

# JOURNAL OF THE AMERICAN SCIENTIFIC AFFILIATION



*An evangelical perspective on science and the Christian faith*

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***A Christian Affirmation  
on the Stewardship of Natural Resources***

***When Was the Last Time  
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***Also . . .***

***Personal Knowledge  
Scientific Theology  
A Christian in Industry  
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*"The fear of the Lord is the beginning of Wisdom."*

Psalm 111:10

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# JOURNAL OF THE AMERICAN SCIENTIFIC AFFILIATION

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## A Christian Affirmation on the Stewardship of Natural Resources

**The existence of all life requires the use of energy and natural resources. Responsible living requires responsible use of energy and natural resources.**

We, who are citizens of the USA, have been using almost six times more energy per person than citizens of the rest of the world. (Coal equivalent energy use in kilograms per capita was 11,244 for USA in 1971 compared to 1,927 for world average.—United Nations *Statistical Yearbook, 1972*.) This imbalance is not only in terms of personal affluence and luxury, but also in terms of social and industrial practices.

Even the development of new sources of unlimited energy will not alter the crisis presently coming upon us. (1) If it were possible to bring the rest of the world up to the standard of living currently enjoyed in the USA, and if in the time required to do this the population of the world only doubled and the overall use of energy (from fossil fuels, or nuclear sources) only doubled, we would be within a factor of two of generating enough heat on earth to melt the polar ice caps and inundate the coastlines of the world. There is an *absolute limit* to the amount of energy that can be generated from these sources, even if their supply were unlimited. Of course the increased environmental pollution resulting from such energy use would, in itself, be totally limiting. (2) Our civilization depends critically not only on energy, but also on a host of materials such as metals, which are in limited supply. Unless use is followed by recycling and re-use, we will find ourselves without the basic materials needed for human welfare.

*The Christian has specific reasons for responding to the needs of his community and the world in a time of crisis for energy and natural resources. It is essential that Christians be leaders and example-setters in the days ahead, not indifferent or reluctant followers. Christians in the USA have been blessed with greater affluence; they have also been given, therefore, greater responsibility.*

1. The Christian believes in God as Creator and Sustainer of the world. Natural resources are a gift to us from God. They merit our respect and careful attention because God has made them. It is part of our responsibility to use and manage these resources in a way that glorifies God and contributes to the well being of our neighbor.

## A CHRISTIAN AFFIRMATION ON STEWARDSHIP

2. The Christian believes that the human being is made in the image of God and has been given a unique position in the created universe. God is pleased to act under ordinary situations through human beings who are committed to Him. To act responsibly with respect to natural resources is therefore to serve God.

3. The Christian believes that Jesus Christ is the Lord of the Cosmos. He who died for us on Calvary and rose again three days later is the same Lord by Whom all things were created, for Whom all things exist, and to Whom all things are intended to be gathered. To be an obedient disciple of Jesus Christ is to be a responsible steward of the resources of the Cosmos.

4. The Christian believes that he is called to serve God and be obedient to Christ in many cases through his neighbors, those presently living and those still to be born. Thus to be wasteful of natural resources or to use them thoughtlessly or selfishly in indifference to the needs of our neighbors, is to yield to disobedience.

5. The Christian believes that he is called to be a witness to the new life that is in him through every aspect of his life. Living responsibly toward the natural world and toward his neighbors is an essential aspect of Christian witness to the saving grace and love of God.

*Because of these specific reasons and others that might as well be adduced from the biblical record, we Christians pledge to live in a way that is responsible with respect to the natural resources given to us by God. In particular we pledge:*

1. To discipline our pattern of living so that energy and resource conservation is fed in at the beginning along with our personal preferences and conveniences, thereby permitting energy conservation to be achieved simply by better planning and thoughtfulness.

2. Consciously to decrease the amount of energy that we use by doing for ourselves what might be done for us by an energy-using machine whenever and wherever possible.

3. To limit our individual use of the automobile insofar as this is possible, and to attempt to cooperate in sharing automobile transportation, or to substitute bicycles and walking wherever feasible.

4. To replace, as it becomes possible, our large gasoline-inefficient automobiles with smaller gasoline-efficient automobiles, and to decrease the number of automobiles deemed "essential" per household.

5. To avoid overheating our homes in the winter, seeking rather to put on sweaters and seek better insulation, and to avoid overcooling our homes in the summer.

6. To reduce to an absolute minimum, and to eliminate if possible, all purely recreational uses of gasoline, which also have negative environmental impact.

7. To reduce to a minimum the use of natural resources for activities that are purely in the luxury category, guiding ourselves by the remembrance of how many others will be cold, hungry, or without the preaching of the Gospel because of our unnecessary activities.

8. To avoid foods and other commercial products that are packaged, treated, processed or in other ways manufactured at the expense of energy and rare natural resources, without corresponding nutritional or health benefits, simply for the sake of convenience or sales attraction.

9. To seek other modes of energy supply as the opportunity and our own situation allow us, e.g., the adaptation of solar energy to meet at least a portion of our heating needs if we can afford to do this, in order to release scarce oil and gas for those who must use these fuels.

10. To avail ourselves of opportunities to become educated on what it means to be *truly* responsible stewards of energy and natural resources in a particular situation, recognizing that many problems may not have obvious and simple solutions. (For example, is it better to use glass containers for milk that can be re-used but require heat and water to sterilize them, or to use paper containers that must be manufactured anew for each use but can be disposed of after use, although probably not without environmental degradation?)

11. To support those public officials who truly seek to face and resolve the problem in a way that is as fair and equitable as possible to all involved, particularly to the poor and underprivileged in the United States and in the Third World countries, and to oppose those public officials who do not.

12. To develop a consciousness of what it means to be God's steward of energy, of water, and of natural resources, so that waste and indulgence become as offensive to us as sin, and conservation and responsible use become rewarding whole-hearted service to God.

**R.H.B.**

# Energy and Christian Stewardship: An Economist's Appraisal



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*The responsibility of individual Christian stewardship with respect to energy as well as other resources is best served by economizing behavior, even when markets work imperfectly. Some observations are made about the possibility and direction of economic growth in the presence of exhaustible resources.*

## The New View on Energy

The new public awareness of the long-run energy problem has had the beneficial effect of increasing the sensitivity of the Christian community to the biblical demand of stewardship. The consciousness of the limitation of the earth's energy resources has forced us to think about our Christian duty to see to the well-being of the whole human family. This new thinking is beginning to make its way into print, and one of the more thoughtful examples is Richard Bube's "A New Consciousness: Energy and Christian Stewardship" (*Journal ASA*, Supplement 1, 1976).

Bube calls us to a life of energy conservation. This involves several dimensions. We are to reduce our standard of living and simplify our lifestyles. We are to improve the efficiency with which we consume energy. We are to try to become more self-sufficient, using energy resources that are renewable and close at hand. All of our practices should be environmentally benign. Bube catalogues many examples of specific things individuals can do that are energy-conserving.

This approach to the energy problem does not sound very much different from the sort of thing that has become (or recently was) regular fare in the general periodical literature. Bube draws heavily on *Science*, *Scientific American*, and *Technology Review*, and it is not surprising that he sounds rather like them. That is *not* to say that energy conservation as he lays it out has no biblical foundation. The idea that we must bring our consumption of energy, along with everything else, under the lordship of Christ is basic to any Christian understanding of the issue. That understanding certainly pushes us in the direction of con-

servation, for reasons that by now are well-known. Bube is especially correct in calling us to a simpler and less expensive lifestyle. While the Bible points out that wealth is a blessing from God, it also warns of the danger that the well-off will be tempted to trust in riches rather than God, and to shirk their duty toward the poor.

## Raising Some Questions

When it comes to energy efficiency and self-sufficiency, however, a Christian economist has to raise some questions to Bube's position. He tells us we must insulate our homes, but how much? He tells us we must seek local recreation, but how far away? He says we must shun aluminum cans, but in favor of what? He says we ought to build solar heating plants and windmills, but how many? In other words, he asks us to expend real resources in the pursuit of energy conservation, but he gives us no guidance about how far we should go. The advice is therefore ultimately unhelpful, because we really don't have a clue about whether or not we are already doing enough of those things.

I think the reason for this problem in Bube's article and the literature that stands behind it has to do with some misconceptions that many in the engineering profession share about the economics of energy use.

Bube begins with two premises: that life is synonymous with the consumption of energy, and that our major environmentally-acceptable sources of energy are rapidly being depleted. From these premises he concludes that energy is scarce in a sense that no other good is, and that therefore we must have an "energy standard of value". He also seems to believe

that economic growth and maintainance of high employment are not possible in the face of this special scarcity of energy.

