparities between the wealthiest and poorest are relatively small. Governmental and economic units are organized to exert control at local and regional rather than national levels. There is greater opportunity for citizens to participate in localized political processes and for sharing in management decisions by the employees of business enterprises. Some businesses are even owned by their employees and the residents of the community in which they are located. Electronic communication has replaced much of the previous travel, and resource use is cut by low-energy techniques for producing goods, increased durability of products, and extensive recycling of wastes. The communities and regions have attained equilibrium with one another and conduct their relations through diplomacy rather than overt conflict.

The futurist literature often pictures Model IV as the paragon of successful political/economic transformation. Gappert called this an Emersonian future to reflect the ideals of that 19th century reformer.[13] William Ophuls endorsed this model as most in harmony with a true understanding of ecology—man in the earth's "household."[14] These writers express a more extreme form of this model than can realistically be attained, yet they rightly point out that a radical shift of public values is necessary for any progress in this direction.

What trends might foreshadow the advent of Model IV? As with Model II, none is sufficiently strong to allow it more than a miniscule probability in the 1980s. One could also cite at this point the neighborhood power movements, particularly those which stress self-help and autonomy from outside authorities. There are also a few worker-owned businesses in the United States. Several nations in western and central Europe are experimenting with formal employee participation in the management of large enterprises, although the results to date have not supported the brightest hopes for workplace democracy. As with Model III, the trends are not visible now in the eyes of most, but could appear with a set of events that sharply constrict the material lifeblood of an affluent economy and force a thorough re-evaluation of societal values.

How Can Christians Respond?

Christians who are committed to certain principles for political and economic life are often frustrated because they cannot apply them in their "pure" form. Public choices are always partial and fragmented, and at best they can strengthen one trend or commitment rather than another. Rarely can one action affirm all of one's values simultaneously; usually one must sacrifice one objective temporarily in order to progress toward another. This is why compromise is such a basic feature of political life. Yet, while none of the four models can be labeled Christian in itself, it is clear that some tendencies are more worthy of selection than others.

Among the biblical teachings on government, two general principles are most useful in this context. First, the Christian community should take seriously the tenet that governments are divine agencies and are accountable to God for their conduct.[15] The purposes of government are to maintain order, practice justice, and assure that the needs of the poor, helpless, and oppressed are met. All citizens, and especially Christians, are obligated to hold their political authorities responsible to meet these expectations and to act when they do not. Beyond this, governments are channels for some of God's actions in history, both in building His kingdom and in judging evil. Christians cannot discern all of these acts with confidence, but they can be His instruments in them as they obey the leading of the Holy Spirit.

A second basic principle is that there are, and must be, limits on man due to the pervasive presence of sin. These limits take several forms. First, they are necessary for the governmental and economic institutions, to withhold from their leaders more power than they can responsibly use. It may be necessary to sacrifice some power to do good in order to minimize the evil that could be done instead. Se-

cond, there must be limits on individual and group acquisitiveness and exploitation of the earth. The greed of the wealthy denies God's material gifts to the poor of their own generation and to all in future generations. Finally, there are limits to the wisdom that any person or institution can claim. The fallibility of all human knowledge and reason dictates that choices of futures not be left to a self-anointed few but be shared among as many enlightened citizens as possible.

These principles suggest a movement toward a compassionate government that acknowledges its accountability to God and its citizens, one that respects constitutional and political limits on its own power but imposes, through law, limits on popular excesses as well. Which of the four models best describes this? None does completely, but many combinations could be acceptable, if not ideal. The Christian community should examine and debate these possibilities as its response to *1984*. What political action it takes will not be the gateway to the Kingdom of God, to be sure. Nevertheless, as Richard Mouw has suggested, "participation in the structures and institutions of the present age is not a mere 'holding action' but a legitimate means of *preparation* for life in the kingdom which is yet to come in its fullness."[16] In that potential, a Christian futurist finds hope.

REFERENCES

[1]David Goodham, "Countdown to 1984: Big Brother May Be Right on Schedule," *The Futurist* 12 (December 1978), p. 347.

[2]See, for example, E. F. Schumacher, *Small is Beautiful*, New York: Harper & Row, 1973, and L. S. Stavrianos, *The Promise of the Coming Dark Age*, San Francisco: W. H. Freeman, 1976.

[3]Harold D. Lasswell, "The Garrison State," *American Journal of Sociology* 46 (January 1941), p. 455.

[4]*Loc. cit.*, p. 459.

[5]*Loc. cit.*, p. 466.

[6]William Ophuls, *Ecology and the Politics of Scarcity*, San Francisco: W. H. Freeman, 1978, especially chapter 8.

[7]Herman Kahn, William Brown, and Leon Martel, *The Next 200 Years: A Scenario for American and the World*, New York: William Morrow, 1976.

[8]The best known expression of this view is in Donella H. Meadows, *et al*, *The Limits to Growth*, New York: Universe Books, 1972. Most futurists have rejected its imminent catastrophism, however.

[9]John Kenneth Galbraith, *The New Industrial State*, New York: New American Library, 1967, chapter XXVI.

[10]Bertram Gross, "Friendly Fascism: A Model for America," *Social Policy* (November-December 1970). Reprinted in Franklin Tugwell, *Search for Alternatives*, Cambridge MA: Winthrop, 1973, pp. 287-301.

[11]Gary Gappert, *Post Affluent America: The Social Economy of the Future*, New York: New Viewpoints, 1979, p. 20. Hobbes' statement is from *Leviathan*, Indianapolis: Bobbs-Merrill, 1958, p. 107.

[12]Robert L. Heilbroner, *An Inquiry into the Human Prospect*, New York: W. W. Norton, 1974.

[13]Gappert, *op. cit.*, p. 21.

[14]Ophuls, *op. cit.*

[15]These are most clearly set forth in Romans 13:1-7 and in Psalms 2 and 82.

[16]Richard J. Mouw, *Politics and the Biblical Drama*, Grand Rapids: William B. Eerdmans, 1976, p. 138.

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

Part 14

Determinism and Free Will
(A) Scientific Description and Human Choice

RICHARD H. BUBE

Department of Materials Science and Engineering

Stanford University

Stanford, California 94305

In the previous installment we touched on the nature of scientific descriptions that are cast into a "deterministic" or "chance" mode, where we argued that a Worldview cannot be unambiguously fashioned out of either one of them. We used this argument there to maintain that the issue between Creation and evolution was not properly expressed in terms of a dichotomy between these two forms of scientific description. The issue of determinism and chance, with its alternate forms in determinism vs free will, or God's sovereignty and man's responsibility, deserves further consideration on its own. In a day in which behavioral scientists insist that human choice can be treated within a wholly deterministic framework, while at the same time avant garde scientists insist that the power of the human mind can dominate all of reality in a burst of absolute freedom, it is appropriate to reflect a little further on the significance of these issues for the Christian scientist who attempts to integrate his scientific perception with his/her Christian faith. In this installment we consider some of the facets of the determinism/free will paradox, and in the following installment we show how the practical consequences of one's conclusions in this area profoundly affect topics related to crime and punishment.

Determinism vs Free Will

The form of the paradox in which determinism is pitted against free will has both a secular and a theological content. In a secular sense the issue is whether a human being is so controlled by his genetic and environmental inputs that his choices flow inevitably from these inputs with any indication of actual choice being nothing more than an internalized illusion, or whether a human being can indeed make responsible choices above and beyond the aspects of life that form his/her living context. In a theological sense the paradox is well known as the historical Calvinist/Arminian controversy: whether a person's coming to saving faith is the inevitable consequence of God's determining election, or whether a person's coming to faith is an act of free human choice among equally possible alternatives. As usual some attention to the definition and meaning of these two terms is helpful. It is quickly realized that Determinism and Free Will taken in an absolute sense are both idealizations rather than faithful descriptions of reality.

Classical (pre-quantum) physics is often taken as the archtype of determinism; but such strict determinism can be postulated theoretically but never realized experimentally. Consider, for example, a wheel mounted without friction so that it can rotate freely about its axis that passes through its center.[1] Its orientation, as described by the angle with respect to a reference direction, changes linearly with time according to the magnitude of the angular velocity. A slight change in the angular frequency introduces a slight change in the reference angle; but no matter how small this change in angular frequency is, we can always wait a sufficiently long time to obtain any value we wish for the reference angle. Thus, regardless of how small the uncertainty is in the angular velocity, as set by initial conditions, the orientation of the wheel itself is completely undetermined if we wait long enough. If such a demonstration can be made within the context of classical physics itself, we have little need of the more dramatic demonstrations from modern quantum physics.

On the other side, no will is ever completely free. There can be no debate but that many choices are not open to us precisely because of our ancestry, our parents' education and financial status, the country and location of our birth, accidents that befell us in growing up, and any of the many other factors that are encompassed by speaking of genetic

and environmental determinism. In reality, we find elements of both determinism and "free will" in all aspects.

"Free will" has other limitations, which do not allow a simple analogy with scientific descriptions. "Free will" is an attribute of a human being, indicating the ability to make a significant choice of possible meaningful alternatives. The consequence of modern quantum theory that atomic particles do not have completely determined position and velocity tells us absolutely nothing about the validity of speaking of "free will" as a human action. If this is true, then it is also true that an overturning of modern quantum theory to return to a fully deterministic mechanics would also have no necessary consequence for the significance of "free will" as a human activity.

As mentioned above, the determinism vs free will controversy in a secular sense is the counterpart of the sovereignty of God (predestination) vs responsibility of human beings (human choice) in the theological realm. If it is true that for the Christian, the latter paradox (*not* a contradiction) is responded to by holding both facets in tension, recognizing that they address different questions in different contexts, perhaps a clue can be obtained from the theological to guide a response to the secular dilemma.

In quantum physics a deterministic description can be given if the variables involved are probability distributions and not "particle" positions and velocities; if it is insisted that particle positions and velocities must be discussed as the variables, only an indeterministic (chance) description can be given. A scientific "chance" description does not inherently mean "meaningless," but only that scientifically definable causes are not discernible. These two types of description take their place with the position vs velocity, and particle vs wave paradoxical pairs—and all may be considered as examples of complementary descriptions. Complementary descriptions are those that are reliable within a given context, but not apparently reconcilable with each other in general.[2] Out of this framework comes another clue as to how to regard the determinism vs free will dilemma.

Both Determinism and Free Will taken in an absolute sense are idealizations rather than faithful descriptions of reality.

It is worthwhile to note that we often use our "free will" in order to become "determined." An example is the use of practice to develop a manual skill such as playing an instrument or typing. Another example is the conscious development of good habits—what after all is a habit, but the development of a determining pattern of behavior? Many biblical exhortations call us to develop patterns of thinking so that we may *not* be "free" to sin. They emphasize that our choices for mental meditation have a profound effect on our lives. The person who habitually chooses to turn away from God, is eventually hardened in this position so that he/she is no longer able to turn back to God. Many biblical passages speak of the will as bound by sin, so that the human being by nature is not free to choose to be obedient to God.

Redefinitions Within the Human Context

It is probably necessary to redefine the terms "determinism" and "free will" in the context of human activity. Consider the following definitions of human *acts*: (1) a determined human act is an involuntary act performed out of physical necessity, e.g., knee-jerk reaction, decrease in size of the pupil in a bright light, "flight" instinct when faced with sudden danger; (2) a human act carried out by free will is a voluntary act representing a responsible choice, e.g., whether or not to get up, to lie down, or to steal. This is not to deny that it is possible for a human being to be so conditioned that it becomes very difficult indeed not to steal; given the appropriate conditions this may indeed become "second nature" to the individual. In such a case the realm for "free will" choices has just been greatly reduced from that of a person without this conditioning.

Certainly everyday experience indicates that both types of acts described above occur in every person's life. For a person to be so conditioned that no area of "free will"—i.e., no area of voluntary responsible choice is left—is equivalent to reducing that human being to the condition of an animal or a machine. To be sure such inhumane treatment can occur, but to maintain that its possibility argues for its inevitability or its general applicability to all human activity violates common personal experience.

Scientific Descriptions of Responsibility and Choice

When we ask what type of scientific description is most commensurate with responsible human choice—a deterministic or a chance description—we are faced by a curious paradox. If we define "free will" as a voluntary act representing a responsible choice, i.e., a choice for which we can

This continuing series of articles is based on courses given at Stanford University, Fuller Theological Seminary, Regent College, Menlo Park Presbyterian Church, Foothill Covenant Church and Los Altos Union Presbyterian Church. Previous articles were published as follows. 1. "Science Isn't Everything," March (1976), *pp.* 33-37. *2. "Science Isn't Nothing," June* (1976), *pp.* 82-87. *3. "The Philosophy and Practice of Science," September* (1976), *pp.* 127-132. *4. "Pseudo-Science and Pseudo-Theology. (A) Cult and Occult," March* (1977), *pp.* 22-28. *5. "Pseudo-Science and Pseudo-Theology. (B) Scientific Theology," September* (1977), *pp.* 124-129. *6. "Pseudo-Science and Pseudo-Theology. (C) Cosmic Consciousness," December* (1977), *pp.* 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. *13. "Creation (B) Understanding Creation and Evolution" September* (1980), *pp.* 174-178.

be meaningfully blamed or praised, then such responsible choices seem to call for an orderly scientific description within the confines of cause and effect. But this is the type of description to which we give the title, "deterministic." It is needed in order that scientific descriptions of the subsystems of the human being may provide the framework for regularity, predictability, order and repeatability—all of which are characteristic of responsible choices in many instances. To invoke a "chance" description, a description in which cause and effect cannot be mechanistically or mathematically related, in order to safeguard the reality of "free will" provides no basis at all for a responsible choice. What responsible choice ever arose from a chaotic, unrelated, and random pattern of activity?

We are therefore led to the following curious paradox: Determinism appears to threaten Free Will philosophically—for how can what is determined be free, but is essential for it—for how can a responsible choice exist without being describable in a cause and effect framework? Similarly Chance appears to make room for Free Will philosophically by removing the constraints of determinism, but renders true responsible choice impossible by reducing the situation to a random, unpredictable and unrepeatable case.

Furthermore it must be remembered that when a large number of individual chance events of the same type are taken together, an apparently deterministic result follows. The average lifetime of my generation is well defined plus or minus a couple of years, but whether any one of us will die tomorrow is virtually unknown. Thus a substratum of chance events at an elementary level can still give rise to deterministic behavior at a more complex level. According to modern quantum mechanics the radioactive decay of a radioactive element is totally a probabilistic (chance) phenomenon; when any particular atom will decay can be described *only* in terms of probability (no known cause exists), but when half of the ensemble of a large number of atoms will decay is a highly determined and determinable quantity: the half-life of the element.