To an economist, this line of reasoning is a bit strange. Of course energy is scarce, but so are a lot of other things, like building materials and human labor. An economy that is working properly should be able to balance the scarcity of one thing against another. As exhaustible energy resources become more scarce, the economic system should induce people to substitute renewable for exhaustible energy sources, energy-conserving for energy-using technologies, and labor- or material-intensive goods for energy-intensive ones. This idea of substitution is not foreign to Bube—it is important to his idea of conservation. What is different is the notion of many competing scarcities and an allocation mechanism to balance them.

### We Must Economize

With this broader perspective we are better equipped to answer the question of how much of our scarce real resources we should expend in order to save exhaustible energy sources. We should as Christians conserve energy to the point where the resources we use in conservation efforts are equal in economic value to the energy we save. In other words, we should minimize the pecuniary costs of the activities we decide to undertake. We must economize.

Economizing behavior has the advantage that it takes into account our responsibility as Christian stewards to care for and protect *all* of creation, and not just the special subset of exhaustible energy resources. In that sense it seems to me a much more complete response to the Cultural Mandate than behavior that focuses exclusively on energy.

The course I suggest does not seem startlingly new or different. Indeed, it does not seem to reckon with our newly perceived energy problem (Bube insists on the term “crisis”) or our new consciousness of the implications of Christian stewardship. It is the course that our shrewd Christian fathers have followed for generations before us. I do not think that is a bad thing, for in spite of all our changed perceptions, the predicament of mankind is not much different from what it always has been. We have always been running out of something, whether virgin forests, rich ores, arable lands or fresh water. Economizing has brought us through these recurrent crises to a life better in material terms than ever before, a great blessing. We must think hard before we reject our fathers’ approach.

### Economic Efficiency

Now I must become technical. The idea that market prices provide the information needed for responsible Christian behavior is not intuitive, and I must be careful in sketching out the argument.

It is an analytical proposition that in a model economy with certain properties (which we come to later), economizing behavior leads to an allocation of resources that makes everyone as well off in his own mind as he could possibly be, subject to the resource constraints on the economy. Hence economists naturally claim that economizing behavior is best (in fact, they usually assume it is the only rational behavior), and most of their policy recom-

mendations are attempts to make the real economy more closely resemble the model. When economists disagree, it is usually about how close reality is to that model.

Many Christian economists (and a growing number of others in the profession) find this argument unsatisfactory.<sup>1</sup> The main problem is that the standard of morality employed is utilitarian—“the greatest good for the greatest number” is the maxim at the base of these normative claims. No room is left for the demands God places on us as economic actors to pursue a lifestyle based not on our own desires, but on our calling to be His servants. So the normative claims of secular economics fall.

I believe these problems can be solved, at least in part, by reassessing the role and character of actors’ preferences in the theory. Let us discard the notion of arbitrary preferences, and instead say that our economic agents have needs and desires for certain qualities that economic goods possess.<sup>2</sup> In the case of Christians, these needs and desires ought to be determined by God’s will for them in the social setting they find themselves in. It is then true that economizing behavior will allow Christians to pursue their calling in a way that makes the least demand on the scarce resources of the earth. It seems to me that this is the essence of stewardship.

This view does not permit grandiose claims of social optimality in the style of the old theory. Scarcity is a function of demand as well as supply, and the bulk of demand comes from people whose needs and desires are not informed by Christian sensitivities. So prices and quantities will look very different in the real world from the values in a hypothetical perfect world. I do not think this consideration vitiates the claim that economizing behavior is best. The spirit of generosity toward our fellows and guardianship over the earth that prompts economizing must be related to the actual demands that are placed on resources, and not some hypothetical demands. If we are going to conserve resources, we must conserve those the most that are being utilized the most, no matter what purposes they may be utilized for. What we have done in undercutting the social optimality claim is to make the foundation of economic policy more uncertain, for at the policy level the moral character of end resource use must enter the decisions, as well as scarcity. Policy analysis is the analogue of individual stewardship.

My view also raises certain questions about the specific properties of the Christian’s preference field, the proper role of prices in determining the shape of the lifestyle itself, and the psychological foundations of positive economics. These are complicated questions, and I do not have good answers to all of them, so I will leave them for another occasion. I do not think my main argument is affected.

### Real World vs. Model World

The nagging question remains: How close is the real world to the economists’ model? Do the prices we observe reflect true scarcities? Are those prices the proper guide for Christian behavior? As I recite the familiar litany of divergences between fact and fiction, I want to argue that Christians should act collectively to make the economic system work better, but that in

their individual decisions they should stick to economizing behavior nevertheless.

(a) If there are significant monopoly elements in the industrial structure, prices will not reflect true scarcities. Other things being equal, monopolists will charge prices that are too high, and consequently sell too little of the good they offer. Some areas of the economy are characterized by monopoly more than others. The OPEC cartel having monopolized the market for crude oil, theory and empirical work both suggest that the price of petroleum is too *high*, and the quantity consumed too *small*.<sup>3</sup>

To control the monopoly problem in the domestic economy we have public policies such as the antitrust laws and the public regulatory commissions. International monopolies like OPEC are beyond such controls, and are much harder to deal with.

Can the Christian by manipulating his purchases do anything to mitigate the effects of monopoly? I think not, unfortunately. If he buys less than the economical amount of the monopolized good, he may hurt the monopoly financially and strain a cartel agreement. But at the same time he discourages potential competition, and he moves the allocation further away from efficiency. If he buys more than the economical amount, he plays into the monopolists' hands. His income is transferred to them. The only reasonable position is to take a political posture favoring more effective public control of monopoly or public action to offset the power of foreign monopolists.

(b) External effects can ruin the efficiency of the price system. An external effect occurs when the economic decision of one agent has a direct impact on the well-being of others. When I decide to drive my car, the exhaust affects the quality of the air that others have to breathe. If I maintain a lovely garden in front of my house, I am thereby increasing the happiness of my neighbors. External effects are essentially goods that are scarce (clean air, lovely gardens) but that for practical reasons have no price attached to them. The examples are endless.

Should an individual Christian take into account external effects when he allocates his purchases? In some cases no doubt the answer is yes. In those cases where the external effects are localized and easily discernible, the individual is in a good position to make an intelligent decision. On the other hand, where the externality falls in small amounts on a large number of people well removed from the decision-maker, he has an impossible decision to make. Clean air is scarce, but so is transportation, and more of one means less of the other. At what point does my decision to drive make the balance between the two unfavorable? It is impossible for me to tell, simply because I have no way of measuring the incremental effect of my driving on the millions of others who will breathe that air.

Should the Christian boycott the products of a firm that pollutes or engages in other undesirable behavior? My own research<sup>4</sup> indicates that individual actions of this type have no impact on the firm's decisions except when such actions are part of a political protest against the firm's behavior. And even in that case, satisfactory redress is likely to come only by way of a legislative remedy.

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Fortunately, again the collective decision-making process can help us out. The responses of government to the problem of externalities have enormous variety. In terms of our examples, pollution-control requirements on automobiles and provision of public parks come to mind. The Christian should take a leading role in these decisions.

(c) Time has a price, too, and that price is the interest rate. In a competitive economy it is determined by people's degree of impatience and by the technical opportunities for transforming goods today into goods tomorrow. In turn, the interest rate determines how much we will save for the future. If the interest rate is too high, we will use up our exhaustible resources too fast.

There has always been a feeling among thoughtful economists that time is more scarce for the individual than for society as a whole, giving an interest rate that in some sense is too high. Individuals, after all, are mortal, while society is not. Uncertainty about the future makes people more present-oriented, or impatient, than they should be. One great economist once said that a positive interest rate was simple failure of the imagination. The Bible prohibits usury, which tends to support the idea that market interest rates are too high. The biblical position, however, could be explained as concern for the poor in an agrarian economy.

Since capital is scarce, it seems to me that the proper social discount rate must be greater than zero, though it is most likely less than the market interest rate. But the effects of a too-high interest rate so pervade the economy that it would seem impossible to give our Christian steward any sound guidance on how to allocate his own resources between present and future. Anywhere that time enters the production process the interest rate will enter the cost calculations, and it is beyond the individual's powers to sort that out for every different good.

Again, there are some public policy steps that may be appropriate. It may be that the government should use a lower discount rate in evaluating public projects. It may be that private investment in certain kinds of industries should be subsidized, not for the sake of the incomes of investors or the "trickle-down" effect on employment, but for the sake of a larger future production capacity. It may be that the rate of depletion of exhaustible resources should be slowed somewhat for the sake of future generations. But all of these are social, not individual, decisions. Christians should be involved in them in their role as citizens.

(d) Even if all else is working smoothly and the allocation of resources is correct, the distribution may still be flagrantly unjust. And it is true that if the income distribution were different, the efficient prices would be different, too. But we do not know very

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clearly what the prices would be under a just income distribution (even if we knew exactly what that distribution would be). It is also no simple matter to predict the distributional impact of a given price change. And it is by no means certain that a given individual action will result in a particular change in prices.

It would seem foolhardy, then for the individual Christian to try to improve the income distribution by manipulating his demand for certain goods. The economizing mode of behavior at least has the advantage that it maximizes the amount of income the Christian has "left over" after meeting his own needs, and thus available to be given to the poor directly. One can have a far more powerful impact on the lives of the poor by donating resources to Christian relief and self-help organizations than by frittering away one's income on misguided attempts to lower the price of this or that good by substituting something more expensive.

It should be obvious that it is also important for Christians to support public policy measures, like tax reform, that would improve the income distribution.

### Economic Growth

The topic of economic growth in the presence of exhaustible resources is big enough to merit a large and growing literature of its own. I will leave the details to another essay, but since Bube raised the subject, I would like to add something here.

The view that economic growth is impossible in the face of declining stocks of fuel and materials became popular with the publication of *The Limits to Growth* in 1972. The analysis in that book is quite faulty and has been widely criticized since.<sup>5</sup> The commissioning body, the Club of Rome, was dissatisfied enough to start another study, and has now repudiated the earlier book. The Hannon article<sup>6</sup> quoted by Bube suffers from the same kinds of difficulties, and worse.

In analytical growth models of the sort that economists are familiar with, it is easy to show that if there are sufficient opportunities for substitution of the sort we discussed earlier, and sufficient technical

progress, then economic growth is possible even with exhaustible resources. The direction of growth will be different from what we know now—there will be more reliance on labor and reproducible capital. Some observers derisively talk about taking in each other's laundry, while others are inclined to envision Mozart quartets by candlelight in lieu of television. Indeed, there is a passage at the end of *Limits* that talks about the growth of such labor-intensive activities as art, education, research, and athletics in their steady-state world.<sup>7</sup> That these are *economic* activities seems to escape the writers, even though they make their own living in research and education.

The kinds of activities that seem destined to give the impetus for future growth are those that receive much government support, though they may be under private administration. There is a great temptation during hard times like the present to cut back on those activities. We who are concerned about the future economic health of the country must resist those impulses.

### Conclusions

It is a good thing that scientists and engineers have a different view of these problems than economists and other social scientists do. Economists like to theorize that the rate and direction of technical progress is determined by the direction of the economy, but it seems clear to me that if that were the whole truth, we would not enjoy the benefits of technology nearly as much as we do today. To some degree technical researchers must focus on what ought to be done, not just on what can be foreseen to be profitable.

However, it is true that we can learn something about what ought to be done from the workings and outcomes of the economic system, provided we know how to interpret the signals properly. Market prices can provide a great deal of information about a great many social and technical relationships at very low cost to the user, and we are foolish to ignore that information when we make decisions about our lifestyles.

### REFERENCES

- <sup>1</sup>See e.g. A. B. Cramp, *Notes toward a Critique of Secular Economic Theory*, Toronto: Institute for Christian Studies, 1975.
- <sup>2</sup>The distinction between goods and their characteristics is due to Prof. Kelvin Lancaster. See his *Consumer Demand: A New Approach*, New York: Columbia U.P., 1971.
- <sup>3</sup>See W. B. Nordhaus, "The Allocation of Energy Resources," *Brookings Papers on Economic Activity*, 1973: 1.
- <sup>4</sup>*Protest Through Market Action*, unpublished dissertation, M.I.T., 1975.
- <sup>5</sup>See e.g. Nordhaus, "Measurement without Data", *Economic Journal*, 1973.
- <sup>6</sup>B. Hannon, "Energy Conservation and the Consumer," *Science*, 1975.
- <sup>7</sup>P. 180, Signet edition.



## When Was the Last Time You Hugged a Homosexual?



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ALFRED R. BARROW

He glanced casually at his watch and continued gazing into the oncoming headlights. It was getting late now and he had been standing there for the last 45 minutes with his thumb jutting out, seeking a ride. To some passing by, he was just another hitch-hiker, but to those who knew the city and knew that this was a "Gay Strip", his intentions were more obvious. Finally, a car stopped and he sauntered over to the window and gazed in. Not much was said, but the message was clear. He got into the car and together they sped away into the night. He had found his "lover", at least for that night.

This is a common scene which is being recreated in thousands of cities and towns across the country. But this scene is not limited to city streets and lonely pick-ups, but can be seen in bars, parks, high schools, college campuses, and among the business community. Homosexuality knows no social class, no certain geographical area, nor any one gender. It is a phenomenon which has risen to a high degree of exposure and prominence in our society within the last seven years. It has, in essence, taken the country by storm, and has gained such power that it is now infiltrating the very institution which has proven to be its greatest adversary, the Christian church.

There seem to be so many differing opinions on homosexuality that we are not sure which to accept and which to reject. With the rise of the "Gay Church", the Scriptural position on homosexuality has even become blurred to some. Because of this "smokescreen of uncertainty" which the scientific and liberal theological communities have thrown up around this issue of homosexuality, we as evangelical Christians must know more than ever exactly how and where we stand. It seems, then, that we need to do two things.

1. We must become educated in exactly what the homosexual is and why he is homosexual.

2. Knowing this, we can then help the homosexual to change through love and understanding.

This is not, however, a love and understanding rooted in humanistic principles and presuppositions, but a love and understanding which finds its expression through the redeeming power and shed blood of Jesus Christ our Lord.

It is our opinion, that much of the failure and frustration which the homosexual finds in attempting to change, as well as the rising acceptance of the homosexual lifestyle, is rooted in a misunderstanding of just what the homosexual is and why he is homosexual in light of Scripture and scientific research. It is felt that, as evangelical Christians, the Scriptures must be our primary source of knowledge. It is the goal of this article, then, to define the problem of homosexuality and recommend a treatment. The article is not an attempt to systematically present research findings with regard to the issue of homosexuality, but rather to share our perceptions as practitioners of the basic issues involved as well as a general treatment methodology for change.

### What and Why?

What, then, is the homosexual and why is he homosexual? In determining exactly what the homosexual is, we must remember that the term homosexual is a very broad one. Basically, the homosexual is a male or female who is motivated in his adult life by a preferential erotic attraction to members of the same sex and who engages in overt sexual relations with them.

Many individuals have experienced a homosexual encounter during adolescence or when deprived of adequate heterosexual contact while others may have had occasional erotic thoughts with regard to members

of their own sex. These incidents would not, in our opinion, be considered homosexual. It is most destructive to label a person "latent homosexual" because he has some thought or past behavior with regard to members of his own sex. It is our opinion that people must be actually engaged sexually over a span of time before they should be diagnosed as homosexuals.

One must be careful whom he labels or calls a homosexual, for it can prove to be detrimental, as in the case where an individual has an occasional erotic thought about a person of the same sex, or is impotent, frigid, or masturbates to excess. Even within the realm of a diagnosed homosexual there is a continuum. This continuum appears to range from the occasional sexual experience to total homosexual involvement with no heterosexual orientation. The danger in labeling a person homosexual because he had some past homosexual experience or thought, is that he may live up to that label in a self-fulfilling prophecy, or give up, thus moving him toward the other end of the continuum and increased homosexual behavior.

### A Choice is Required

It must be noted that the Scriptures point out that homosexuality is not a *condition*, but rather a *conduct*. The Bible never speaks of being a homosexual, but rather speaks of homosexual *behavior*. Heterosexuality is considered the natural state or condition of man. This can be seen in Romans 1:26, 27.

A choice is required. We believe a man or woman is not born a total homosexual nor is he born as a bisexual with a heterosexual and homosexual orientation being natural to him. But rather, he is born with a total heterosexual orientation and chooses to indulge in homosexual behavior.

As to the question of why a person is homosexual, there seem to be two points of view:

1. Homosexuality is the result of some glandular disturbance or some genetic predisposition.
2. A person is homosexual because of societal conditioning and parental upbringing.

Basically, these two statements state that a person is either born a homosexual or learns to be a homosexual, which in most cases implies a choice. If one accepts the fact that there is a basic endocrine imbalance or that genetic heredity is the basic cause of homosexuality, then it removes all personal responsibility from the individual and prevents any significant psychotherapeutic treatment or spiritual awakening. On the other hand, if one accepts the social learning theory as the etiology of homosexuality, then the problem can be treated. Possible conditioning situations could include parental role reversals (weak father or overindulgent-dominant mother), cool parents, poor parental marriage relationship, or a pathologically close relationship with a parent of the same sex, all coupled with poor sex education and a basic spiritual impoverishment in the home. The social learning theory implies that the person is not determined by his past, but by knowing his past, he can take responsibility for his actions now and change in a favorable direction; the current research tends to offer evidence to support this.