These examples reveal the danger in assigning ultimate philosophical or metaphysical meaning to the terms of determinism and chance used in scientific descriptions. If the design of the water molecule reveals the necessity for hydrogen and oxygen atoms to exist in one and only one lowest energy relative configuration (the structure is determined), the design of the DNA code reveals an arrangement attributable only to chance in a scientific description since there is no single lowest energy state—else all human beings would be identical. Thus determinism can be the instrument of design, but so can chance; the creativity expressed in the creation of the multiplicity of human beings is expressed scientifically through the chance assignment of DNA configurations.

An Experimental Test

Pursuing this same line of reasoning further we may ask what kind of experimental test or measurement can be made to help decide the determinism/free will dilemma.

One might invoke a kind of Indeterminacy Principle in such an experiment, arguing that conditions that make it possible to test for determinism or free will so alter the state of the experiment that the original question cannot be meaningfully answered. For example, the test of determinism might involve a large number of electrodes implanted in the human brain so that appropriate sampling of all brain processes can be carried out; since these electrodes must all be hooked up to a detecting apparatus, the experimental subject is hardly free to do much of anything! To put the subject into an ideal environment for free choice would be to separate him/her from all other inputs or influences so as to minimize environmental effects and leave open the basic exercise of free choice; but in that isolated condition an experiment can hardly be carried out.

We often use our "free will" in order to become "determined."

One might argue that these are limitations imposed only by existing technology and may be expected to be overcome in the future (the same objections are often leveled against the Heisenberg Indeterminacy Principle in quantum mechanics) by better techniques or the understanding of more fundamental variables. Be that as it may, the question still remains as to what kind of experimental test would settle the question even if these operational problems were absent. If a decision is accompanied by a continuous set of phenomena and patterns in the brain waves, thus providing the basis for a deterministic description of decision-making at the biochemical level, should this be interpreted in favor of or opposed to a free choice? If a responsible free choice should not be described within a deterministic framework at the biochemical level, how should it be described? And if a deterministic description of biochemical reactions is consistent with a free choice, how can one claim that free choice is an illusion simply because a deterministic description on the biochemical level is possible?

Indeed one is led by this line of argument to conclude that the ability to present a deterministic description does not help to settle the determinism/free will paradox, but that the actual experimental finding of a chance situation would enable one to rule out the reality of responsible choices. Here we are again confronted with a usual dilemma. A series of phenomena that can be described scientifically only as chance events at one level of organization frequently manifest themselves as deterministic descriptions at a higher level of organization in which many such chance events participate. Might we not then argue that somehow "free will" expresses itself through the randomness of the lower level and manifests itself through the deterministic properties of the higher level? Experiments revealing chance on the lower (biochemical) level do not therefore

necessarily imply that a deterministic description at the level of the whole person's decision making is absent. Therefore, once again, the experimental results are ambiguous and the finding of a chance behavior may well be compatible with a person's free choice.

We may conclude that no scientific experiment seems possible that would enable us to decide between the validity of an absolute "determinism" and an absolute "free will." Such an outcome suggests that common definitions of these terms are inappropriate, and that they represent complementary approximations to a more complex whole.

Knowing the Future

If it were possible for someone to know my future, would this in itself constitute a violation of my ability to make free responsible choices? Sometimes people are intimidated by the biblical teaching that God knows the future as though it were present, and argue that if this were true, we would all be automata and fatalism would be the only appropriate philosophy. In order to be free in their perspective, *no one* must be able to know the future. Reflection on the question, however, reveals that our freedom to act from within our own context is in no way limited or infringed by the possibility that another person might know the future. Indeed it is this weak form of "foreknowledge" that has often been advanced to soften the stronger biblical "predestination" in an attempt to avoid the grips of the stronger predestination/free will paradox.

A variation of this problem has been treated at some length in several publications by Donald MacKay.[3] MacKay supposes that our brains are totally deterministic and that a person could take information from the present state of a person's brain in order to predict the future state of the brain for that person. MacKay then asks if such a possibility is an infringement upon my freedom to make choices. His answer is in the negative, for he argues that there is no such description of the future that is binding upon me whether I know it or not, or whether I like it or not. The nature of human consciousness is different from that of the planets in their orbits, for example; the occurrence of an eclipse in the future can be predicted with considerable accuracy. Making this information public does not change the situation. In the case of human consciousness, however, to be told the prediction would in itself alter the condition of the brain and render the prediction not something that I would be correct to believe and incorrect to disbelieve. The reader who wishes to pursue all the nuances of this claim is urged to investigate the referenced literature.

Determinism appears to threaten Free Will philosophically, but is essential for it. Chance appears to make room for Free Will but renders it impossible.

Summary

Attempts to resolve the determinism vs free will controversy in terms of some neat dichotomy are an illusion. These two aspects of reality are interwoven throughout our entire lives so that they form more the two aspects of one reality, than two competing absolute worldviews.

Attempts to relate the forms of scientific description to the realities of personal life are equally nonproductive. A deterministic scientific description appears most compatible with a responsible human choice, but is commonly believed to make such responsible choice impossible. Relief from determinism through an appeal to chance appears to make other options possible, but a responsible choice is not one of them since it is hardly compatible with random noncaused activity.

Questions dealing with determinism and free will must abandon the question for a general answer, and ask instead: To what extent am I determined while at the same time to what extent am I free? Appropriate areas and interactions for both exist within the context of a meaningful human life.

REFERENCES

[1] J. M. Jauch, *Are Quanta Real?*, Indiana University Press, Bloomington (1973)

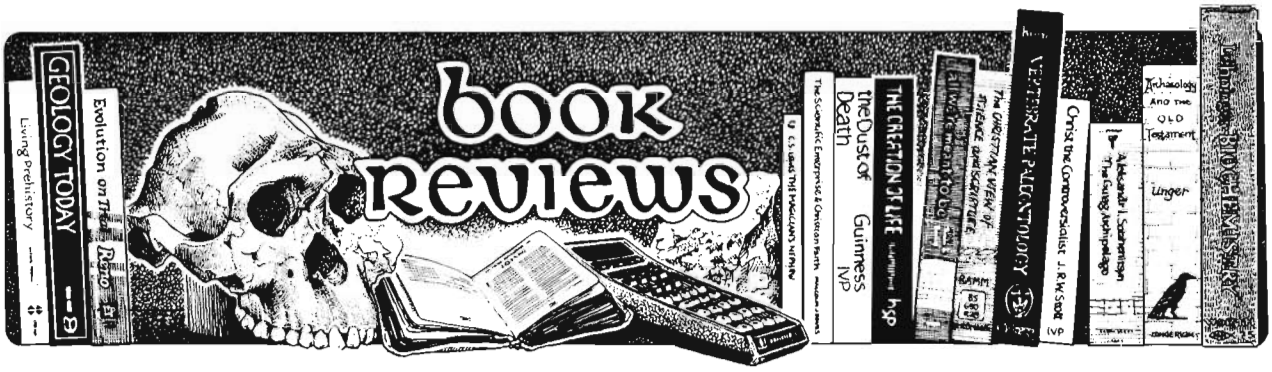
[2] Paul T. Arveson, "Dialogic: A Systems Approach to Understanding," *Journal ASA* 30, 49 (1978)

[3] See, for example, Malcolm. A. Jeeves, *The Scientific Enterprise and Christian Faith*, Tyndale, London (1969) pp. 148-152

D. M. MacKay, *The Clock Work Image*, InterVaristy Press, Downers Grove, Illinois (1974); *Human Science and Human Dignity*, InterVarsity Press, Downers Grove, Illinois (1977)

J. A. Cramer and D. M. MacKay, "The Clockwork Image Controversy," *Journal ASA* 28, 123 (1976)

William Hasker and D. M. MacKay, *Christian Scholars Review* 8, 130-152 (1978)



THE GOLDEN COW: MATERIALISM IN THE TWENTIETH-CENTURY CHURCH by John White, Inter-Varsity Press, 233 Langdon St., Madison, WI 53703, 1979, 175 pages ($3.50, paperback).

Consider the following scenarios: Scenario 1. An obscure cleric in studying the Bible concludes that the church has been wrong for over one thousand years about the major issue of the faith—how a person is to be saved. As he proclaims his discovery, great controversy erupts, many people of high and low station are persuaded, vast social and political changes ensue, wars are fought, and eventually as equilibrium is established the course of Christendom and the world is altered for all time.

Scenario 2. An obscure cleric in studying the Bible concludes that the church has been wrong for ages in its proclamation of the gospel. The church has been preaching and teaching the faith in English, German, Chinese, Russian, etc., whereas (our cleric becomes convinced) the true understanding of God's message can be attained only through Greek and Hebrew. As he proclaims his discovery, great controversy erupts, many are convinced, and a large segment of the church doggedly sets about the task of translating all their materials, from Pilgrims Progress to the latest Sunday School Quarterly into Greek and Hebrew, teaching these languages to all their members, and then getting on with the work of the church. From now on, becoming a Christian means spending years in language study so that the truth can be fully understood.

The first of these scenarios roughly describes something which has happened—the Reformation. The second describes events which to my knowledge have not occurred and, hopefully, never will. But I have described these to emphasize that the historical church can be amiss on the large issues as well as the small and that sometimes cleaning house can be no small task. Certainly the church must consider any challenge that she has strayed from the standards of the biblical faith.

John White's *The Golden Cow* contains such a challenge. The thesis of the book is that the entire church, including yours and my favorite evangelical parachurch organization, has so completely absorbed (if not embraced) Western pragmatic materialism that every aspect of church life is tainted. This is an impassioned plea to all of us to draw our inspiration and shape our practices from the biblical message and not from Madison Avenue and the boardrooms of the giant corporations. Should White's message strike its intended target and produce the changes he calls for, vast indeed would be the implications—surely the world would be changed.

The early chapters of the book deal with the biblical prophets' response to unbelief and idolatry. Although White's major image is that of Jesus driving the merchants from the temple with a homemade whip, he devotes more space to the Old Testament prophets' use of the "adultery" theme to describe Israel's unfaithfulness to Yahweh. The point is that only such shocking language can begin to describe the folly, immorality, and disgrace of God's people forgetting "who they are and to whom they belong." This section is not a series of proof texts but rather in it the author paints a picture, using appropiate biblical images, to show us, the modern North American church, how tragically absurd is our turning from a simple trust in our God to the schemes, the mindset of our age.

White uses the word "materialism" to characterise this mindset. He contrasts philosophical, doctrinaire materialism, which asserts that matter is all there is, with the pragmatic materialism of our culture. This latter materialism consists of *acting* as if this world is all that matters, regardless of what philosophy, or set of beliefs, one claims to hold.

His point is that the North American church, no matter how pure her doctrine or lofty and spiritual her values in theory, actually practices materialism in her activities—how money is raised and where spent, the striving for things and financial security among Christians, the investment in pew cushions and stained glass. Observing these values one cannot but admit that practical materialism permeates our thinking and actions.

The author next addresses individual Christians. As one would anticipate, he expounds the familiar passages of the New Testament on riches, centering mainly on the passages in the Sermon on the Mount. He carefully avoids legalisms, driving again and again to the question of motives and attitudes. Of course, these passages are strong and radical, and White does not have to labor very hard to prove that the Scriptures warn of the peril of spiritual dilapidation under the pressure of wealth.

In this section White makes a significant distinction be-

tween the Pauline teaching about justification by faith and the focus of Jesus' teaching and concern, which is "How can we know when justifying faith is present?" White asserts that

> One answer Jesus gives is that faith in the invisible God can be demonstrated by [a Christian's] power over material things, either power to manipulate them or power to escape enslavement to them. . .We must be suspicious of any faith about personal justification that is not substantiated by faith in God's power over material tings in our everyday life. . .*Enslavement to the visible makes faith in the invisible suspect.* (p. 53f, his emphasis).

Thus does White elevate the question of our capitvity to material things to one of fundamental importance.

The author's strongest words are directed to Christian institutions—churches, denominations, mission boards, religious publishers and bookstores, etc. White is concerned about the role materialism plays in the decision, money raising methods, and values of such groups. Of course he decries the "Money Talks" mentality, but he is also concerned about broader issues, such as lack of reverence for the name of our Lord (Jesus T-shirts) and manipulation of people with modern marketing techniques on behalf of the Almighty. One of the most fascinating parts of the book is where White, a practicing psychiatrist, gives a step-by-step procedure for brainwashing people into the Kingdom at evangelistic meetings. He calls upon evangelists to renounce such techniques and rather to inform and reason with the unsaved.

In this section about Christian institutions, White occasionally betrays anger and bitterness, as when he describes Christian organizations as "dignified vultures" because they try to get included in donor's wills. But on the whole, the author reasons, warns, and pleads with the church, his "adulterous mother," to turn again to simple trust in God and biblical ways.

White is a skilled writer and he writes here with great passion and conviction. This book will challenge any serious Christian and this book will, I suspect, depress many, as it did me. In one of my opening scenarios, I referred to Luther's touching off the Reformation. Of course, it took more than one man's activity to reform the church—the times has to be right. Are the times right for the church to hear White? Are many Christians or Christian institutions apt to heed his warnings? My experience as an individual Christian struggling with these issues is that the social currents are strong and it takes considerable effort to swim against them. I for one need much support from fellow strugglers—ideally a Christian sub-culture committed to radical, biblical values. This is, of course, the goal of the Christian community movement. That this movement is still laboring to get off the ground tells me that probably the times are not yet right. Meanwhile, let us hope that White's warnings find their target and aid us in our struggles to become increasingly free of our cultural captivity.

Reviewed by J. R. Cogdell, Department of Electrical Engineering, The University of Texas at Austin, Texas 78712

CONTEMPORARY MISSIOLOGY: AN INTRODUCTION by Johannes Verkuyl (translated and edited by Dale Cooper), William B. Eerdmans Publishing Company, Grand Rapids, Michigan. Clothbound, 414 pages, plus xiv pages, (1978) $14.95.

To missiologists this opus of Verkuyl bespeaks of erudicity and comprehension that makes its author a most capable leader and spokesman among his peers in the Reformed Church tradition. Although the subtitle is "An Introduction," the volume is not really that in the sense that most instructors in missiology or courses in missions will want to confront the beginning student with it. Nor is the book merely a compendium or survey; it is both, but its wealth of information with accompanying analysis—all within about 400 pages—actually prompts this reviewer to conclude that the book should be considered a modified encyclopedia of missiological thought and personnel. If this conclusion has any validity, the volume is something that lends itself less to introductory study than to a reference source for students engaged in advanced study as in some seminar on missions.

Books Received and Available for Review

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

Brown, R.M., *Creative Dislocation - The Movement of Grace,* Abingdon.