### A Social Basis

There appears to be little support for a genetic or hormonal cause of homosexuality in the Scriptures, which teach that *the homosexual is responsible for his behavior*. This appears to rule out any notable physiological cause of homosexuality. The Scriptures, however, do lean toward a social theory of homosexuality. Although Scripture does not see man as completely determined, i.e., man always being in constant response to stimulus around him without any free will, nevertheless, our sinful environment does have an effect upon us. For this reason, some individuals will have a greater number of homosexual-determining factors going against them in their environment than will other persons. It must be remembered that if a person can be led to perceive the effects the environment has had upon him, then he has a responsibility as a result of his free will to choose to act contrary to those negative influences. Society and Christianity especially, does not have the right, however, to reject or condemn an individual suffering from inappropriate choices resulting in homosexuality.

### Distorting Factors

Even though the facts concerning the state of homosexuality and its etiology lie before us, there are certain factors which, nevertheless, tend to distort and muddle a clear understanding of homosexuality. In the final analysis, there seem to be four basic factors serving to distort a clear understanding of homosexuality and adding to its rise in prominence.

The first factor is a general attitude of *self-indulgence* in our society. Hedonism, more and more, is becoming the order of the day. Sin is momentarily pleasurable, which tends to reinforce its reoccurrence. Homosexuality is a particular sex sin which is pleasurable in that a man and woman performing sex on one's own gender find it far more stimulating than heterosexual contact. The reason for this is that individuals of the same sex have the full capacity to know what is pleasurable and therefore can perform sexual interaction at a greater degree of intensity and pleasure than could be performed by one of the opposite sex. This, by the way, is a good reason why it is inappropriate to recommend sex with the opposite sex to a homosexual as a treatment modality.

A second factor tending to distort a clear understanding of homosexuality and adding to its current upswing of popularity is the *open acceptance* of homosexuality as a way of life. The founding of the Metropolitan Community Church in 1968 by Father Troy Perry, a gay minister, has served as a forerunner in the drive for the current popularity of homosexuality today. Since homosexuality is a moral issue, the gay church has provided society a way in which it can assuage its guilty conscience. Hence, we see the rise of such things as "Gay Pride Day," in major American cities, as well as, the ordination of gay ministers. It is interesting that the particular sin of homosexuality has a "Pride Day" when to our knowledge no one has ever suggested an "Adulterer's Pride Day."

The third basic factor is the fact that homosexuality satisfies man's basic nature of *selfishness*. The homosexual basically confuses lust with love and uses the

homosexual relationship in most cases to satisfy his own sexual desires. Because of this there is no need to develop long-term relationships that require day-to-day submission and a general selflessness in giving to another person. There are, however, rare occurrences where stable relationships have developed, but this is by far the exception rather than the rule.

The fourth and probably most important factor which adds to the distortion of a clear understanding of homosexuality is the often ignored fact that homosexual behavior becomes *a way of life*. As one reaches adulthood, certain thought patterns and ways of living become ingrained in us; a certain lifestyle is developed. It is the experience of most that certain habits and patterns of behavior are difficult to change after a long period of time. The problem with changing particular habits and patterns of behavior is that when one tries a new behavior it's usually anxiety-producing; therefore, one tends to stay with the learned behavior even though it may be unfulfilling with regard to one's total life needs. When the homosexual has some desire to change, he finds himself in a rut that's so deep there appears to be no hope. The homosexual does not pull out of his lifestyle or pattern of behavior easily; like any other habit or pattern of behavior, there is an immense amount of effort and discipline needed to change.

#### Basis for a Christian Stance

Having reviewed some aspects of homosexuality, as well as the basic factors which distort one's view of homosexuality, it is time that we as evangelical Christians take a knowledgeable and firm stance on the issue of homosexuality. However, it is not enough just to take a stance, but rather we must reach out to the homosexual and truly minister to him. In order to do this, four points should be kept in mind concerning homosexuality.

- (1) The belief that homosexuality is physiological and that homosexuals are created homosexual is a myth. Homosexuality's alleged "incurability" or "constitutionality" as espoused by some in our society today is supported by neither Scripture nor solid medical evidence. It is time that the homosexual is told that he has chosen this lifestyle and that he is responsible for it.
- (2) There are certain environmental factors during childhood which may predispose a person toward a homosexual orientation. However, a person can become aware of these factors and being aware of them, can then choose an alternative course of behavior. Man is not determined to the extent that he has no will. Homosexuals have chosen their behavior. This again points out that the individual is responsible and that homosexuality is not a *condition* but rather a *conduct*.
- (3) There can be healing. In I Corinthians 6:10 (The Living Bible), we read the following:

Don't you know that those doing such things have no share in the Kingdom of God? Don't fool yourselves. Those who live immoral lives, who are idol worshippers, adulterers or homosexuals—will have no share in His Kingdom. Neither will thieves, greedy people, drunkards, slanderers, or robbers.

*One must be careful whom he labels or calls a homosexual. . . . Even within the realm of a diagnosed homosexual there is a continuum.*

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Too often the homosexual reads this verse and then turns away in frustration without reading the following verse. Verse 11 goes like this:

There was a time when some of you were just like that, but now your sins are washed away and you are set apart for God, and He has accepted you because of what the Lord Jesus Christ and the Spirit of our God have done for you.

This verse boldly proclaims that there can be healing. But first, there must be a repentance, a giving up of oneself and an acknowledgment of weakness and wrongdoing. With confession, and a turning to God, there can be healing in a very supernatural way. This healing comes from the indwelling of the Holy Spirit.

- (4) Be aware of attempts to modernize ethics. Many Christians have fluctuated in their stand on homosexuality for the simple reason that they fall into the trap of basing much of their knowledge on their own experience and then apply this to their interpretation of the Scripture. We forget, in doing this, that much of our experience is based on societal pressures, as well as our own sinful perceptions. Eventually, our vision becomes distorted and our truth becomes untruth. Rather, we must look to the Scriptures and apply their mandates and truth to our experience. If we do this, our vision will always remain clear and our lives will always reflect a true image of God.

#### Prevention

There is, then, hope and treatment for the homosexual. However, before we consider treatment let us consider prevention. The key to prevention rests with the parents and the relationships within the family. Parental influence, also of course, involves spiritual development within the family as well as encouraging the appropriate sex education both within the family and in society at large. Parents must accept their responsibility for their children and must develop appropriate sex roles. Parents of homosexuals also must accept their responsibility without guilt. There is a difference between wasting energy in self-condemnation and being convicted to change.

The Scriptures have set up basic guidelines concerning the roles parents should take. The father should assume an appropriate father-figure in the home, that is, one of love and authority. He must be able to show love and affection to his children as well as tenderness, yet to be able to be firm and strong when the situation calls for it. Parents must look at their own marital relationship and decide if they are conducting their marriage with the appropriate godly principles. Does the wife respect her husband? Does

*“When was the last time I really reached out beyond myself and cared for and tried to understand the homosexual?”*

the husband love his wife and children? It is essential that there be open affection in the home and that Christ's love be the focus of the family interactions. This includes praying as a family, talking about the blessings God has given the family, and a general recognition of His role in family life. We must remember that homosexuality begins in the home. For it is out of a distortion of one's early homelife that the seeds of particular sins and personal misery are planted and come to full fruition in later life.

Education is a second important preventative measure. Since our society will not, it is important that the church take an intelligent stand against the flaunting of homosexuality in our present-day society. Proper information must be provided concerning homosexuality; this includes its psychology and etiology. For too long, homosexuality has been a hush-hush subject in the modern day Christian church and must be dealt with openly. However, this does not mean that the church, as it has in the past, should begin to “modernize its ethics”, but rather we must begin dealing with the problem of homosexuality in a truly Christ-like manner.

#### **Treatment**

Having taken into consideration the preventative factors of homosexuality, where then should treatment of those already homosexual begin? A good starting place is with the homosexual himself. The homosexual must realize that he has a choice with regard to his homosexuality. He had to choose in various situations over a period of time to become a homosexual. The homosexual must want to change, and, therefore, must stop asking what the straight world can do for him, but rather what he can do for himself. Not only should the church and the outside secular world be given a proper understanding of homosexuality, but also the practicing homosexual must receive education as to the etiology of the problem and the current pressure of today's society with regard to the fostering of homosexuality. In essence, the homosexual must remain aware of the fact that he can escape homosexuality and that God did not ordain him to be homosexual.

A second step in the treatment of the homosexual is the recognition that homosexuality is a sin. Until the homosexual recognizes that his homosexuality is

a sin, Christ cannot heal the homosexual. He must recognize that his lifestyle and homosexual behavior patterns are no different than any other sinful aspects of one's lifestyle, but that they are, nevertheless, a sin. Christ came into the world so that we might be reconciled to God in all aspects, including our sexuality. In addition, the homosexual must understand that his sin is not any greater than any other and that God does not measure the intensity of quality of sin, but rather sees all sin as the same.