Caird, G.B., *The Language and Imagery of the Bible,* Westminster.

Carmody, J., *Theology for the 1980's,* Westminster.

Custance, A.C., *The Mysterious Matter of Mind,* Christian Free University Press.

Ellison, C.W., *Loneliness: The Search for Intimacy,* Christian Herarald.

Erickson, E.E., Jr., *Solzhenitsyn: The Moral Vision,* Eerdmans.

Gallup, G., Jr. and Polling, D., *The Search For America's Faith,* Abingdon.

Hulme, W.E., *Mid-Life Crisis,* Westminster.

Jung, C., *Psychology and Alchemy,* Princeton-Bollingen.

Maier, J. and Tollers, V. (editors), *The Bible in its Literary Milieu,* Eerdmans.

Mollenkott, V.R., *Speech, Silence, Action! The Cycle of Faith,* Abingdon.

Roberts, J.D., *Roots of a Black Future: Family and Church,* Westminster.

Shaeffer, J.R. and Brand, R.H., *Whatever Happened to Eden?* (Earth's Energy-Environment Crisis Opens Doors to New Prosperity), Tyndale.

Sider, R.J. (editor), *Cry Justice* (The Bible Speaks on Hunger and Poverty), InterVarsity.

Silk, J., *The Big Bang: The Creation and Evolution of the Universe,* Freeman.

Sire, J.W., *Scripture Twisting: 20 Ways the Cults Misread the Bible,* InterVarsity.

Skillen, J.W., *Christians Organizing for Political Service,* Association for Public Justice Education Find.

Steck, O.H., *World and Environment,* Abingdon.

Torrance, T.F. (editor), *Belief in Science and in Christian Life,* (The Relevence of Michael Polanyi's Thought for Christian Faith and Life), Handsel.

Van Scoyoc, N.J., *Women, Change and the Church,* Abingdon.

Woodfin, Y., *With All Your Mind: A Christian Philosophy,* Abingdon.

This is not to say that a novice in missiology will be unable to profit from reading or consulting Verkuyl's effort; the beginner will be able to glean many rewards for any serious reading, but such novices will be aided much when an instructor stands by to guide the student through the labyrinth of historical and ideological pathways and persons brought within the book's horizon. The instructor using the book as a text with routine and sequential assignments, chapter by chapter, will likely overwhelm, if not confound, those without introductory background in the study of Christian missions.

These strictures are not intended to reflect negativism toward a well-written and comprehensive statement of missiology, but rather to note that the author has undertaken a difficult self-assignment. In the past generation or two, especially the period following World War II, many dramatic and profound alterations have characterized the science of missions. As the book's jacket correctly notes, the missionary enterprise is no longer unilateral; that is, it is no longer (if ever it seemed to be to ethnocentric Western mission personnel) a program emanating from Western sources and carried only by Western missionaries elsewhere in the World. Increasingly, despite considerable and grudging reluctance among Western mission scholars, the missionary task is being accomplished *with* and not merely *for* individuals and groups outside the West. Verkuyl is to be commended highly in recognizing that missiology in today's post-colonial world is a universal endeavor with the emergence of missiologists from the so-called developing countries.

Of course this reviewer cannot entirely suppress his ethnocentric ambivalence when Verkuyl allocates greater emphasis to European missiologists over American in Western Christianity. As a Christian ethnologist with decades of interaction with mission programs and personnel, this reviewer is led to commend Verkuyl for indirectly chiding American missions personnel who regrettably concluded for much too long that Christian missions have been, and can be, successful only if American schemes and methodology are adopted and dominant worldwide. On the other hand, this tendency to slight the American role will perhaps offend some missiologists west of the Atlantic Ocean.

With this in mind, we may note the struggle among American missiologists as a spinoff aspect of theological conflict between conservatives and liberals. The conservative Christians in America, whether identifying as "evangelical" or "fundamental," will be far less favorable to Verkuyl's advocacy of ecumenicity in world-wide missions. This reviewer must confess to a rather pronounced conservative tradition; hence, some of Verkuyl's views on ecumenical theory and methodology do not meet with the warm reception that perhaps they might in some theological and missiological circles. We must admit, nonetheless, that he presents a plausible case for every missiologist considering the most effective means for the Christian evangel in today's complex world.

And, we must hasten to add, Verkuyl has skillfully but not obscurely woven into the fabric of his presentation the imperative threads of biblical doctrine centered in the pivotal issue of Jesus Christ, God's unique Son, as the only "Way," "Truth," and "Life." He does not equivocate in this critical focality for missiology, especially in his treatment of "The Biblical Foundation" in Chapter 4. But he seems to wander a bit from this "Foundation" as he seeks to relate it to what he envisions as necessary in ecumenicity. It may be that those more familiar with the Reformed Church tradition will not experience the theological discomfort experienced by this reviewer; certainly the extremely conservative, or "fundamentalist," missiologists will sharply disagree with his ecumenical conclusions!

In a more positive vein, and in the author's awareness of contemporary conditions as in the Middle East, Verkuyl appropriately devotes a chapter on missiology in relation to Jewish people and the state of Israel. It is common knowledge that this has been a nagging problem from the inception of Christianity as historically outlined by Luke in the Book of Acts; and, of course, the problem has its inspired treatment by Paul in Romans 9-11. Verkuyl seems to be both cautious and correct, after admitting to the thorny nature of the Christian witness to Jews, when he suggests: "There is no better means of communication to be found anywhere than the means of personal friendship; that is, one becomes so interested and involved in the life of the other person that he actually suffers along with him in times of crises and tension and comes to the alert when a dread anti-Semitism once again bares its ugly head. ." (p. 141). And this reviewer agrees when he adds; ". .Genuine love always finds a way (to communicate the Christian message), and if we really love the people of Israel as we ought, we shall never be without means of reaching them" (p. 142). While the Jews are the immediate context for this suggestion, Verkuyl lays bare an imperative theoretical dimension that has application universally.

Furthermore in positive assessment is Verkuyl's attention to "Black Theology," and "Theological Developments in Asia, Africa, and Latin America" (Chapter 11). As a Christian ethnologist, I fully concur with his conclusion that many misconceptions and delusions tenaciously cling to the theological work being done outside the West. Undoubtedly this is in part the result of a myopic fusion of ethnocentrism and ignorance on the part of some Western theologians. One hears that non-Western theology is merely a Western import, a reproduction, and a potted-plant variety. But, says Verkuyl, serious missiological study reveals clearly that non-Western Christians have, and increasingly, offered theological traditions worthy of Western consideration.

To continue, as Verkuyl observes what he labels "the impact of young churches," he detects approvingly that the established churches in the West are losing their dominance because the "young churches" elsewhere object to the demeaning phrase, "daughter churches," which gives the impression that they are mere satellites of established churches in the West. Increasingly, these non-Western churches have their own destiny, are proud of it, and want to divest themselves of the vassal status which Western ecclessiastical

imperialism imposed upon them. This reviewer heartily concurs!

On the other hand as an ethnologist, one is somewhat disappointed to find Verkuyl surveying "Trends in the Theology of Religions," seemingly unaware of the Christian anthropologist, Charles Kraft, who, though controversial among evangelical missiologists, merits inclusion in Verkuyl's analysis. Especially since it is obvious that Verkuyl recognizes the critical implications that bear upon cross-cultural communication of our Christian evangel, for no analysis of contextualization and the culture concept—which this reviewer views as demanding high priority in evangelical missiology today—in respect of emerging theological trends should neglect Kraft's probes.

This, rather regretably, leads one to further negativism in that Verkuyl, while following conventional Reformed Church missiology, seems inadequately alert to ethnological theory in social forms and dynamics. It would have added to his analysis if, for example, he had distinguished between "institution" and "association" somewhat as has the sociologist, Robert M. MacIver; for this scholar envisioned associations as groupings in society while the established forms of procedure linked with group action as the institution. Verkuyl fails to discern sharply, as is necessary in missiological study, between the church structure and the church dynamics. Hence, as Jacques Ellul would put it, the "means" threaten to become the "end"; that is, there tends to be the glorifying of the "body of Christ" rather than the "end" which is the "Head" or the Person of Christ.

We cannot in this review engage in the "chicken and egg" argument, but a sharp distinction must be made between the Church as the "body" and "means" to accomplish the "Head's" purpose and glorification. Roman Catholics in recent decades have begun to wrestle with their traditional and excessive emphasis upon the "body" which in their hierarchical structure had in essence become the "end" for the perpetuation of itself; the avowed glorification of God had tended to be merely rationalizational clichés to maintain the institution.

One final comment: It is a bit unfortunate that Verkuyl's opus is mostly encyclopedic with no index of subjects to aid its reader in sifting through it rich contents (although it does have an index of persons considered in the text). As a wealthy repository with much useful material, an index would enhance the book's use. Despite all these negative comments, this book should be in every missiologist's library and available for consulting by all serious students confronted by today's missions' challenge.

Reviewed by George J. Jennings, Associate Professor in Anthropology, Executive Secretary, Middle East Christian Outreach—USA, Geneva College, Beaver Falls, Pennsylvania 15010.

ENCYCLOPEDIA OF AMERICAN RELIGIONS

by J. Gordon Milton, Consortium Books, Box 9001, Wilmington, North Carolina 28402, 1100 pp, $135.

The *Encyclopedia of American Religions* by J. Gordon Milton, a Methodist minister, is the most extensive work ever written in the area of minority American religions. Milton describes the history, practices, and beliefs of 1,200 distinct religions and classifies them in a system which helps the reader understand the place of each religion in the American religious scene. The volume is an indispensible reference work for religious schools and libraries in general. In many cases it is the only source of information about the countless small American religious groups.

Milton, in compiling the materials for this massive two-volume set, spent 16 years and collected literally tons of literature about the American religions he studied. He has spent hundreds of hours researching and traveling, extensively interviewing leaders and members alike. He is probably the foremost authority on minority American religions today. The only previous works in this area were Elmer Clark's *The Small Sects in America* which is now very outdated, and Arthur C. Piepkorn's *Profiles in Belief.*

Because of the increased prominence of groups such as the Moonites, the Children of God, Scientology, and the People's Temple, scholars are increasingly looking at the phenomenon in America known as "made in America small religious sects." This reference work will likely be the starting place for the serious researcher. In addition, those confronted with various religions who need a brief background about the religion will find Milton's work indispensible.

The book would be an excellent beginning source for students wanting to complete a doctorate dissertation in one of the small American religious sects. It would introduce them to the myriad of extant religious sects which merit further study. With the exception of the Jehovah's Witnesses, the Seventh Day Adventists, the Mormons, Christian Scientists and the main line denominations, the majority of the American religious sects Milton catalogues have almost no published research about them.

Usually not until a religion achieves a degree of notoriety does there tend to be much written about it. Virtually nothing except occasional newspaper and magazine articles was available about the People's Temple in California until the recent tragic mass suicide in Guyana. Now, several serious scholarly studies are appearing and several books are already available.

Even information about groups such as the Christadelphians, a religion that has been a solid and important part of American religious life for the past one hundred years, is scarce. Except for short chapters in Bryan Wilson's work, and several incidental references in a few journals and books, outside information about the Christadelphians is unavailable. And this, in spite of the fact that the Christadelphians number in the thousands and produce a large amount of high quality, well-written, and

well-researched literature.

A pioneering aspect of Milton's work is that he attempted to group the religions according to families such as the Liturgical family, the Liberal family, the Adventist family, etc. This is the first serious attempt to understand and classify the vast panorama of American religion.

In biology, in order to understand the myriads of life, life is divided up into various categories including, for example, mammals, reptiles, amphibians, and birds. Classification is indispensible in understanding life. Likewise, in understanding the complex world of American religion, classification systems are necessary. Milton's classification into 17 families helps the reader quickly grasp the basic religious beliefs and orientations of the hundreds of religions Milton researched.

The myriad of American religions Milton includes are the mystical Hassidic Jews, psychics, groups that take psychedelic drugs, own communal property, practice yoga, worship UFO's, handle snakes, believe everyone is God, in no god, or the earth is square, oval, hollow, cubical, flat or does not exist.

One aspect which is often discussed is the numerous schisms which typically occur in American religion. For example, the Adventist family includes mainly the Seven Day Adventist Church, the Jehovah's Witnesses, and the Worldwide Church of God (Armstrongism), but from the Witnesses alone have sprung scores of religious sects including the Christian Believers Conference, Layman's Home Missionary Movement, Epiphany Bible Students, Pastoral Bible Institute, Dawn Bible students, etc. The reason for the splits are discussed, as well as differences between the schism group and the main group. These schisms have had almost no attention from the academic press.

The encyclopedia not only looks at the smaller, more fascinating religious sects, but also the larger religious denominations. For example, the Lutheran, Methodist, Congregational, Pentecostal, Catholic, and other main line denominations are all surveyed. In addition, the many divisions of these main line denominations are discussed. For example, the Pietist Methodist family is divided up into the Moravians, Scandinavian Pietists, and Methodistcism. Methodistcism, on the other hand, is divided up into numerous groups, including the Apostolic Methodist Church, Church of Daniel's Band, Asbury Bible Churches, the Reformed Zion Union Apostolic Church, etc. In addition, Milton compares the theology, liturgy, and ecclesiology of the main line denominations with other main line denominations.

The main drawback of the book is its brevity. In spite of being two volumes of 600 pages each, only a few paragraphs are devoted to most denominations. For example, the Adventist family has no more than a paragraph or two written about each group. Probably to do justice to each of the groups, at least a volume or more could be written on each one. The purpose, though, of the encyclopedia is to introduce the researcher to the basic beliefs and practices, and to classify most American religious sects and denominations. This it adequately does, although very briefly. The many references given will enable the researcher to explore further the groups he or she is interested in. Milton's other book, *A Directory of Religious Denominations*, includes the relevant addresses so the researcher can write to the organizations themselves for their own literature.

The book is printed on high quality, thick paper and bound in a durable cloth binding. It should hold up for library use, as well as make an attractive addition to the home library shelf.

In summary, Milton's book is a major attempt to understand and classify American religion, and especially minority American religions. The encyclopedia should become the standard reference work in this area, and at the same time serve as a stimulus for further research.

Reviewed by Jerry Bergman, Dept. of Educational Foundations and Inquiry, Bowling Green, Ohio 43403.

CLAIMS IN CONFLICT: RETRIEVING AND RENEWING THE CATHOLIC HUMAN RIGHTS TRADITION by David Hollenbach, S.J., Paulist Press, New York, Ramsey, Toronto, 1979, 219 pages, paper, $5.95.

For a proper evaluation of an approach to human rights we must ask: What is man? If after that we want to communicate with others we have to find a common basis, and if possible a common vocabulary. The book under review makes it clear how difficult both conditions are. It is easy to divide mankind in two groups: Christians and non-Christians, then to proceed to say that we have faith in common with one group and reason with the other. Do we have the common basis of reason with everybody? Are we always talking about the same things if we use the same words?

Dividing mankind into two groups in that way denies the basic unity of man. Fr. Hollenbach says (pg. 115): ". . .the theological influence operative throughout the discussion of rights is as a perspective which informs, limits and guides. . . .". (See also p. 126). My teacher, Prof. Vollenhoven (Amsterdam) used to quote Prov. 4:23, stating that all our activity has a goal, a direction, which is either towards God or away from Him. Neutrality, even in science, is impossible.

It is striking that on several pages of this book it becomes clear how close the Roman Catholic and Calvinistic traditions are, not only in the conclusions drawn, but also in the foundations for these conclusions: Striking since I find few references from one tradition to the other. Usually the references are limited to the places where a definite dogmatic disagreement exists, partly (maybe mainly) because the terminology is so different. Reading and comparing with what one reads in one's own tradition becomes a (rewarding) exercise in translation. We might then

translate incorrectly. Further study is needed.

For that reason I am hesitant (for now) to criticise some (few) statements. Maybe I misunderstand. Example: p. 117: "Every human person is redeemed by Christ, called to the Kingdom of God. . ." I don't believe that every human person is redeemed by Christ. Still I am hesitant, since I found that the different terminology used might mean that I read in *my* tradition what Hollenbach wrote in *his*. That means that it is possible we agree when we have eliminated terminological difficulties.

As an example, that this is possible, consider page 126. In a discussion on reason-faith, in the context of nature-grace, I discovered that I could agree with most of what was said, by referring to (and translating in the language of) the Calvinist Belgic confession Art. 2, which talks about the way we know God: ". . .by the creation, preservation and government of the universe. . ." and by ". . .His holy and divine Word. . ."

Also, as another example, the schematic drawing on page 98 makes one think of some schemes used by some adherents of the Philosophy of the Cosmonomic Idea (the Amsterdam school). Further contact and cross-fertilisation might help both traditions. Above all it would help further unity among Christians. Discussion and study is needed.

To show how close the subject (and its treatment by Fr. Hollenbach) is to all of us I quote from Pope Paul VI, p. 121:

> Methodological necessity and ideological presuppositions too often lead the human sciences to isolate, in various situations, certain aspects of man, and yet to give these an explanation which claims to be complete or at least an interpretation which is meant to be all-embracing from a purely quantitative or phenomenological point of view. This scientific reduction betrays a dangerous presumption. To give a privileged position in this way to such an aspect of analysis is to mutilate man and, under the pretext of a scientific procedure, to make it impossible to understand man in his totality.

The direction of our lives becomes therefore important here and now, and not only for our future. Our daily studying, our research are affected by it. When we abstract, we abstract a part of creation. As Christians we can never talk about, "Mathematics, the man-made universe" as Stein did. All we are studying is always a very small part of a very great creation.

Claims in Conflict is a stimulating book. It gives not only direction to our thinking about human rights, but also (and it does so in a very interesting way) it gives an overview of the history of Roman Catholic thinking on this subject over the past 100 years. It tries to show the development in the answering of philosophical questions about man and the cosmos in a basically Christian context. Since all scientists are involved with many of the questions asked, I found this book a very worthwhile study and I hope it will further discussion and more unity among Christians.

Reviewed by Jan de Koning, Department of Mathematics, St. Michael's College, University of Toronto, Toronto, Ontario, Canada.

PROGRESS AND ITS PROBLEMS by Larry Laudan, University of California Press, Berkeley, 1977. $4.95 (Paper), 257 pp.

The author of this book, the former chairman of the Department of History and Philosophy of Science at the University of Pittsburgh, aims to set forth a justification for scientific knowledge in terms of its effectiveness in solving empirical and conceptual problems. The traditional viewpoint (p. 125) has been that rationality amounts to accepting those statements about the world which we have reason to believe are true, progress consists in successive attainment of truth by a process of approximation and self correction, and science (especially natural science) is one of the principal embodiments of rational thought and progress. This traditional approach has, in Laudan's opinion, suffered badly from recent (and not so recent) skeptical arguments, and so he feels that the time has come to offer an alternative. An approach to the world is rational, in Laudan's view, if it is *progressive* in the sense that *it makes progress in solving problems*. Whether it has any direct connection with truth or falsity is entirely beside the point.

What is it that has driven Laudan to this particular point of view? The prologue (pp. 2, 3) lists several reasons: (i) the definitions of rationality hitherto provided by philosophers of science do not agree with scientific practice; (ii) attempts to show that the methods of science guarantee that science will produce true or even probable or highly confirmed knowledge have failed; (iii) sociologists, historians and philosophers of science have been able to point to nonrational or irrational factors in scientific decisions, and have suggested that some of these factors may be essential. Laudan evidently wishes to maintain the notion that, despite these difficulties, scientific knowledge *is* rational, and he associates this rationality with the ability to solve problems.

Laudan recognizes some of the complex elements which enter the decisions which scientists make when evaluating the merits of different theories. He emphasizes—correctly, in my opinion—that the choice is usually between different theories, and that it is not a matter of evaluating some theory on an absolute scale. He points out that not all problems are equally important, and that it is possible for problems to have approximate solutions. The importance for a particular theory of a problem which it does not solve depends both upon the ability of competing theories to solve this problem and upon the scientist's (or research tradition's) view as to whether this problem lies within the domain which should be addressed by the theory. All of these assertions I found to be helpful insights and true to my own experience as a practicing research physicist. Occasionally Laudan takes a somewhat extreme position, such as his assertion that unsolved problems generally count as genuine problems only when they are no longer unsolved (p. 18), but even here one finds valuable insights behind the hyperbole.

I do not, however, think that Laudan has made much progress in solving the central philosophical problem he is

addressing, that of understanding scientific rationality. I have two objections to his central thesis, one technical and the other more fundamental.

First the technical objection. Laudan's approach depends in a critical way on the notion of a "solved problem," but he does not give a good explanation of what constitutes an acceptable solution. The proposal on p. 25, that a theory solves a problem if it features significantly in a scheme of reasoning leading to a statement of the solution, will be unacceptable to most scientists because it omits any mention of the "quality controls" which we use all the time in our research. For example, the assertion that hydrated copper sulfate crystals are blue "because they contain blue atoms" is in some sense a "solution" of the problem of the color of these crystals, but not one which would be acceptable in a modern scientific journal.

Laudan seems to be aware of the problem of quality control, for he tells us at the beginning of Ch. 3 that ". . .we must lay down adequacy conditions for determining when a theory provides an acceptable solution to the problems which confront it." Alas, neither in the remainder of that chapter nor in the remainder of the book could I find adequacy conditions applicable to colored-atom or other similar theories. It may be asking too much of a book devoted to the philosophy of science to spell out such conditions, since determining the acceptability of proffered solutions to empirical problems involves a complicated exercise of scientific judgment—as people who referee papers for research journals are well aware. However, this is precisely the difficulty with Laudan's approach: in order to understand why scientists think they have solved a problem, we need some notion of scientific rationality, and to define this rationality in terms of problem solving yields very little insight.

My second, and deeper, objection to Laudan's approach is that it has no place for a typical, if not universal, attitude among practicing scientists: that it is precisely *because* their theories have (something) to do with the real world, *because* they are true (in some approximation), that they are useful for solving problems. No doubt this attitude is naive to some extent. We are indebted to the historians of science for reminding us that scientists in the past had similar confidence about theories which modern scientists have discarded. And philosophers (including scientists-as-philosophers) have certainly encountered difficulty in establishing the claim that scientific procedures do lead to true and certain, or even approximately true and probably correct knowledge.

Despite these difficulties it seems to me unwise to follow Laudan and completely discard the typical attitude of the typical scientist towards his theories. Indeed, Laudan appears to be inconsistent at this point: he has let the failures of the rather unprogressive (by his own evaluation) discipline of the philosophy of science outweigh the insights of the progressive (in his sense) natural sciences.

In summary, Laudan's book is more effective at exposing and illustrating certain dilemmas of the modern philosophy of science than it is at proposing a cure. An improved account of scientific rationality would be a very worthwhile contribution to philosophy and perhaps to Christian theology as well, especially if one accepts the thesis that there are a number of parallels between scientific and theological thought. Perhaps some readers of this journal can do a better job than Laudan; I encourage them to try.

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

ADVICE TO A YOUNG SCIENTIST, by P.W. Medawar, New York, Harper and Row (1979) 106 pp., $8.95.

The author, Sir Peter Medawar, begins his preface, "I have tried to write the kind of book which I myself should have liked to read when I began research." He concludes with his "belief that the pursuit of universal learning to be acquired and applied to the benefit of all men for the common good (G.A. Comenius) is truly the *via lucis*, the way of light." This book is the second in the Sloan Foundation's series to encourage the public understanding of science by having "accomplished and articulate scientists set down their own accounts of their lives in science." It is highly recommended for all science teachers and aspiring young scientists.

The author has had experience as a teacher (departmental chairman at the universities of Birmingham and London), as a researcher (Nobel Laureat in medical science), and as an administrator (head of the British National Institute for Medical Research). A frequent collaborator himself he warns that such individuals must like and respect one another. Having had his wife as a coworker he notes that a husband and wife team can be effective only if they "love each other in the fully adult sense." He is particularly sensitive of one's moral and contractual obligations to one's employer, and above all, an unconditional obligation to the truth. The author's primary concern in this book is research.

He addresses himself to *questions* of youth. "How can I tell if I am cut out to be a scientist? How can I equip myself to be a scientist or a better one? What shall I do research on? Where does luck come into all this? If need be, can I opt out without a sense of self-reproach or misdirection? His answers form a guideline.

With respect to *research*. Read intently and choosily, but don't overdo it. The best way to do research is to get on with it. Get commercial equipment when available; don't try to make everything yourself. Admit mistakes promptly. Beware of following fashion. To make important discoveries one must study important problems. One cannot do without common sense. Don't be secretive; tell all you know (and what you don't know.) Don't mistake the

necessity of reason for the sufficiency of reason. On no account continue with your Ph.D. research; the post-doctoral trend is unqualifiedly a good thing.

With respect to *presentation of material.* ("Most scientists do not know how to write.") Research is incomplete without publication. Don't parade your culture ("very many scientists are not intellectuals"). Don't exhibit scientmanship, i.e., raising yourself by debasing others; citing all your own work while giving only the most recent ones of others. (Medawar prefers the Royal Society custom of listing authors of joint papers alphabetically.) Never read a paper from a script or show off by speaking without notes, which helps one to use natural words. Shun the Germanic practice of using nouns as distributive adjectives. Use a blackboard rather than slides (in either case insure visibility and legibility). Don't exhibit obvious curves, e.g., linear relations. Don't be too critical; don't boast of your having had the idea earlier. Don't poach on another speaker's time. Have a friendly respect for your mentor; but don't ingratiate yourself with your seniors (don't assume they will remember you when or where.). Don't have no time for anything or anybody not related to you and your work. On occasions defend science; don't ever appear to condone folly or superstition, or to demonstrate unsound belief. Better appear to be querulous than gullible. Use recognized channels of communication. Respect the administrator, who has to give up his research to get funds for yours. Value the technician. Avoid scientific messianism!

With respect to *sexism and racism.* Women's intuition is geared to human relations, not to science; there is no distinct style in their scientific work. No one nation has a corner on good scientists; there is no Jewish or Hungarian elitism. A spouse must recognize that a genuine scientist is in the grip of a powerful obsession.

With respect to *prizes and rewards.* Electoral procedures are all fallible, but a high opinion of one's peers is always a great moral boost. The exaggerated respect, however, for prize winners may sometimes serve useful ends.

The chapter on "The Scientific Process" is noteworthy. The author broadly defines science to include "all exploratory activities for understanding the natural world." "Scientific inquiry is an enormous potentiation of common sense." "A scientist is not engaged in the collection of facts and in calculations based upon them." "The generative art in science is imaginary guesswork." He classifies experiments as Aristotelian (demonstrative), Baconian (observational), Galileian (critical), and Kantian (thoughtful). He rejects Thomas S. Kuhn's point of view as not adding up to a methodology; he prefers Karl R. Popper's "The Logic of Scientific Discovery," i.e. the hypothetico-deductive method. Observation and experimentation must both be purposive, critical processes. "The art of devising hypotheses is a large part of the art of solution." Discovery is more the result of a prepared mind (Pasteur) than of uncovering (serendipity).

With respect to "*the many simple and childlike questions that people like to ask.*" In the last chapter particularly the author stresses reasonable expectations of science: neither undervalue nor overvalue science! "The judgments of scientists per se on any topic whatever are not specially valuable or virtually worthless." "A scientific attack on religious belief is usually no less faulty than a defense of it. Scientists do not speak on religion from a privileged position except in so far as those with a predilection for the Argument from Design have better opportunities than laymen to see the grandeur of the natural order of things." The author groups "mystical theology" with the wisdom of Eastern cults as being antiscientific; he has, I believe, a somewhat distorted view of mysticism in its broadest meaning.

"No known or conceivable limit to the power to answer questions of the kind that science can answer" exists plus ultra! A better world, therefore, is possible through the transformation of society with science as an agent provided there is a sufficient, sustained effort: What the author calls "scientific ameliorism"! Science can point the way, but success will be achieved only by political actions and events (religious?) outside the realm of science. "These problems not being scientific afford no scientific solution." There is unfortunately a current "doctrine of original virtue," the modern version of the doctrine of original sin. "Material progress does not hold out the promise of remedying any of the major ailments that affect mankind today," e.g., overpopulation and harmonious coexistence of a multiracial society. There is no human ommiscience which can guarantee "the improvement of all human affairs in all persons."

Reviewed by Raymond Seeger, NSF (Retired), 4507 Wetherill Road, N. W., Washington, D. C. 20016.

SCIENCE, CURRICULUM, AND LIBERAL EDUCATION by Joseph Schwab, (edited by J. Westbury, Education, University of Illinois, and N.J. Wilkof, law student, University of Chicago), University of Chicago Press (1978), 394 pages, $24.00.

Joseph Schwab spent nearly fifty years at the University of Chicago; he received his baccalaureate in biology and literature in 1930, his Ph.D. in genetics in 1939, and retired in 1978 as Professor of Education and Professor of Natural Sciences (in 1937 he was a fellow in science education at Teachers College, Columbia University). He was chairman of the BSCS committee on teacher preparation (the subsequent NSF summer institutes were not at all in keeping with his philosophy). Although in 1959 he was chairman of the academic board of the Meltion Research Center of the Jewish Theological Seminary, he never mentions religion in these essays—one curriculum without religion?