The third, and probably most important step in the treatment of the homosexual, is the discipling of the homosexual who has made a commitment to Christ and has chosen to turn from his homosexual lifestyle. This discipling process will many times involve a great deal of counseling as well as understanding and caring for the changed homosexual. It is not an easy road he has chosen to take once he decides to renounce his homosexual lifestyle, but rather it is a long and arduous journey back to a more fulfilling life. It is essential during this time that the homosexual be supported and cared for by members of Christ's body, the church.

Probably the most effective discipling is done by individuals who have dealt with the problem of homosexuality themselves and have subsequently received victory over their problem. The peer self-help approach to discipling of the homosexual has unique healing aspects in that judgment and condemnation many times are replaced with understanding and hope. This peer self-help approach can be seen in the organization of Alcoholics Anonymous, which has had a remarkable healing rate and ministry among the alcoholic community. In the long run, the discipling process must involve building a good self-image, learning to submit to others in love, and accepting God's forgiveness with the reality that one must still deal with the historical consequences of one's sin.

#### **Conclusion**

In conclusion, we must each ask ourselves, “*When was the Last Time I Hugged a Homosexual?*” Or, in other words, “When was the last time I really reached out beyond myself and cared for and tried to understand the homosexual?” In the long run, it is our attitudes toward the homosexual and our basic concern for his plight which will truly make the healing difference. We must see the homosexual's sin as no greater than any other sin and as no greater than our own sin. For all men have sinned and fallen short of the glory of God, but praise God we have a Redeemer through Jesus Christ and He will not fail us.

that support their thesis.

#### **Incidence and Prevalence of Homosexuality**

To begin, the authors suggest that homosexuality is rising in prominence, which seems to imply a greater incidence and prevalence of homosexuality in our society. To be sure, the prominence of homosexuality is more manifest, but that does not necessarily mean that more persons are becoming homosexual (incidence), or that more persons in the population are homosexual than in the past (prevalence). It is extremely difficult to obtain accurate demographic fig-

## **POSITIVE THOUGH INACCURATE**

The preceding article by Campion and Barrow presents a positive Christian response to the current controversies about homosexuality within our society at large and within specific Christian communities. To it I must add my dissatisfaction with its scientific inaccuracies, but also report on my personal observations

ures for deviant behavior in a society. In his massive review of the world history of homosexuality, Arno Karlen<sup>1</sup> cautions against glib historical generalizations. For although social views and social acceptance or rejection of homosexuality have varied with time and culture, we have little objective data upon which to judge whether the incidence or prevalence of homosexuality does change with cultural mores. I suspect that it does, but the general limits of change are obscure.

### A Deviant Stereotype

Second, the authors, unwittingly it seems, perpetuate a deviant stereotype. That is, they plead for a recognition and extension of Christian love toward "homosexuals." Although they point out that if we take one piece of behavior—homosexuality—and make that behavior the label for the person, we violate personal identity, the authors perpetuate the error in their title. As Sagarin<sup>2</sup> points out, there is no such thing as a homosexual, but rather a wide range of persons with variations in their sexual identity and orientation. Thus if we are to follow the authors' proposals for Christian love we must replace the stereotypic label of "homosexual" with the real persons who experience a homosexual orientation.

### The Development of Homosexuality

Now several caveats about the development of homosexuality. I concur that our scientific evidence strongly supports a psychosocial etiology for homosexuality<sup>3</sup>. However the child is probably not born with either homosexual or heterosexual affinities, but rather the capacity for eventual sexual differentiation. We do know that gender identity can be changed early in life, and that distortions of gender identity result from early child experience before the age of four. Thus the notion of inborn heterosexuality does not seem to fit well with the facts.<sup>4</sup> Even more important, however, is the fact that sexuality orientation and sexual activity is rooted in and reflects one's gender identity. Put simply, homosexuality is *not* basically an issue of genital sexual experience. It is *not* a sexual problem at root, but an identity problem. The person of homosexual orientation tries to *find identity* through homosexual activity. Thus it is not surprising that such persons develop a homosexual "life-style". Consequently, the person who changes from a homosexual orientation to a heterosexual orientation may have achieved little if anything in terms of personal development, if his identity is still centered around sexuality.

If we understand that the development of homosexuality is an attempt to compensate for missing elements in the acquisition of identity, then it follows that sex education, or lack of it, probably has very little to do with the development of homosexuality. Good parent-child relations, solid gender identity, acquisition, and unequivocal development of self identity are the preventative measures against homosexuality.

In their attempt to transmit a view of personal responsibility, the authors over-emphasize the notion of "free-will" and the choice of homosexuality. All of our behavior is determined to some extent, just as we have degrees of freedom to choose in different social contexts, states of consciousness, knowledge, etc. It is

*It is a gross overstatement to say that homosexuality is chosen when we realize that it grows out of the murky antecedents of infancy, childhood, adolescence and young adulthood.*

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true that the homosexual person is responsible for his/her actions, and can exercise choices about behavior, appearances, life style, etc. But it is a gross overstatement to say that homosexuality is chosen when we realize that it grows out of the murky antecedents of infancy, childhood, adolescence and young adulthood.

I have given only a few examples of what I feel are very weak sociological and psychological analyses of homosexuality, in which the authors have continued to muddy the waters of understanding, which I have detailed elsewhere.<sup>5</sup>

### Some Personal Experiences

Nevertheless, I find myself agreeing with their conclusions and proposals based on recent experiences I have had with groups of "ex-gays". Heretofore, conventional wisdom and available clinical research data have suggested that to change homosexual orientations and activities was difficult at best and accomplished only through tedious, long-term, intensive psychotherapy. It seemed that "treatment" approaches had little to offer except for a very select few.

I am happy to report that some exciting and intriguing events have occurred over the past five years. Across the country in various places, Christian men and women have achieved successful changes in their homosexual orientations, their life-styles, and achieved major emotional and spiritual growth. As a result, much like Alcoholics Anonymous, small cells or groups of "ex-gays" are now offering counseling within the context of a nurturant Christian community, with apparent success. Although I plan to publish later a series of scientific studies on this process, I should like to share some preliminary observations.

1. Based on my personal intensive interviews, I am convinced that these persons were of a classic homosexual orientation and that there has been a profound and fundamental change in their sexual orientation.

2. In all persons I have observed, they first became Christians, began to develop a pattern of spiritual growth within which they came to view homosexuality as non-acceptable and sinful, and as a result of their spiritual growth changed their sexual orientation.

3. In all instances, the growth of their personal identity and selfhood preceded and produced a change in sexual orientation.

4. In all instances these persons were all intimately involved in a guiding, sustaining, and disciplining Christian community which was critical to their growth into a new being.

The import of these observations is tremendous, for it suggests that homosexual orientations are indeed amenable to profound change and it highlights the importance of the Christian community for such a process. In conclusion, the Christian approach sug-

gested by these authors is viable and I have seen it successfully at work in the lives of people.

REFERENCES

<sup>1</sup>Karlen, A. *Sexuality and Homosexuality: A New View*, New York: Norton, 1971.  
<sup>2</sup>Sagarin, E. "The Good Guys, the Bad Guys, and the Gay Guys," *Contemp. Sociol.* 2:3-13, 1973.  
<sup>3</sup>Stoller, R. J. *Sex and Gender*, New York: Science House, 1968.  
<sup>4</sup>Pattison, E. M. "Notes on the Current Quest for Gender Iden-

tity," *J. Relig. & Hlth.* 14:82-95, 1975.  
<sup>5</sup>Pattison, E. M. "Confusing Concepts about the Concept of Homosexuality," *Psychiatry.* 37:340-349, 1974.

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**CHAUVINISM, PATERNALISM  
 AND PUT-DOWN**

I find this article quite distressing. It helps to assume that the authors did not intend a scholarly work but rather something in the nature of a sermon, still, the quality of scholarship is sometimes claimed and certainly an article on a topic as important as this can afford to be evaluated in terms of scholarship. In this respect I find a great deal that is inadequate.

**Fact vs. Opinion**

If the authors were content in remaining in the discipline implied in their subtitle, "A Biblical Perspective on Homosexuality and Its Healing," I would have then had questions as to the quality of their biblical theology and exegesis, but would not be in a place to make such evaluations. Even if they had stayed with their "we believe," "it is our opinion," etc., it would have remained an expression of their views. However, they choose to incorporate psychology and medicine as substantiations for their beliefs and frequently use such words as "facts." For example, they say, "Even though the facts concerning the state of homosexuality and its etiology lie before us . . .", in spite of the reality that the medical and psychological community has a great many differing theories at present with respect to homosexuality, and that few feel that we are in a place where we really understand it. The authors, themselves, in something of a contradiction, have noted that there are differing points of view.