This book (394 pages) consists of twelve essays (11 previous published, 6 in modified form) based upon 55 listed publications (1935-1976). They are particularly

valuable in showing the development of a scientist primarily interested in education at the University of Chicago where a unique experiment in it took place from the early 1930's to the early 1950's. Schwab's own views were greatly influenced by Dewey and Freud; he emphasized the role of experience in the growth of a person and encouraged open debate of specific topics (more adaptable to "soft" sciences). Every teacher will be stimulated by his own formulation of questions, but disappointed with the paucity of answers. The Introduction by the editors sets the stage by tracing the changing educational pattern at the University leading to Schwab's own role in the curriculum reform movement of the 60's. The essays are grouped under three headings.

The first part "On Liberal Education and Science" consists of five articles. "The Three-Year Program in the Natural Sciences." (1950), "The Nature of Scientific Knowledge as Related to Liberal Education" (1949), "Eras and Education: A Discussion of One Aspect of Discussion" (1954), "Science and Civil Discourse, The Uses of Diversity" (1956), "Enquiry and the Reading Process" (1958). If one can get over the author's verbiage—particularly his pedantic mannerisms and use of uncommon words—the first paper will prove quite informative about Chicago's own reaction to its celebrated "survey" courses; the second is thoughtful. They all contain many provocative statements: Mark Hopkins' purpose is to liberate, not to captivate. . . The identity of teacher and examiner should be removed. . . Eros is the energy of wanting. . . An oval table for 25 is optimal equipment. . . We do not know until we know what was measured (with respect to Lord Kelvin). . . . The program should lean heavily upon the reading and discussion of original work. . . Laboratory instructions should be reduced to the minimum . . . Science can be both sensitive and philosophical without ceasing to be scientific. . . Discussion material should be taken from research papers. . . Science comprises all natural phenomena which can be made to yield general truths when subjected to the method of science. . . The scientific method is the inductive method . . . No one doctrine concerning the nature of science should be exclusively employed. . . Doctrine about science should be established later by historians and philosophers. Discussion is indispensable to a good liberal education. . . Education cannot separate off the intellectual from feeling and action—To be there does not necessarily mean to be first and eternal.

Part II, "On the Foundations of the Curriculum" includes three papers: "The Impossible Role of the Teacher in Progressive Education" (1950), "What Do Scientists Do" (1960), "Education and the Structure of the Disciplines" (1961). The editors recommend reading the first one both first and last in reading the book because of Schwab's growing indebtedness to the oft misunderstood Dewey. Although it is interesting, as a mathematical physicist I cannot subscribe to the elevation of mathematics alone as "a process dedicated to the invention of new concepts." The second article proved disappointing in its emphasis upon critical analysis of formal methodology as contrasted with a genuine scientist's humble desire to understand phenomena per se. I myself would prefer to have students investigate nature first-hand rather than to criticize research papers. The third paper has an interesting ending where the author indicates how he himself would develop the teaching of a discipline from the early grades through high school. His dicussion of the selection of facts through the design of experiment is good; he fails, however, to give due recognition to the more general value of experience itself—even though it may be only accidental. I cannot agree with his assertion that theory is primarily man's invention—without regard for man's discovery of nature's architecture. There are some provocative remarks. The teacher must be a learner of education. . . Engineering is a semi-discipline. . . History and language are sciences in the most inclusive sense.

Part III, "On Curriculum - Building," contains four articles: "Testing and the Curriculum", "The Practical: a Language for the Curriculum", "The Practical: Acts of Eclectic", "The Practical: Translation into Curriculum." The first one has an interesting suggestion that test results need to be tested by "depth" interviews, where the student is taught to think aloud as he answers test items. Another time-consuming procedure is his recommendation that a student be continually assessed for his cumulative learning grade by grade. He was apparently disturbed by the failure of the federally sponsored PSSC, BSCS, CHEMS, and CBA to include persons other than subject-matter specialists as if these are not also teachers. In the second paper he presents the usual procedure for a Master's thesis in science as a "sophicated enquiry into enquiries;" as a typical educationalist, he gives it a name of his own. The last article deals with the practical problem of curriculum making; he urges that the cognizant committee be representative of all expertise; he reserves the chairmanship, however, for a curriculum specialist, who must be neutralized (because of admittedly possible bias) by a co-chairman or a monitor. The experts should be in subject matter, learning the milieus, and teaching per se. Here, too, he has some provocative comments. The field of curriculum is moribund. . . Effective teaching of reading and writing cannot be left only to teachers of reading and writing. . . The way in which scientific knowledge is presented to students affects the credibility of the content of the humanities and social studies. Deliberation about the physics course requires the comment of the English teacher, as well as of the biologist, the learning theoretician as well as the science educator. Different theories on the same subject matter are mutually exclusive. . . We have not the faintest reliable knowledge of how literature is taught in the high school or what actually goes on in science classrooms. The procedure of polyfocal conspectus is not adaptable at present to the sciences as curricular resources. Scholars, as such, are incompetent to translate scholarly material into curriculum. The curriculum is not to conform to the material; the material is to be used in the service of the student. The attempt to formulate a scientific problem, however simple, and to carry out the investigation required by the problem, is to learn about questions to be addressed to scientific material which no mere lectorial presentation can convey.

Reviewed by Raymond Seeger NSF (Retired), 4507 Wetherill Road, N.W., Washington, D.C. 20016.

TOTAL MIND POWER by Donald L. Wilson, M. D., (New York: A Berkley Book, 1978), 246 + ix pp., $2.25, paper.

The author's purpose in this volume is to enhance the reader's ability to solve his problems and give better overall direction to his life through more effective use of mind power. Citing the familiar claim that only 10% of one's intellectual facilities are ever used at one time, Dr. Wilson claims to have developed a method for increasing that percentage by tapping into one's latent mental abilites. The first part of the book introduces the concept and potential of "total mind power." The second part of the book discusses the use of the techniques involved. The third—and largest—part discusses the application of "total mind power" techniques to specific problems—including changes in weight, improved sports performance, controlling disease, and a host of others.

The technique of "total mind power" consists of three steps. In the first the reader is instructed to focus his awareness on the matter to be considered. Through placing oneself in the proper environment, blocking out all extraneous stimuli (audio, visual, sensual, olfactory), and relaxing the mind and body one can "set up an ideal situation in which the mind can drift on its own, without effort, concentration or fatigue, into a focused awareness in the direction you set" (p. 41).

The second step consists of the construction of a transcript incorporating all the mental perceptions into which the mind has begun to drift, ever focusing in on the "best possible solution" to whatever may be the particular problem under consideration. Wilson strongly urges the full writing out or dictation into a tape recorder of these transcripts, so that they can be referred to on later occasions. Numerous examples of transcripts—which remind one of free-verse poetry—are supplied.

The third step constitutes a structured repetition of the first two in which the written transcript is used to reconfirm the conclusion and prescription for action reached in the first two stages. In Step Three the reader will "determine the frequency or repetition" of Steps One and Two (p. 53) in the resolution of the particular problem.

This technique is designed to unlock hidden mental capacities, freeing them from the restraints of the subconscious to allow their application to everyday problems. An impressive bibliography following each chapter suggests a rather broad body of scientific literature to support the author's thesis. Personal and patient experiences and numerous examples of transcripts encourage the reader to begin the use of total mind power at once, and to expect impressive results.

This reviewer's efforts to apply this technique to a number of situations have been frustrated at both Steps One and Two. Total sensual isolation seems always just beyond by reach; and written transcripts are often time-consuming, when it seems that a quick mental sortie will produce the same result. Total mind power may indeed hold some benefits for those who persevere in the technique; yet for those who, like this reviewer, have neither the patience nor discipline for a highly structured technique, alternate methods of solving problems seem equally viable.

Reviewed by T. M. Moore, Minister of Education, Executive Administrator, Coral Ridge Presbyterian Church.

MEN IN MID-LIFE CRISIS by Jim Conway. Elgin, Illinois: David C. Cook Publishing Co., 1978, 316 pp., $3.95.

This paperback deals with a subject that has received increasing attention lately, namely the traumatic upheaval and re-evaluation that occurs in the lives of many men in their middle years, usually around the age of forty. Jim Conway, the pastor of a large church in Urbana, Illinois, writes not only as one who has researched the subject well, and as one who has counselled men in mid-life, but also out of his own personal experience with the mid-life crisis.

Conway discusses the pressures and difficulties that face men in mid-life: their bodies are wearing down, family responsibilities, pressures of work, community service, church commitments, the realization that they are getting older and that they will die. He sees the mid-life crisis as a time of re-evaluation of the direction of one's life, "Who am I? What are my values? What do I want to do with my life?" Unfortunately, the pressures and re-evaluation often lead to depression, self-doubt, and self-pity, which lead men to want to unload their responsibilities and commitments and start life again differently. He points out that because men do not usually share their feelings, they are unaware that other men at this age are having a similar struggle. There are a variety of ways in which men may deal with the situation, some constructive, but some quite destructive. A new life style, an affair with a younger woman, alcohol, concern with one's body and health, self-indulgence, are but a few of the possible responses. Conway however, does not stop at an analysis of the problems, but goes on to suggest how one can navigate the crisis. He has positive suggestions for a Christian perspective on marriage renewal, restoring love and sex to a worn marriage, working out job related problems, aging with grace, dealing with adolescent children and aging parents. Although mainly about men, part of the book also deals with mid-life problems of women and particularly how they can best cope with the mid-life crisis of their husbands.

Overall, I regard this as a very useful book for those in or approaching their middle years. As someone who is just entering his middle years, I found it particularly helpful to be forewarned of problems that are likely to arise. This book is understandable and easy to read, and aims to deal with the practical problems of mid-life and their solutions. Conway offers a good counsel from Scripture, psychology, his ministry, and his own personal experience.

Reviewed by Steven R. Scadding, Department of Zoology, University of Toronto, Guelph, Ontario, Canada.

THE FORCE OF KNOWLEDGE: THE SCIENTIFIC DIMENSION OF SOCIETY by John Ziman, F.R.S., Cambridge University Press (1976), 374 pp., $6.25.

Professor Ziman's book is a composite volume, originally given to Science students in the University of Bristol, England, where he is Professor of Physics. The book sets forth his opposition to claims that university lecturers are not aware of the relationship between science and society and that they fail to generate thought in their students about this vital aspect of the scientist's work. By writing this book, Professor Ziman has filled a gaping void in society's awareness of its scientific dimension. He must be praised for communicating in such a coherent yet simple style which is understandable to scientist and non-scientist alike but with sufficient factual content to prevent it being dismissed as simplistic.

Initially the author states that natural science is transforming human society and is therefore worthy of our attention. In past decades, the public may have been content to leave science in the hands of scientists, assured that they were objective, responsible persons striving for the good of mankind and producing results which were always beneficial to society. In this present era however, a radical view has emerged suggesting that scientific knowledge is often misused, that the product of scientific thought and endeavor can have deleterious consequences and that the public can be adversely affected. This has resulted in the rejection by many of the idea that all science is good science. In order to appreciate just how this situation has arisen and to understand the social responsibilities of the scientist today, the past must be examined; the author undertakes this task carefully.

To correlate the "Art of Knowing," i.e. science, with the "Art of Knowing How," i.e. technology, Professor Ziman reveals their symbiotic relationship. He exemplifies his thesis that either science and technology overlap or that one precedes the other only to reach fruition upon combination. For instance, the pyramids were built in Egypt long before Greek mathematicians had developed a logical system of geometry; however it was the examination of these edifices that assisted in the construction of such a system. On the other hand, Oersted discoverd the magnetic field produced by a steady current in 1820, seventeen years before the discovery was turned to social benefit in the form of electric telegraphy. Ziman traces science through the ages to determine if the role of the scientist in the community has changed. In 1670 science was confined to aristocrats who had time to indulge in hobbies. Such men lived in isolation and communication of their results to the public depended largely on their motives in carrying out research. The inauguration of scientific societies set standards for scientists, together with opportunity to stimulate each other with exchange and discussion of ideas. By the mid 1800's such societies were no longer open only to those of wealth or breeding but to any who were positively contributing to science. Scientists were still esoteric but now they had official influence in education and industry. Recognized as valuable servants to their country, scientists began to wield their power.

From these glimpes into the historical development of scientific research, the author lays the foundations for his views on the scientist in society. Scientists themselves are joined in an invisible college, bound by ideas rather than material possessions. Their community is supposedly a democratic republic; however this community, like any other, influences its members who in turn influence society at large. Ziman devotes a chapter to such influences describing intellectual authority as illustrated by Newton and Einstein. Newton's discoveries still dominate classical mechanics and Einstein has become a household name to whom relativism in everything from physics to aesthetics is commonly attributed. Authority as a teacher, administrator, pundit, technical innovator and government official is also examined. Through concrete examples, conclusions are drawn demonstrating the impact of scientific authority and how, its acquisition of secular power can lead to corruption.

With increasing authority has come decreasing individual responsibility due to the advent of Big Science. Science has emerged from the atomic revolution in giant sized packages. No longer does a scientist do research; instead he takes part in a research project, merely as a team member. The author gives a lucid precis of Big Science using the field of high energy physics to illustrate the role of a scientist in a research establishment comparable in size to a city. Inseparable from this concept of Big Science is its price. The costs involved in planning, financing and administering such are too enormous to be comprehensible to the uninvolved individual. The figure of $20,000 - $25,000 is quoted for a full time research worker at PhD level in industrial research—Big Science costs 200 times as much.

The author's final chapter entitled, "Science and Social Need" discloses the crux of the matter. A justification for the central position of pure research is given and reasons for the fears and doubts of many about science are discussed. In past decades, science may have been treated with unwarranted awe and respect but society still cannot justly lay the total blame for "backward progress" at the door of the invisible college. Ziman maintains that knowledge is a tool for action but not its agent and hence every member of society has his role to play in social responsibility.

What does social responsibility in science mean anyway? Is it the end of science and its replacement by political action and revolution? Is it an appeal to private conscience in judging what research to undertake? Is it a plea for greater caution and experimentation before accidents like Thalidomide occur? These thought provoking questions are raised before the reader. This volume reminds scientists of such facts and questions and, just as importantly, enlightens non-scientists too. It encourages both to a greater sense of personal involvement and assists them to appreciate their own moral obligation to the aims and outworkings of the scientific dimension of society.

Reviewed by Sheena Lewis, Physiology Department, The Queen's University of Belfast, Belfast, Northern Ireland.