This fluctuation between dogmatic presentation on the one hand and a statement of opinion of the authors on the other hand can be seen in the difference between the two sentences they use to define the goal of the article,

. . . to define the problem of homosexuality and recommend a treatment. The article is not an attempt to systematically present research findings with regard to the issue of homosexuality, but rather to share our perceptions as practitioners of the basic issues involved as well as a general treatment methodology for change.

Sharing perceptions and defining the problem of homosexuality are qualitatively different. They certainly have their right to share their perceptions and have done so quite well. However, their defining of homosexuality in the absence of any careful and scholarly presentation of the many difficulties with such a definition leaves much to be desired.

**Genetics and Psychology**

Their treatment of genetics and homosexuality is a case in point. To dismiss this as "a myth" shows considerable lack of knowledge of the scientific enterprise and scholarly work. This is even more evident to me in their treatment of psychology. "Social learning theory" is treated as if it were a unitary theory and highly correlated with their Christian beliefs on this issue. However, social learning theory is not a homogeneous theory, even in the loose sense of the word, but is a collective term for a number of differing "microtheories" of learning that have varying strengths and weaknesses. Obviously, an eclectic collection will have many inconsistencies and none is more evident than the question of "will" or "choice," a topic that has not been very acceptable in psychology in general nor learning theories in particular, the authors' claim notwithstanding. Indeed, their thoughts that "conditioning" occurs in the development of homosexual behavior, might easily lead to the thought that the way to treat homosexual behavior is through "de-conditioning" procedures, but this is given no prominence apparently or even a place in the authors' considerations of treatment. Most psychotherapists who work under the general model of "social learning theory" would not feel in the least comfortable with the authors' position on homosexuality either in terms of definition or treatment. The use of value-laden terms such as "indulge," "weakness," "wrong doing," and "sin" is antithetical to the position of most learning theorists and outside the assumptions or propositions of learning theory, yet the authors make no attempts to point this out nor attempt an integration.

In a related way, they press an outdated form of the heredity versus environment issue; they pose it in terms of genetic factors versus social learning as the etiology of homosexual behavior. While this question still remains one of considerable interest in psychology, it is no longer "either-or" but rather an increasing knowledge of the complex interrelationships between the two, the way each interlaces with the other and serves as a trigger for the other, in a complicated intertwining. The authors seem to have no understanding of this.

**Responsibility and Guilt**

In many other ways their paper lacks the quality of careful and systematic work with the ideas presented, their interrelationships, their implications, etc. For example, they say that "parents of homosexuals also must accept their responsibility without guilt." The question of the interrelationship of the ideas of "responsibility" and "guilt" is not explored nor elaborated. It seems quite clear that the authors feel that guilt *and* respon-

sibility go together for at least some aspects of the homosexual's work with himself. Still, even there, it remains unclear whether the homosexual is or is not responsible for his past homosexual behavior, and at the very least, there is no exploration of this difficult question. In another area, the question arises as to whether psychology has any part to play in their view of the treatment of the homosexual. Clearly, they see the basis of treatment to be that which has been very much a part of the evangelical church rather than the psychotherapist's office. Why a homosexual should come to a psychotherapist at all is left unanswered. One might guess that if they were consistent in their position, they would not accept a referral of a homosexual (and charge fees) but rather refer him on to an appropriate church.

Here, of course, the authors depart from social learning theory by a distance of a few light years. There is no social learning theory of which I am aware that talks about this kind of treatment for homosexual behavior, yet the authors omit any mention of this or any attempts to integrate the two together.

### A Disturbing Tone

In general, the tone of the paper seems to be that the authors have a certain position with respect to what is the appropriate way to treat homosexuality, and have presented this, but have borrowed here and there, in a superficial and eclectic way from some aspects of

*Their defining of homosexuality in the absence of any careful and scholarly presentation of the many difficulties with such a definition leaves much to be desired.*

social learning theory to support their views, ways which on closer look are not justifiable. Beyond that, there is a quality of presentation, a tone of the paper that is disturbing. Upon reading the title, I had expected that there would be some considerations of the way in which homosexuals are alienated and pushed away by so many aspects of our society, including the church, and that there would be some appeal to close the gap. Instead, there seems to be a dogmatic presentation which, in my judgment, would have the effect on homosexual people with whom I have worked of alienating them even further. There is a quality of chauvinism, paternalism, and put-down. A reader might well end up feeling that the authors are much more interested in sweeping sin and compromise out of the church than in relating to homosexuals.

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## VALUABLE BUT SOMETIMES SUPERFICIAL

We should commend Campion and Barrow for their courageous attempt to bring before Christian and the scientific communities a subject we have all been running away from. They make several valuable points.

First they condemn the casual and irresponsible labeling of young men and women as homosexuals who may have experienced an erotic encounter or who experience erotic thoughts toward bodies of members of their own sex. Again, they rightly point out that homosexual behaviour ranges from occasional homosexual encounters to an exclusive homosexual life style. I agree wholeheartedly with their view that homosexuality should be defined (both scientifically and biblically) as conduct rather than condition. They should also be warmly commended in coming right out and calling homosexual behaviour sin, while at the same time pleading for compassion and help for the sinner.

In other sections of their article they seem to be less well informed and to underestimate the problem. I agree with them that Holy Scriptures must be our guide. But the Bible says nothing either about the etiology of homosexuality, or about its "treatment." This is understandable, for a sinful act is still sinful whatever the psychological causes leading up to it. And sin calls for forgiveness, not "treatment."

I am also unhappy about the Campion and Barrow attempt to deal with etiology. To say that the idea that "homosexuals are created (I presume they must mean

born) homosexuals is a myth" may or may not be true. Many of the older physiological theories have long since been discarded but modern research still comes up with new genetic evidence. I would prefer to say that genetic transmission of homosexuality is *unproven*.

To say that environmental factors account entirely for homosexuality is again a commonly held but unproven viewpoint. Both behaviourists and analysts would agree with the view—but neither of them (analysts or behaviourists) has demonstrated satisfactory evidence for their hypothesis.

The issue is important since the authors base their suggestions about preventing homosexuality on ideas which are neither biblical nor scientific, and which may add to the distress of already guilt-ridden parents.

I also am unhappy about what I feel is a superficial understanding of the gravity of the problem. While many male homosexuals behave in the way described in the opening paragraphs, I have encountered others (both male and female) whose search is not for eroticism, but for intimacy and companionship, and while their chances of finding it are not nearly so good as it is for those of us who enjoy heterosexual marriage, homosexual love (as distinct from homosexual eroticism) is a real and profound emotion. Many of the suicidal patients I treat are persons who have been abandoned by a homosexual lover. Many (men as well as women) weep heartbrokenly in my office over a sense of isolation or abandonment.

The word "healing" in the article is not defined. Does healing mean a change to heterosexual urges and feelings? Or does it mean peace with God and a willingness to accept life as a single person?

Among the many men and women practicing one-night-stand homosexuality a good number find it rela-

*I am unhappy about what I feel is a superficial understanding of the gravity of the problem.*

tively easy (depending upon the length of time they have adopted a homosexual life-style) to adapt to heterosexual relationships.

Others find it extremely difficult (and I refer now to born again homosexuals) either to have a warm relationship with, or an erotic relationship with a member of the opposite sex. Regenerated or not, they react with fear and revulsion to the very idea, and while I agree that the Holy Spirit through prayerful loving counsel will sometimes change such a situation, there are times when these unhappy people must adopt sexual abstinence.

After all, a man who is sexually intimate with a different woman every night is morally no different from a one-night-stand homosexual. He can and should be told to flee temptation and to quit his promiscuity. A homosexual can be given the same advice.

My final concern is the unrealistic advice to potential parents of homosexuals. In my experience, by the time parents wake up to inappropriate parental behaviour, these children are already too far along the road of homosexuality for the advice to help. Let us by all means teach parents to be good parents, but having had long experience in this too, I question whether we will thereby cut down children's vulnerability to homosexual behaviour.

I warmly commend the authors' comments on discipling homosexuals. There is a tremendous need for such men and women to be brought back also into what should be the healing fellowship of the church. I have one caution on the idea of ex-homosexuals helping newly converted ones. The comparison with A.A. is valid. But it should be remembered that A.A. can reach only 5% of alcoholics, and that while the contribution of a sober alcoholic cannot be overemphasized, there are some alcoholics who respond better to non-alcoholics.

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***The Authors Reply***

When efforts are made to comment on controversial issues, one is apt to generate controversy. We appreciate the comments of Dr. White, Dr. Pattison, and after re-reading Dr. Oakland's response, we will be starting an article entitled, "When Was the Last Time You Hugged a Seminary Professor?"

Drs. White, Pattison, and Oakland's remarks added greatly to the overall presentation, but basically, they get off the point by dealing with our article as a "scholarly work" rather than as an easy-to-read article based on personal opinion developed through observation as therapists.