The Birth of Science

To command the professors of astronomy to confute their own observations is to enjoin an impossibility, for it is to command them not to see what they do see, and not to understand what they do understand and to find what they do not discover.

— Galileo Galilei

Perhaps no phenomenon has so enthralled modern man as the rise of empirical science. In it he sees the triumph of truth over superstition, an emphasis on the here-and-now vs. a shadowy hereafter and a panacea for every malaise facing the human race. The late E.F. Schumacher characterized us as a "people of the foward stampede." Our motto is "a (scientific) breakthrough a day keeps the crisis at bay."

Yet the first stirrings of the scientific spirit were comparatively recent. Academics usually point to the Ionian outposts of Asia Minor in the 6th century B.C., where Thales, Anaximander, and Anaximenes first formulated theories of the universe, without relying on a divine hand. Rationalists like Renan euphorically refer to this as "the only miracle in history."

And in one sense they're right. Previous civilizations, notably those of Egypt, Mesopotamia, and India, conceived of the universe as peopled by spirits, friendly or hostile. They divided reality into the sacred (crucial) and the profane (insignificant). Charmed by the idea that like produces like, they attempted to control nature by means of sympathetic magic. (If a frog croaked, the rains came, so men dressed in frog costumes and mimicked frog sounds.) They followed common sense and tradition, and did little to rock the boat of political and social stability. For as John Dewey once remarked, "If we once start thinking, no one can guarantee where we shall come out, except that many objects, ends and institutions are doomed."

What were the early "scientific" theories that so antagonized the ancients? Thales of Miletus announced, "All things are made of water." "It seems to me," declared a member of the Hippocratic school that epilepsy "is no more divine than any other disease. It has a natural cause, just as other diseases have." "Nothing is created out of nothing or destroyed into nothing," hypothesized Democritus, and "by necessity were foreordained all things that were and are and are to be." "The eyes and the ears are bad witnesses for men," taught Heraclitus, "if the mind cannot interpret what they say."

Do you feel the sense of Greek alarm? Often these men were castigated as "atheists" by the populace, though it is more accurate to call them indifferent to religion, than actively opposed. The state not infrequently capitulated to popular indignation and banished the troublemakers or closed down their academies. Even Socrates, who in his youth once followed their teachings, later denounced them for being more concerned with astronomy than ethics. And by his famous maxim, "the unexamined life is not worth living," he attempted to turn the Athenians from looking at the physical universe to a concern for their own immortal souls.

While the forerunners of the Greeks made significant contributions in mathematics and astronomy, they were never prone to the same consistency, clarity, and simplicity that so marked Greek thought. The Egyptians developed a decimal number system and a solar calendar based on a 365-day year. They measured the fall of the Nile for over 700 miles with an error of only a few inches. They could compute the area of a circle, triangle, rectangle and a trapezoid and used 3.1605 for *pi*. From embalming they derived an elementary knowledge of anatomy (though their conclusions on organ functions are invariably wrong). Nevertheless, as Otto Neugebauer discerns, "The only texts which have come down to us. . . .are crude observational schemes, partly religious, partly practical in purpose. Ancient science," he concludes, "was the product of a very few men; and these few happened not to be Egyptians."

Few, if any, were Babylonians either, despite the invention of the sun-dial, the water-clock, and the polos. The Babylonians knew how to fertilize palm and date trees, compiled tables of squares, square roots, cubes, cube roots, divided the circle into 360°, charted the irregular motion of the planets and mapped the ecliptic, or yearly path of the sun through the fixed stars. However, the Babylonians' greatest discoveries—those in the field of astronomy—never broke away from the stranglehold of astrology. And unlike the Greeks, their careful observations and conclusions were the exclusive property of priests and royalty, and not meant to enlighten the common man. (To be fair, the number of known texts on science and mathematics from Egypt and Mesopotamia are slight compared to those from Greece.)

A number of Greeks, however, believed in rational inquiry, scientific observation and mathematical formulas of reality. Their influence can be divided into at least four geographical schools: Ionia, southern Italy, Athens, and Alexandria. Ionia, historically the first, was distinguished for its cosmology; but today these ancient discussions strike us as absurd. Thales argued that the universe was solely composed of water, Anaximenes air, and Anaximander a primary substance he called the Unlimited or Indeterminate. Yet philosophically it is a giant step from the ancient Egyptian and Babylonian view, namely, that the universe was a huge box and the earth was its floor, to the Ionian concept of the earth as a body floating freely in space, equidistant from the periphery of the vortex. Yet even here we are more in the realm of curiosity and speculation, of men "who walk into a well from looking at the stars." Still, the prerequisites have been met. In creating models of reality men could test their application. As Alfred North Whiteheard was to write some twenty-four centuries later, "The aim of science is to seek the simplest explanation of complex facts."

This process of simplification was advanced further by the Italian school of Pythagoras. Here, at last, mathematics strove to become what Wordsworth called, ". . .an independent world,/ Created out of pure intelligence." By the fifth century B.C. its members had classified numbers into odd and even, prime and secondary, perfect and "friendly," and devised a theory of proportions. They argued that the earth and the celestial bodies were spheres that moved in circles and believed that a celestial fire, not the earth, was the still point in the turning universe—around which ten bodies (earth, moon, sun, five planets, the fixed stars, and a

"counter-earth") revolved. However, for them mathematics was more than simple curiosity; it bordered on becoming a religion. They thought the world was orderly and harmonious because it sprang from a geometer God. Soon, for them, numbers took on a mystical significance. The school's greatest scandal was its discovery that the square root of 2 is an irrational number, a secret they tried to hush up lest it undermine belief in reason.

The most famous of the ancient schools, namely that of Socrates and Plato, continued Pythagorean interest in numbers, but at the same time espoused an idealism antithetical to empirical research. For Socrates the only statement of the physicists worth a straw was: "In the beginning everything was confusion, then Mind came and reduced it to order." Socrates practiced universal definitions and inductive reasoning, but he scorned physical work, the body, and experiments.

Plato continued in his master's footsteps, but his star pupil, Aristotle, revolted against the other-worldly tendencies of his teacher, and proceeded to make the most significant contributions in ancient biology. His description of the habits of the cuttlefish in the island lagoon at Pyrrha, his concise, but accurate, account of the life cycle of a gnat, and his notes on the woodpecker's tongue or the owl's eyes—conjure up an image of a man who spent hours in the open air contemplating the world of nature teeming with life before him. (How far this was from the magical conceptions of ancient Egypt where animals had such a compelling effect on the observer that they were worshipped in awe, rather than analyzed and studied.) This is the essence of the scientific spirit: disinterested observation. Yet even for Aristotle nature could not resemble soulless machine of Newton; instead he portrayed it as the work of a craftsman or an artist, arguing that nature never produced anything imperfect or in vain.

Finally, the head of Aristotle's Lyceum moved to Alexandra, where in the three centuries before the birth of Christ, the final burst of ancient scientific creativity broke out. Strato enunciated the principles of pneumatics and Hero demonstrated them in working models. Apollonius discerned the characteristics of cones and introduced the words parabola, ellipse, and hyperbola. Ptolemy improved on trigonometry and gave geography a scientific basis by insisting on accurate latitudes and longitudes. And Euclid in his *Elements of Geometry* accomplished one of the greatest syntheses of all time, by drawing extensively on the earlier work of the Pythagoreans. William James could well have said of Alexandria: "Science, like life, feeds on its own decay. New facts burst old rules; then newly divined conceptions bind old and new together into a reconciling law."

Still, the Greeks were far removed from the world of modern science. They were more impressive in their theories and their rational inquiry than in developing the empirical method. In one sense, they were stymied by their own success; thus Parmenides invented logical games of the One vs. the Many, which caused havoc for years. The Greek love for symmetry, the tendency to rely on a priori reasoning and to jump quickly to conclusions, always made science a child of philosophy, rather than a grown-up equal. Their skepticism of sense data could just as easily lead to mystery cults and ecstatic union with a god, as to the creative study of earthly and heavenly phenomena. However, the earlier catalogues and entangled superstitions of ancient Egypt and Babylon, by comparison, look like the incoherent babblings of an infant.

Bernal, J.D., *Science in History*, v. 1.
Cassirer, Ernst, *Philosophy of Symbolic Forms*, v. 2.
Dampier, W.C., *A History of Science*.
Farrington, Benjamin, *Science in Antiquity*.
Franfort, Henri, ed., *Before Philosophy*.
Lloyd, G.E.R., *Early Greek Science*, v. 1.
Lloyd-Jones, Hugh, ed., *The Greek World*.
Muller, Herbert J., *The Loom of History*.
Neugebauer, Otto, *The Exact Sciences In Antiquity*.
Sarton, George, *A History of Science*, v. 1.
Toulmin, Stephen and Jane Goodfield, *The Fabric of the Heavens*.

Ken Bazyn
264 West 22nd Street, Apt. 2C
New York, New York 10011

The Censorship of Copernicus' De revolutionibus

By the end of the sixteenth century Copernicus' *De revolutionibus orbium coelestium* was securely established as an important book, undoubtedly the most significant astronomical treatise since antiquity. The two editions of the work, Nuremberg 1543 and Basel 1566, were by then widely distributed throughout Europe in several hundred copies each; at least one copy had reached America and another would soon arrive in China. A bulky work of 400 pages and well illustrated with 146 diagrams, it was too imposing to be discarded lightly and too formidably technical to be worn out from overuse. As we shall see, this unique book received unique treatment from the Inquisition.

The initial reaction of the church, both Catholic and Protestant, was muted. The often-quoted comment from Luther's *Table Talk*, that "this fool would turn the whole art of astronomy upside down" (or, in the alternative version, that everyone who would be clever nowadays must come up with something new), is grossly misleading. A casual remark, Luther's off-the-cuff judgment is not at all representative of the actual Lutheran reaction. In fact, Copernicus' book was highly regarded in Lutheran circles and extensively studied throughout their university system.

The potential ecclesiastical reaction to Copernicus' radical heliocentric cosmology was considerably tempered by the anonymous introduction added in publication by Andreas Osiander, a Luther clergyman of Nuremberg hired by the printer to oversee the final stages of the proofreading. Osiander's introduction stated that the hypotheses of the work "need not be true nor even probable," and that their essential requirement was to furnish a model whereby planetary positions could be calculated for any conceivable time. That this was precisely the way the book was received in the Lutheran universities is admirably borne out by the pattern of annotations found in a score of well-studied books.

It was within this framework that Johannes Kepler learned about *De revolutionibus* from his Tübingen teacher, Michael Maestlin. Shortly thereafter the young Kepler took a post as a high school mathematics teacher in southern Austria, and it was there in 1597 that he received the copies of his new book, the *Mysterium Cosmographicum*, the first unabashedly heliocentric treatise to appear since Copernicus had published his *De revolutionibus* over fifty years previously. Anxious to have an international hearing for his ideas, Kepler not only sent copies to specific astronomers, but he sent along a pair of the books with an emissary to Italy. Apparently the ambassador was already working his way back from Rome when he realized that he had done nothing about Kepler's

request. Looking around for a suitable recipient, he handed both copies over to the professor of mathematics in Padua, a man of some local reputation but certainly unknown north of the Alps since he had not yet published anything. The Italian wrote a hasty reply, indicating that he, too, had supported Copernicus privately. Kepler mentioned the reply in a letter to his former teacher, Maestlin, bemusedly reporting that there was an Italian astronomer with the same first name as last name: Galileo Galilei. The young Kepler promptly wrote back to Galileo, urging him to stand forth openly in favour of the Copernican doctrine. There the correspondence temporarily ended, not to be resumed until both men had established brilliant reputations as Copernicans, Kepler as imperial mathematician and author of the *Astronomia nova*, and Galileo as the dicoverer of satellites of Jupiter and the mountains on the moon.

Through both their scientific work and their polemics, these two men brought a dynamic new life to the perception of the Copernican theory. When Galileo and Kepler began to hammer out a new terrestrial and celestial physics, they both realized that they must also counter the scriptural arguments before the Copernican system would be widely accepted. Kepler, in the introduction to his *Astronomia nova* argued that the Scriptures were written in everyday language for common understanding, and should not be taken literally. Galileo, at much greater length in a letter to the Grand Dutchess Christina, argued similarly. He said: "I think in the first place that it is very pious to say and prudent to affirm that the Holy Bible can never speak untruth—whenever its true meaning is understood. But I believe that nobody will deny that it is often very abstruse, and may say things which are quite different from what its bare words signify. Hence in expounding the Bible if one were always to confine oneself to the unadorned grammatical meaning, one might fall into error."

The entry of such an accomplished polemicist as Galileo into the territory of the theologians was cause for alarm in ecclesiastical circles. It was not so much the particulars of the heliocentric cosmology as the fear of the argument that the Book of Nature might provide a more direct route to Truth than the Book of Scripture. Physical reality as differentiated from theological truth was a scarcely perceived distinction, and therefore an obvious place to draw the battle lines was on the *interpretation* of Copernicus' doctrine. Heliocentrism was not at fault *per se*, but it was essential, in the eyes of the churchmen, for Copernicus' work to be perceived as hypothetical and not a physical reality. The powerful Cardinal Bellarmine accepted the position of Osiander's preface when he wrote in 1615 in a famous letter to Foscarini: "It seems to me that your Reverence and Signor Galileo would act prudently were you to content yourselves with speaking hypothetically and not absolutely, as I have always believed Copernicus spoke."

Unfortunately from the churchmen's viewpoint, Copernicus himself was annoyingly vague concerning whether or not he believed in the reality of his system. Furthermore, by this time Kepler had conspicuously announced the true authorship of the anonymous introduction to *De revolutionibus*, so it could no longer be maintained that Copernicus necessarily subscribed to the view given there. Hence, from the vantage point of the Holy Congregation of Rome, the most expeditious course was to suspend Copernicus' book until the appropriate adjustments could be made in the text. Decree XIV of the Holy Congregation of the Index, issued 5 March 1616, reads in part: "Whereas it has also come to the knowledge of this Congregation, that the Pythagorean doctrine—which is false and altogether opposed to Holy Scripture—of the motion of the earth, and the quiescence of the sun, which is also taught by Nicholas Copernicus in *De revolutionibus orbium coelestium*, and by Diego di Zuniga in (his book on) Job, is now being spread abroad and accepted by many,. . . therefore, in order that this opinion may not insinuate itself any further to the prejudice of Catholic truth, the Holy Congregation has decreed that the said Nicholas Copernicus, *De Revolutionibus orbium*, and Diego di Zuniga, on Job, be suspended until they be corrected."

The expression "donec corrigatur"—"until corrected"—belonged to the standard vocabulary of the Inquisition, but in only one case did the Holy Congregation ever announce specific corrections. That unique treatment was reserved for Copernicus' *De revolutionibus*. The report made to the Congregation of the Index on the proposed censorship of the Copernicus' book *De revolutionibus* still survives, although it is little known and has not yet been published in English. Unlike the final decree announcing the corrections, the report gives the background reasons for the action. It was probably written by Bonifacio Caetani, one of the Cardinals who had persuaded the pope to label the heliocentric doctrine as false rather than heretical. In a nutshell, it says there are three basic considerations. First, astronomy is important to the church for calendarial reasons, and Copernicus' book must be preserved for its observations and for the restoration of astronomy. Second, to remove the heliocentrism would not be a correction, but the total destruction of his system. Finally, it is possible to proceed by a middle way without compromising the Holy Writ by emending certain passages, and now I quote: "If certain of Copernicus' passages on the motion of the earth are not hypothetical, make them hypothetical; then they will not be against either the truth or the Holy Writ. On the contrary, in a certain sense, they will be in agreement with them, on account of the false nature of suppositions, which the study of astronomy is accustomed to use as its special right."

Decree XXI, finally issued in 1620, announced about a dozen corrections. They have been reprinted in various places, among them Augustus de Morgan's *Budget of Pardoxes*, which in the 1915 edition and 1954 reprint includes an English translation. Let me here mention only a few of them. Concerning the eighth chapter of book I, the Decree stated: "This whole chapter can be deleted because it admittedly deals with the truth of the earth's motion, while it refutes the ancient reasons for proving its immobility. If, however, it would please the most illustrious fathers that this chapter be emended, Copernicus may be made to seem to speak always problematically and from opinion. . . [This] would better satisfy students, since the sequence and arrangement of the books would remain intact."

I have now personally examined nearly every surviving sixteenth-century copy of Copernicus' book, and I have found only a single example of where chapter 8 has been totally excised—the 1566 edition in the public library in Cremona.

Generally the censor provided a substitute text for the phrase, sentence, or sentences deleted. A particularly characteristic substitution occurs for the title of chapter 11, originally "On the demonstration of the three-fold motion of the earth," and changed to read "On the hypothesis of the three-fold motion of the earth and its demonstration." Immediately before this, at the end of chapter 10, is another interesting change. Copernicus describes how the retrograde motion of Jupiter is smaller than Mars', and Saturn's is still smaller than Jupiter's because each is successively farther from the sun. Finally, the stars show no discernable annual motion because they are so far away—"So great, without any question, is the divine handiwork of the Almighty

Creator." The Holy Congregation, apparently wishing to avoid an apparent Divine imprimatur on the system, deleted this stirring finale to Copernicus' glorious cosmological chapter.

My Copernican census, undertaken during the past decade, now for the first time provides evidence concerning the effectiveness of the censorship. Because the instructions of 1620 were so specific, it is possible to determine rather accurately whether or not a copy was censored. Of about 400 copies now in Europe, 33 were censored, or about 1 in 12. From a careful analysis of the provenances, it is possible to reconstruct where the majority of these books were in 1620, and thus I conclude that about 60% of the copies in Italy were censored, and relatively few elsewhere. For example, in France, where many copies were in Jesuit libraries, there was comparatively little censorship; apparently the Jesuits considered the *Index* primarily a Dominican concern! My census revealed a quite unexpected and initially puzzling situation with respect to Spain and Portugal, where *none* of the copies are censored. In Madrid I turned up the uncensored copy once owned by Juan de Pineda, a Spanish theologian active in the early 1600s; subsequent research showed him to be the editor of the Spanish version of the *Index*. Pineda's version explicitly prohibited Rheticus' *Narratio prima* as reprinted in the 1566 Basel edition of Copernicus' book, and indeed, Pineda had sliced these offending pages from his copy. Pineda could hardly have been unaware of Decree XXI, but his Seville *Index* specified no changes in the *De revolutionibus* text itself, and apparently neither Pineda nor any others on the Iberian peninsula deleted any part of the Copernican treatise.

Even in Italy the physical process of the censorship was highly variable. In some cases ink or paper paste-overs completely obliterated the original text. In others, such as Galileo's own copy, the deletions hardly concealed anything, and in a few, such as a copy in the Lincei Academy, the corrections almost seem to emphasize Copernicus' original statements. In fact, when Kepler's *Epitome of* Copernican Astronomy was placed on the *Index* in 1619, a Venetian correspondent assured him that his work would be read all the more attentively in Italy. More than anything else, the suspension and correction of *De revolutionibus* probably merely gave Copernicus' ideas abundant free publicity.

Galileo's trial and its inhumanity, coming a dozen years after the censorship, was considerably more consequential. It cast a damper on scientific inquiry throughout Catholic Europe and destroyed creative science in Italy for several generations. But the censorship itself had little effect in maintaining the primacy of Scripture over Nature as the path to truth about our physical world. It was as fruitless as King Canute commanding the tides to stop.

There are, for better or worse, still many people who claim the Bible as a scientific textbook and who wish to regard scientific theories as hypothetical and thus fictional. In this matter I side with Galileo, who quoted Cardinal Baronius in saying that the Bible teaches how to go to heaven, not how the heavens go. In the generation following Galileo, Milton would write

> *Heav'n*
> *Is as the Book of God before thee set*
> *Wherein to read his wondrous works. . .*
> *. . . whether Heav'n move or Earth*
> *Imports not. . .*

Without committing himself on the cosmology, Milton was already conceding the legitimacy of the Book of Nature. Within another generation came Milton's countryman Isaac Newton, who "feigned no hypotheses." Newton read the Book of Nature to establish a physical coherency and thus a persuasive justification for the heliocentric blueprint of the Universe. Censorship, even scientific censorship, remains in our world today, and it may well be far more effective and insidious than in the seventeeth century. Copernicus' book was finally removed from the Index in 1835, but long before, by the time of Newton, the censorship of *De revolutionibus* had run its course ineffectively.

Owen Gingerich
Harvard-Smithsonian Center for Astrophysics
Cambridge, Massachusetts 02138

Presented at the American Astronomical Society, Historical Division, San Francisco, 15 January 1980. A longer version is being prepared for the Annali dell'Istituto e Museo di Storia della Scienza di Firenze.

Practical Preventive Medicine

The area of preventive medicine has been filled with charletons and quacks. But amidst the quagmire of soft thinking and pseudoscience, there emerges some fairly sound science that we as Christians might do well to incorporate into our lifestyle.

I am now in the middle of a cardiology training program and an increasing portion of my time and effort is devoted to preventive medicine. In spite of the drama of bypass surgery and coronary care units, preventive medicine is cheaper and can be more broadly applied. Indeed in an era of decreasing resources, it may be the only type of medicine that the world can afford. To practice preventive medicine requires significant lifestyle changes. In order to make these changes, character strength is required. I have found that unless the patient is spiritually healthy, he is often unwilling to make these changes.

Cigarette smoking not only increases the incidence of lung cancer but also cancer of the mouth, larynx, esophagus, bladder, pancreas, liver and stomach. For some of these organs cancer is greatly increased, i.e. buccal cavity and pharynx cancer is 9.9 times more likely in smokers of age 45-64 than non-smokers of the same age group. Bladder cancer is two to three times more common among smokers—a small but still greatly significant increased risk.[1]

Not only is this cancer risk more widespread than simply lung cancer, it is also proportional to the number of cigarettes taken, the degree of inhalation and the age at which smoking began. The risk of lung cancer is almost 19 times greater in a two pack per day or greater smoker than in a non-smoker. The risk in a light smoker (less than ½ pack per day) is increased 4.6 times that of a non-smoker. Light smokers and non-inhalers are still at a much higher risk than non-smokers. A person beginning smoking before age 15 is four times more likely to develop lung cancer than one beginning after age 25. This statistic is particularly relevant with increasing tobacco smoking among teenagers.[2]

Less well recognized is the probable greater risk to the smoker of premature death from coronary artery disease. The Framingham study[3] is probably the best known of the prospective epidemiologic studies of heart disease. Its data suggest that: (1) the consumption of twenty or more cigarettes daily is associated with up to three times the hazard of myocardial infarction found in non-smokers; (2) the danger of heart disease is greater because there are more deaths from coronary artery than there are from all forms of cancer combined. Moreover, the smoker at greatest risk is the young smoker.

Chronic obstructive pulmonary disease with death from progressive shortness of breath and peripheral vascular disease with gangrene and amputation of extremities are diseases that are concentrated in smokers. In fact, it is unusual to encounter a patient with these diseases who has not been a smoker. Lower infant birth weight is seen in infants born to mothers who smoke during gestation.[4] The full effects of smoking on the newborn are only now beginning to be characterized.

The evidence is clear that smoking is a danger to the health of every smoker. Elimination of this habit from our country would prolong life expectancy as well as the quality of life. Despite the fact that every cigarette package sold today contains warning of health dangers, tobacco use is common. Certainly this is in part due to ignorance of the extent of risk; yet many cannot quit because they do not have the character.

Salt—sodium chloride—is clearly involved in the pathogenesis of idiopathic hypertension. This form of hypertension accounts for 95% of the hypertension in this country. Hypertension—high blood pressure—by itself can cause heart failure and brain hemorrhage if sustained. Even more important than hypertension's direct effect is its association with premature atherosclerosis—hardening of the arteries—predisposing to heart attacks and strokes.

There is now some exciting new data on salt and hypertension or high blood pressure. There are now a number of epidemiologic studies that show a linear correlation between the average sodium chloride content of the diet and the percentage of hypertension in a given population. The average 40 gram per day sodium diet of the northern Japanese contains much salted fish; here high blood pressure affects 40% of the population. The Eskimo diet contains about 2 - 4 grams of sodium per day. The incidence of hypertension is virtually zero. Americans could approximate this content in their own diet by adding no salt at the table or while cooking and by avoiding salty foods such a potato chips, bacon, ham and processed foods preserved with salt.

An objection to epidemiologic studies has been that many people, even on a high sodium diet, have a normal blood pressure. These studies are based on American standards of 140/90 or less as being normal. This is too high. Actuarial tables have shown decreased life expectancy associated with blood pressures greater than 100/60. What we have accepted as normal probably is not.

It is also expected that blood pressure should rise with age. This effect observed in our country is probably the result of salt intake that is too high in the average American diet. Studies done in several populations where salt intake is very low show no significant rise in blood pressure with age.[5] I believe that we can improve our life expectancy and quality of life by omitting salt from our diets.

Let me cautiously add, however, that salt is not all you need to know about hypertension. Five percent of hypertension is secondary to tumor or renal (kidney) disease. Some experts such as Harriet Dustan[6] believe that obesity may also be an important factor in addition to dietary sodium.

The next diet modification is that of switching from a low fiber diet to a high fiber diet. Principally Dr. Denis Burkitt[7] is responsible for the diet fiber hypothesis which is gaining increasing evidence and popularity. The idea is simple but the results can be far reaching. Dietary fiber is primarily complex carbohydrate that we cannot digest with the enzymes available in our gastrointestinal tract. These pass through the bowel and are excreted in the stool. Dr. Burkitt, who worked many years in Africa, noticed that many disorders of the bowel were not seen in African populations who ingested diets low in animal fat and high in fiber. These disorders include carcinoma of the colon, diverticulitis, appendicitis, hiatal hernia and hemorrhoids. The proposed mechanism by which fiber prevents these various diseases is simple. Larger stools have shorter transient times, i.e. the time from the mouth to the anus is shortened from the average 4-5 days in the American eating low fiber diet to two days. The shorter transient times mean less exposure of the colon to the carcinogens present in our stools—namely bile salts and cholesterol esters. Moreover, these carcinogens are diluted in the large volume of fiber in the stool. Carcinoma of the colon is the most frequent cancer in men (cancer of the colon kills less than cancer of the lung since it kills only about half of its victims). Colon cancer's elimination by itself would be worth the trouble of eating more fiber.

The other diseases prevented by fiber ingestion are not as lethal but are frequent and disabling. All these diseases are postulated to be secondary to high intraluminal pressure in the colon and abdominal cavity required to eliminate small, compact stools. High pressure in the colon causes the impaction of the fecalith that obstructs the appendix and leads to appendicitis; high colon pressures cause the veins to dilate leading to hemorrhoids and the colon walls to weaken leading to diverticulitis. Increased intraabdominal pressure may well be responsible for hiatal hernia.

Practically, in order to get enough fiber in our diet, unprocessed food should be eaten instead of refined. Whole grain should be substituted for white, fruit for candies. Such a diet may not always be convenient. Dr. Burkitt suggest that two tablespoons of bran daily, by itself, is sufficient for colon protection. This simple regimen should prevent much chronic bowel disease.

No paper on preventive medicine would be complete without a dicussion of cholesterol. Cholesterol is the number one alterable risk factor for coronary artery disease.[8] I have little time for those who say that cholesterol does not matter—those pseudo-preventive medicine people are ignoring vast quantities of epidemiologic data and animal studies. The fact remains that people who live in countries with low cholesterol have a low incidence of coronary artery disease and death from heart attacks. If these same people move to another country and develop the eating habits of the high cholesterol country, they develop heart attacks at a rate equal to the high attack rate country.

The average cholesterol in this country is 220; coronary heart disease kills approximately one half of the males. The average cholesterol in rural Africa is 140; coronary artery disease is very rare. The message is clear—high cholesterol is not healthy. While we wait for the last skeptic to be satisfied, may I offer a simple suggestion: lower your serum cholesterol to 150 mg %. Coronary disease is chronic; it takes years to build up and years to regress. If one waits for more information than is already available, one may well wait too long. Several steps are necessary often to achieve this 150 value. First check your cholesterol, you may be fortunate

enough to require no further modification. If your cholesterol is high, the first step is to lose to ideal body weight. At this weight you should have minimal abdominal fat. If this is not sufficient, then decrease the amount of animal fat and eggs in your diet. Change meat portion to fish and poultry and cut down the size of the meat portion. Further increase fiber in your diet, particularly rolled oats such as oatmeal. If this is unsuccessful, then a total vegetarian diet may be necessary. Very few vegetarians have cholesterols greater than 170. A regular exercise program may also help with cholesterol control.

Running has become a popular form of exercise in America today. There is some direct epidemiologic data to support the contention that physically active people are less likely to die of ischemic heart disease. There are some fairly good data now that regular exercise reduces several risks that are responsible for coronary artery disease; excess weight, blood pressure and serum cholesterol. It is my clinical impression that those who exercise live higher quality lives with greater confidence and increased tolerance for stress.