Dr. White's question as to our definition of "healing" is well taken. However, we feel that the Scriptures do not necessarily point to healing as a re-directing of one's sexual orientation from homosexuality to heterosexuality. The emphasis in II Cor. 6:9-11 is upon the washing, sanctification, and justification of the individual into a new life in Christ. One does not renounce his homosexuality in the name of Christ so as to hopefully become heterosexual in his sexual orientation. This is not the ultimate motive. We feel that in some ways, heterosexuality may develop as the reformed homosexual grows into his new identity in Christ. Dr. Pattison's observations seem to confirm this. However, this is not always, nor does it necessarily need to be, the case.

In reference to Dr. White's concern as to our "unrealistic advice to potential parents of homosexuals", this advice was not intended to be seen as a "cure-all", but a call to action for a more thorough Christian family nucleus. We do recognize that choice of sexual orientation is ultimately the child's responsibility and no amount of "parental prevention" can be a deterrent to an act of the will.

We feel that both Drs. Pattison and White, had some difficulty in accepting our view that constitu-

tional homosexuality is a myth. Dr. White feels that this may or may not be true. Rather, he prefers to state that "genetic transmission of homosexuality is unproven". Dr. Pattison states that the "scientific evidence strongly supports a psychosocial etiology for homosexuality." He goes on to state, however, that "the child is probably not born with either homosexual or heterosexual affinities, but rather the capacity for eventual sexual differentiation". In both of these views, there is an uncertainty as to the nature of man's sexuality. We agree with Dr. White that the scientific evidence is inconclusive. Dr. Pattison's statement is a Freudian viewpoint, espousing a bisexual nature of man. We feel, however, that Scripture does not necessarily see this as "natural". Homosexuality is natural only in the sense that sin is "natural" to the Adamic or fallen state of man. Scripture, we feel, strongly supports constitutional heterosexuality. The creation story, as well as Paul's statement in Romans 1:27 strongly suggest a natural inborn predisposition to heterosexuality due to the fact that we are made in God's image. We strongly feel that this issue of constitutional homosexuality is a key issue in terms of our understanding this problem and providing help for those dealing with this problem. We have known many who practice homosexual behavior who feel they are "caught" or that this is "the way they were made". Freedom lies in the fact that they are not made this way, but rather that through help, this "habit" may be overcome. We are not ruling out scientific enterprise or research, but are encouraging it. However, we are encouraging research in this area based upon solid Christian presuppositions.

In conclusion, let us state that we are not minimizing academic excellence, but rather would like the reader to focus on the question—"When Was the Last Time You Hugged a Homosexual"?

**Michael A. Campion**  
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# A Biblical Basis for Behavior Modification



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*Experimental psychology has been attacked and discounted by some Christians because they do not agree with some experimental psychologists' opinions of how its basic principles should be applied. An integration of objectively verifiable principles of learning with the Christian faith seems a more beneficial course. Building upon the basic assumptions that there is no real conflict between God's Word (the Bible) and God's world, and that becoming a Christian involves an attitude but not necessarily a behavior change, this paper discusses the similarities between the findings of experimental psychology and the teachings of Jesus Christ. A cost-benefit model for self-control is also presented.*

One area of psychology which has received little acceptance in the Christian community is experimental (behavioristic) psychology<sup>1</sup> with its attendant therapeutic approach, behaviorial therapy (the application of basic learning principles to modify behavior). Experimental psychology has been assailed with such emotion-laden terms as "pseudoscientific," "mechanistic," "dehumanizing," and "ratomorphic," with little attention being given to its objective data and much being given to the opinions of its proponents.<sup>2</sup> Should we reject objectively verifiable principles of learning because we disagree with some experimental psychologist's idea of how they might be applied? Instead of living in fear of some malevolent "behavioral engineer," we could better use these principles to rearrange our own lives.

The purpose of this article is to offer an integration of a behavioristic and a Christian approach to behavior modification.

## Basic Assumptions

As a Christian experimental psychologist, I have operated under the assumption that there is no conflict between God's Word and God's world. Both are His creations, and He "is not the author of confusion" (I Cor. 14:33, KJV). Any apparent conflicts are perceived and not real ones. This does not mean that there may not be misinterpretations by man; however, knowledge of each should aid in the interpretation of

the other. We as Christians must be careful not to assume that our personal interpretation of the Word is the correct one if it conflicts with others' interpretations of the world, and vice versa. We must also take care not to worship either the Bible or the world, but to be ever mindful of their common Creator.

My second assumption is that becoming a Christian involves a change in attitude and commitment, but not necessarily a change in behavior. There is often a gap between what we as Christians will-to-do and what we will-do. Although commitment to behavior change is an important first step, it is in no way a guarantee that change will take place (i.e., we are still subject to the laws of learning). Perhaps commitment, prayer, and a tested change strategy would be a more suitable approach for modifying behavior.

## A Biblical Basis

A number of the basic principles of learning which have been the subject of extensive research by experimental psychologists were also mentioned by Christ. He stressed that Christians should analyze their behavior and understand that it is influenced by environmental events which precede and follow it. A close scrutiny of the gospels reveals several such observations which Christ made.

At least twice Christ appeals to us to analyze and change our behavior (self-control):

'Why do you look at the speck of sawdust in your brother's eye, with never a thought for the great plank in your own? Or how can you say to your brother, "Let me take the speck out of your eye," when all the time there is a plank in your own? You hypocrite! First take the plank out of your own eye, and then you will see clearly to take the speck out of your brother's.' (Matt. 7:3-5, New English)

The second passage suggests that we realize that there are cause-effect relationships in the earth and sky about us, but we fail to carefully analyze the cause-effect relationships that exist in the world of behavior.

He also said to the people, 'When you see cloud banking up in the west, you say at once, "It is going to rain", and rain it does. And when the wind is from the south, you say, "There will be a heat-wave", and there is. What hypocrites you are! You know how to interpret the appearance of earth and sky; how is it you cannot interpret this fateful hour?'

'And why can you not judge for yourselves what is the right course? When you are going with your opponent to court, make an effort to settle with him while you are still on the way; otherwise he may drag you before the judge, and the judge hand you over to the constable, and the constable put you in jail. I tell you, you will not come out till you have paid the last farthing.' (Luke 12:54-59, NEB)

One important class of stimuli which must be understood if we wish to control behavior consists of discriminative stimuli (antecedent cues). When a response has been reinforced in the presence of a certain stimulus, that stimulus increases the probability that the response will recur when it is again presented (i.e., "physical circumstances, social settings, the behavior of other people, and your own thoughts"<sup>3</sup> may serve as discriminative stimuli). Christ seems to suggest, as have psychologists,<sup>4</sup> that we may need to eliminate some discriminative stimuli which set the occasion for inappropriate behavior.

'If your right eye is your undoing, tear it out and fling it away; it is better for you to lose one part of your body than for the whole of it to be thrown into hell. And if your right hand is your undoing, cut it off and fling it away; it is better for you to lose one part of your body than for the whole of it to go to hell.' (Matt. 5:29-30, NEB) (See also Matt. 18:8-9 and Mark 9:43-47)

A second important class of stimuli includes reinforcers (rewards), pleasant events which follow a response and increase the probability that it will recur. One important reinforcer which psychologists have recognized and which Christ warns us about is the attention of others (social reinforcer<sup>5</sup>). He warns that in our acts of devotion we can receive man's reward or God's, but not both.

'Be careful not to make a show of your religion before men; if you do, no reward awaits you in your Father's house in heaven.

'Thus, when you do some act of charity, do not announce it with a flourish of trumpets, as the hypocrites do in the synagogue and in the streets to win admiration from men. I tell you this: they have their reward already. No; when you do some act of charity, do not let your left hand know what your right is doing; your good deed must be secret, and your Father who sees what is done in secret will reward you.' (Matt. 6:1-4, NEB. See also Matt. 6:5-6, 16-18)

Christ also assures us that our acceptance and aid of others will be rewarded.

'And if anyone gives so much as a cup of cold water to one of these little ones, because he is a disciple of mine, I tell you this: that man will assuredly not go unrewarded.' (Matt. 10:42, NEB)

'For the Son of Man is to come in the glory of his Father with his angels, and then he will give each man the due reward for what he has done.' (Matt. 16:27, NEB)

'But you must love your enemies and do good; and lend without expecting any return; and you will have a rich reward: you will be sons of the Most High, because he himself is kind to the ungrateful and wicked.' (Luke 6:35, NEB)

A third class of stimuli consists of aversive stimuli, annoying events which tend to decrease the probability of the recurrence of a response they follow and increase the probability of the recurrence of a response which removes them. Christ warns of the aversive consequences of our inappropriate (sinful) behavior.