Recently there have neen several documented deaths from myocardial infarction among long distance runners.[9] These individuals often had warning symptoms. Other risk factors (such as high cholesterol or tobacco use) for coronary artery disease were present and apparently ignored by these runners. My real point is that running is good for our well being and probably helps us live longer, more productive lives but it is not a panacea; other preventive measures must also be considered.

Alcoholism must be avoided for its chronic effect on personality. Heavy alcoholism is associated with cirrhosis of the liver and tumors of the liver. It is synergic with tobacco in the cancers that tobacco causes. Chronic heavy drinking also results in early brain degeneration. Heavy doses are directly toxic to the heart and can result in heart failure. The effect on the fetus from a drinking mother is profound and has only recently been delineated. I can, however, find no evidence that small doses, such as one glass of wine a day, is harmful.

There is controversy on the consumption of refined sugar or sucrose. People currently argue the sugar high and sugar blues. Some are now writing on atherosclerosis, hyperinsulinemia and glucose loading. All of this information is interesting but preliminary.

Despite this controversy, there is essentially no controversy on the association between dietary sucrose and dental caries.[10] This is not a cause of death but it certainly causes much discomfort and expense. Because of the risk of dental caries, I think it wise to avoid much refined sugar foods.

Much of what I have said is widely known. These principles are basic and the data are firm. I have not mentioned megavitamins, vitamin C, trace metals, yoga or yogurt. Data on health protection from such measures is at least an order of magnitude less firm than the data I have presented. My difficulty with proponents of these other forms of preventive medicine is that they often use poor science to defend their points and offer a false security which allows their adherent to overlook real preventive medicine.

Large lifestyle changes may be required. Quitting smoking, avoiding animal fat and salt in our diet, losing weight and exercising regularly are major changes in lifestyle. Motivation to change must come from the spirit of a man. Many patients that I inform of these risks are unable to make the necessary changes. Short term pleasures must be sacrificed for long term benefit. This requires character. In the area of preventive medicine, cult groups such as the Mormons[11] and Protestant groups such as the Seventh Day Adventists[12] are far ahead of mainline Christian groups and epidemiologic data shows clear health benefit. As Christians we have the duty to honor God with our bodies. The more we know, the more we must do. To whom much is given, much shall be required.

Presented in part at ASA national meeting August 1979.

[1]E. Cuyle Hammond in *Persons at High Risk of Cancer*, Joseph F. Fraumeni, Jr., ed., (New York: Academic Press, 1975), p. 131.

[2]*Ibid.*, p. 131

[3]W.B. Kannel, "Some Lessons in Cardiovascular Epidemiology from Framingham", *American Journal of Cardiology*, (1976), 37:269-82.

[4]Jonathan Fielding, "Smoking and Pregnancy", *New England Journal of Medicine*, (1978) pp. 298, 337-339.

[5]Ed Freis, "Salt, Volume and the Prevention of Hypertension," *Circulation*, (1979), 53:589.

[6]Harriet Dustan, "Research Contributions Toward Prevention of Cardiovascular Disease", "Research Related to the Underlying Mechanisms in Hypertension", *Circulation*, (December 1979), 60:1566-9.

[7]D. P. Burkitt, "Are Our Commonest Diseases Preventable?", *Preventive Medicine*, (December 1977), 6(4):556-9.

[8]Jeremiah Stamler, "Research Related to Risk Factors", *Circulation*, (December 1979), 60:1575-87.

[9]T. D. Noakes, et. al., "Autopsy - Proved Coronary Atherosclerosis in Marathon Runners", *New England Journal of Medicine*, (1979), 301:86-89.

[10]E. Newburn, "Dietary Carbohydrates: Their Role in Cariogenicity", *Medical Clinics of North America*, (September 1979), 63:1069.

[11]J. L. Lyon, et. al., "Cancer Incidence in Mormons and Non-Mormons", *New England Journal of Medicine*, (1976), 294:129-33.

[12]R. L. Phillips, "Summary of Adventist Mortality - 1958-65", *Cancer Research*, (1975), 35:3513-22.

Jay Hollman, MD
Clinical Fellow in Cardiology
Emory University
Atlanta, Georgia 30309

Letters

Thanks. . .

I enjoyed the paper "Creation. (A) How Should Genesis Be Interpreted?" in the March 1980 issue of the *Journal ASA* very much, and would very much appreciate receiving the remaining parts.

James A. Hopson
Department of Anatomy
The University of Chicago
Chicago, Illinois 60637

Thank you very much for the articles in the June 1980 issue of the *Journal of the American Scientific Affiliation.*

It is the best presentation of both sides of the nuclear energy debate done factually with a minimum of hysteria.

Keep up the good work.

Robert E. Barr, Jr.
Perinton Community Church
Fairport, New York 14450

Earthquake Information

Many people in my church, as well as some ASA members at the recent annual meeting, have been asking questions about earthquakes due to an upcoming alignment of the planets. Since ASA members who are not astronomers will undoubtedly be asked similar questions, this letter is intended to provide some useful information to readers of the *Journal ASA*.

The earthquake predictions were made in the 1974 book *The Jupiter Effect* by Gribbin and Plagemann. In general terms, an alignment of the planets in 1982 was to raise tides on the sun and thus increase all solar activity such as sunspots and solar flares. The resulting increase in ejected solar particles, some of which reach the earth's atmosphere, would cause shifts in large air masses, thus affecting the earth's rotation, which would trigger earthquakes in California. I have been told that at least one Christian publication quoted this earthquake prediction and drew the connection between earthquakes and the end times, thus encouraging speculation.

A number of astronomers have thoroughly debunked the entire idea (e.g., the article by Meeus in the July/August, 1979, issue of *Mercury).* First, the planets will be only poorly aligned in 1982 and the tides raised on the sun will be only about 1 mm high. Furthermore, historical data show that comparable or better planetary alignments have not correlated significantly with increased solar activity or earthquakes. Neither has there been any significant correlation between solar activity and the number or strength of earthquakes in the past. The available scientific data is thus strongly opposed to the entire theory. Recognizing this, Gribbin (one of the authors of *The Jupiter Effect*) withdrew the entire idea in the June, 1980, issue of *Omni.*

Although geologists are making significant progress in the area of earthquake predictions, this does not depend on theories similar to that described above. A major earthquake in California is, of course, possible at any time, but the 1982 prediction based on planetary alignments is entirely specious.

Kyle M. Cudworth
Yerkes Observatory
University of Chicago
Williams Bay, Wisconsin 53191

Christians in Social Work Establish National Office

The Board of Directors of the National Association in Social Work (NACSW), at its recent convention in Chicago, announced the establishment of its first national office. Board President, Eleanor B. Whipple, M.S.W., L.C.S.W., Executive Director of a California residential treatment center for emotionally disturbed children, indicated that the office will be located at St. Davids, Pennsylvania, on the campus of Eastern College, a Christian college of arts and sciences. It will be administered by newly appointed part-time Executive Director, Edward G. Kuhlmann, M.S.W., D.S.W. (cand.), who heads the College's Department of Social Work.

NACSW, a professional society with more than 1,000 members, originated in a half-day conference in 1950, and was organized as a membership association in 1953. Its purposes are to provide opportunities for fellowship and professional growth, to sensitize the Christian community to human need, to encourage Christian students to consider careers in social work, and to produce professional literature reflecting a Christian world view.

In addition to its annual convention, the Association publishes *Catalyst* (a bi-monthly newsletter), *Social Work and Christianity* (a semi-annual journal), and a national directory of over 800 Christian social welfare agencies. Services are brought closer to members by 12 local and regional chapters.

Reviewer's Response and a Last Word

I must say it has been some time since I have seen such an outcry of objection over a book review; indeed, I cannot recall the *Journal ASA* having published such in the over two years I have been a subscriber. I refer to the recent publication of letters reacting to my review of Dean Turner's book, *Commitment to Care*.

Nevertheless, these things certainly have their place. However the nature of the protests leave me, the reviewer of *Commitment to Care*, somewhat perplexed.

On the one hand, the author objects to my having misrepresented his purpose, then proceeds to restate the very point with which I took issue, namely, "that God's care is ultimately what gives meaning to things in the universe." Such an exalting of one divine attribute at the expense of the rest not only assaults the integrity of God's being, but also shows an extremely narrow perspective on the day to day realities of human experience. I suggest that there are a great many homeless, hungry, persecuted, dispossessed, and oppressed men and women for whom the concept of "God's ultimate care" seems totally irrelevant.

God is more than just love, and to exalt His love as dominant over His justice, wrath, etc. is indeed to place beyond the whole being of God a single attribute to which the rest of His nature is subservient. This is simply not the case with God.

Mr. Hazelett, on the other hand, passes by the review itself and turns on the reviewer. Had *Commitment to Care* been a work of pure science there may be some room for a charge of incompetency (may we say, lack of competence?). However, Mr. Turner's book is not science; rather, it is theology, natural theology, and the whole purpose of my review was to consider it in that light, a task for which, I feel sure, Mr. Hazelett would be persuaded I am altogether competent and qualified. And, when a theologian both denies and neglects the Scriptures as authoritative for his endeavors—as Mr. Turner has done in this book—he runs the risk of producing a work which can be criticized by serious students of that Word.

Further, I was rather disappointed that both correspondents failed to take note of the extremely complimentary remarks I made about the book's salutary features. To repeat, as an apologetic for theism vis a vis a rampant evolutionary world view, Mr. Turner has made some very helpful contributions.

T. M. Moore, President
National Institute of Biblical Studies
4001 N. Dixie Highway
Pompano Beach, Florida 33064

Statement required by the Act of October 23, 1962, Section 4369, Title 39, United States Code, showing ownership, management, and circulation of

JOURNAL OF THE AMERICAN SCIENTIFIC AFFILIATION

Published Quarterly at P. O. Box 862, Elgin, Kane, Illinois 60120.

The name and address of the editor is: Richard H. Bube, 753 Mayfield Avenue, Stanford, California 94305.

The owner is the American Scientific Affiliation, P. O. Box 862, Elgin, Kane, Illinois 60120.

The known bondholders, mortgagees, and other security holders owning or holding one per cent or more of total amount of bonds, mortgages, or other securities are: None

	Average No. of copies each issue during preceding 12 months	Actual No. of copies of single issue published nearest to filing date
Total No. copies printed	7680	8500
Paid circulation		
Sales through dealers and carriers, street vendors, and counter sales	0	0
Mail subscriptions	4984	6547
Total paid circulation	4984	6547
Free distribution	275	200
Office use, left-over, unaccounted, spoiled after printing	2421	1753
Total	7680	8500

I certify that the statements made by me above are correct and complete.

Harry Lubansky, Jr., Acting Executive Secretary

"God is love" (I John 4:8). God's love is what gives His wrath and His justice its meaning. God becomes wroth or judgmental because of lack of love on earth. God's love is indeed primary within Him; else why would we worship Him?

Richard Hazelett
30663 Lake Road
Bay Village, Ohio 44140

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 the publication. **CSCA** subscribes to the same statement of faith as the **ASA** and has the same general structure. However, it has its own governing body with a separate annual meeting in Canada.

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

Associate Membership is open to anyone with an active interest in their purposes. *Members* hold a degree from a university or college in one of the natural or social sciences, and are currently engaged in scientific work. *Fellows* have a doctoral degree in one of the natural or social sciences, are currently engaged in scientific work, and are elected by the membership. *Dues:* Associate $18.00, Member $24.00, and Fellow $32 per year. A member in any of these three categories can take the *special student rate* of $8.00 per year as long as he is a full time student.

ACTING EXECUTIVE SECRETARY:
HARRY LUBANSKY, JR., P.O. Box 862, Elgin, Illinois 60120.

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

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

LOCAL SECTIONS of the American Scientific Affiliation and the Canadian Christian and Scientific Affiliation have been organized to hold meetings and provide an interchange of ideas at the regional level. Membership application forms, publications and other information may be obtained by writing to: AMERICAN SCIENTIFIC AFFILIATION, P.O. Box 862, Elgin, Illinois 60120, or CANADIAN CHRISTIAN AND SCIENTIFIC AFFILIATION, P.O. Box 386, Fergus, Ontario, N1M, 3E2.

CENTRAL CALIFORNIA
CHICAGO
DELAWARE VALLEY
GUELPH, ONTARIO
GULF-SOUTHWEST
INDIANA
NEW ENGLAND
NEW YORK CITY AREA
NORTH CENTRAL (Minnesota)
OREGON
SAN DIEGO
SAN FRANCISCO BAY
SOUTHERN CALIFORNIA
TORONTO
WASHINGTON-BALTIMORE
WESTERN MICHIGAN
WESTERN NEW YORK

SECOND CLASS POSTAGE
PAID AT BRAINERD, MINN. 56401

"Upholding the Universe by His Word of Power" Hebrews 1:3

VOLUME 33 NUMBER 1 MARCH 1981

The American Scientific Affiliation

P.O. Box 862, Elgin, Illinois 60120

WHO MAY JOIN THE ASA?

Anyone interested in the objectives of the Affiliation who can give assent to our statement of faith may have a part in the ASA. Students, ministers, housewives, teachers, or others with little training in science may join as Associates. Associates receive the *Journal* and *Newsletter* and take part in all the affairs of the Affiliation except voting and holding office. Men or women with at least a bachelor's degree in science who are currently engaged in some kind of scientific work (research, teaching science, practicing medicine, etc.) may qualify as *Members* of the Affiliation. "Science" is interpreted broadly to include mathematics, engineering, medicine, psychology, sociology, economics, history, etc., as well as physics, chemistry, biology, astronomy and geology.

WHAT ARE THE MEMBERSHIP DUES?

Annual dues for *Members* are $24. For *Associates,* those who are interested in the work of the Affiliation but who do not wish to become (or do not qualify as) Members, annual dues are $18.

Any full-time *Student* may join at specially discounted annual dues of $8.00

Canadian Scientific and Christian Affiliation was incorporated in 1973 as a direct affiliate of the American Scientific Affiliation with a distinctively Canadian orientation. For more information contact:

Canadian Scientific and Christian Affiliation

P.O. Box 386, Fergus, Ontario NIM 3E2

The American Scientific Affiliation Application for Membership

Name _____

Address _____

City _____

State _____ Zip _____

Occupation _____

Employer _____

Academic Preparation:

College/University Degree Year Major

_____

_____

_____

Church Affiliation _____

I am interested in the aims of the American Scientific Affiliation. Upon the basis of the data herewith submitted and my signature affixed to the ASA Statement below, please consider my application for membership. I understand that I may become an Associate if I do not qualify as a Member at present.

I hereby subscribe to the Doctrinal Statement as required by the Constitution: [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.

Signature _____

Date _____

SEND TO:

American Scientific Affiliation
P.O. Box 862
Elgin, IL 60120