A little later Jesus found him in the temple and said to him, 'Now that you are well again, leave your sinful ways, or you may suffer something worse.' (John 5:14, NEB)

'He who does not dwell in me is thrown away like a withered branch. The withered branches are heaped together, thrown on the fire, and burnt.' (John 15:6, NEB)

He who puts his faith in the Son has hold of eternal life, but he who disobeys the Son shall not see that life; God's wrath rests upon him. (John 3:36, NEB)

Another important principle involved in the control of behavior is modeling (imitation). "New responses may be learned or the characteristics of existing response hierarchies may be changed as a function of observing the behavior of others."<sup>6</sup>

'Treat others as you would like them to treat you.' (Luke 6:31, NEB)

'Pass no judgment, and you will not be judged; do not condemn, and you will not be condemned; acquit, and you will be acquitted; give, and gifts will be given you. Good measure, pressed down, shaken together, and running over, will be poured into your lap; for whatever measure you deal out to others will be dealt to you in return.' (Luke 6:37-38, NEB)

## A Behavior Modification Model

One of the major objections to behavior therapy has been the control that the therapist possesses when he decides what behavior needs to be changed and manipulates the consequences of that behavior. In recent years there has been a move toward self-control in which the individual sets the goals and designs and implements his own change strategy. This seems to be what J. B. Watson, the founder of behaviorism, was calling for fifty years ago:

I think behaviorism does lay a foundation for saner living. It ought to be a science that prepares men and women for understanding the first principles of their own behavior. It ought to make men and women eager to prepare themselves to rearrange their own lives, and especially eager to prepare themselves to bring up their own children in a healthy way.<sup>7</sup>

The behavior we engage in seems to be determined by our perception of the cost-benefit ratio (environmental consequences). I am defining cost as the presentation of an aversive stimulus or the postponement or removal of a reinforcing stimulus, and benefit as the presentation of a reinforcing stimulus or the postponement or removal of an aversive stimulus. Christ pointed out the many benefits of becoming a Christian, but he also pointed out the costs.

And to all he said, 'If anyone wishes to be a follower of mine, he must leave self behind; day after day he must take up his cross, and come with me. Whoever cares for his own safety is lost; but if a man will let himself be lost for my sake, that man is safe. What will a man gain by winning the whole world, at the cost of his true self?' (Luke 9:23, NEB)

'If anyone comes to me and does not hate his father and mother, wife and children, brothers and sisters, even his own life, he cannot be a disciple of mine. No one who does not carry his cross and come with me can be a disciple of mine. Would any of you think of building a tower without first sitting down and calculating the cost, to see whether he could afford to finish it?' (Luke 14:26-28, NEB)

Although the principle that we engage in that behavior which we perceive as maximizing benefit and minimizing cost is quite deterministic, it allows for freedom of choice. As frequently happens when we try to establish a new and appropriate behavior, benefit is perceived to be greater than cost, but when we initiate the behavior, we discover that the cost (fatigue, loss of reinforcement from the previous behavior) is greater than originally anticipated. Unless something is done to increase the benefit, the behavior ceases. At that point in time when we perceive that the benefit outweighs the cost, we can structure our environment in such a way that the benefit will continue to be higher than the cost in the future.

In order to diminish or eliminate an undesirable behavior, we must increase the cost of that behavior. It is also very helpful to increase the benefit of a desirable behavior which is incompatible with the one which is to be eliminated.<sup>8</sup>

Let him who steals steal no more; but rather let him labor, performing with his own hands what is good, in order that he may have something to share with him who has need. (Eph. 4:28, New American Standard)

*The basic principles of learning which have been investigated and applied by experimental psychologists are supported by Christ's statements about behavior.*

The ultimate goal of the change strategy is to increase the benefit of the desired behavior until the period of greatest cost has passed so that the behavior will persist even in the absence of the added benefit.

The structuring of a self-control strategy involves at least three important steps, "the specification of a behavior, the identification of its antecedent cues and environmental consequences, and the implementation of an action plan that alters some of these antecedents and/or consequences."<sup>9</sup> The books by Mahoney and Thoresen, Watson and Tharp, and Williams and Long (see References) are excellent guides for the person who wishes to implement a self-control strategy.

In conclusion, the basic principles of learning which have been investigated and applied by experimental psychologists are supported by Christ's statements about behavior. The appropriate application of these principles can modify our own behavior.

#### REFERENCES

- <sup>1</sup>Schultz, Duane. *A History of Modern Psychology*. (New York: Academic Press, 1975), p. 257.
- <sup>2</sup>Andrews, Allan R. Psychology as Scientism: Alienation by Objectivity. *Journal of the American Scientific Affiliation*, 27, 1975, pp. 55-59 and 130-135.
- <sup>3</sup>Watson, David L. and Tharp, Roland G. *Self-directed Behavior: Self-modification for Personal Adjustment*. (Monterey: Brooks/Cole, 1972), p. 148.
- <sup>4</sup>Watson, D. L. and Tharp, R. G., *op cit.*, p. 53.
- <sup>5</sup>DeRis, William J. and Butz, George. *Writing Behavioral Contracts: A Case Simulation Practice Manual*. (Champaign: Research Press, 1975), p. 5.
- <sup>6</sup>Bandura, Albert and Walters, Richard H. *Social Learning and Personality Development*. (New York: Holt, Rinehart and Winston, 1963), p. 47.
- <sup>7</sup>Watson, John B. *Behaviorism*. (New York: Norton, 1925), p. 248.
- <sup>8</sup>Williams, Robert L. and Long, James D. *Toward a Self-Managed Life Style*. (Boston: Houghton Mifflin, 1975), p. 26.
- <sup>9</sup>Mahoney, Michael J. and Thoresen, Carl E. *Self-Control: Power to the Person*. (Monterey: Brooks/Cole, 1974), p.

*For many years there has been talk about the need for engineers to get a liberal education. . . The development is an encouraging one, but not because of the false notion that study of the humanities will improve the engineer's character and make him a better citizen. . . . I submit that study of the liberal arts will rob him of his innocence, stain his character, make him less "moral"—or at least, less naive. And this is exactly what the engineer needs. In all of his thinking, henceforth, he will have to take into account the imperfections and the absurdities of his fellow human beings.*

Samuel C. Florman

*The Existential Pleasures of Engineering*, St. Martin's Press, New York (1976), pp. 38-40.

# Lowering the Reactance of Psychologists and Theologians to One Another



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*Lowering reactance among theologians and psychologists is a task relevant to today. Over the past centuries theologians and psychologists have built up a feeling of distrust toward one another. This distrust or fear stems from the fact that either group views the other as a threat to its freedom. Herein is the concept of reactance. What is needed is a nonemotional look at the causes of this reactance and some possible means to reduce it. An historical perspective makes clear the origins and ultimate amelioration of the problem.*

Psychology, having lost its soul, is now in the process of losing its mind. Or so goes an idea from a 1973 text by Marx and Hillix on the development of theories and systems in psychology. This statement is more truthful than humorous. Man's soul was not considered an important area of study by Freud. As a matter of fact, Freud considered religion a form of neurosis. In a letter to Ludwig Binswanger, Freud stated, ". . . I have already found a place for religion, by putting it in the category of the neurosis of mankind" (May, 1969, p. 27). At least most psychoanalytic theorists felt that man had lost his soul. However, Carl Jung remained a mystic and spoke about a spiritual plane of man in his idea of a collective unconscious (Jung, 1918, 1934).

Strict behaviorists deny the need to study anything but overt behavior. This is where the name *behaviorist* came from. John B. Watson, known as the father of behaviorism, felt that only directly observable behavior was food for scientific study. Therefore, mind was ruled out because it was a hypothetical construct. Edward L. Thorndike stated that anything that exists must exist in some amount and if it could not be measured it did not exist. This extreme position led to an adoption of a monistic philosophy of man's nature.

Sheridan (1971, p. 20) states that there are three ways of viewing the nature of behavioristic theory in relation to man: 1. Behavior is the operational definition of mind. 2. Mind content can be inferred only from behavior (implies that mind and behavior are

distinct). 3. Mind goes beyond behavior, but only those aspects manifest in behavior can be studied scientifically. The functional view that behavior is the operational definition of mind is traditionally held by behaviorists. This view can be called radical behaviorism since it rules out all but overt behavior.

## Recent Trends in Psychology

Recently the behavioristic school of psychology has had the greatest general impact on society and the field of psychology. The entire field of psychology has adopted the behaviorist's experimental approach to study, which relies on the inductive method: postulating hypotheses and testing them in controlled situations. Experimental psychology is one specific area of psychology that is a "how-to-do-it" area: a training ground for psychologists in every branch of psychology. To speak as though experimental psychology were a separate, discrete field of psychological study is misleading. Every field of psychology, as with any science, is dependent on the inductive method for growth. Whether or not a psychologist is a behaviorist does not matter. What does matter is that the method of the behaviorist was adopted by the field of psychology.

Earlier and less productive methods of studying human behavior were rationalism, logic, and sensory impressions. These earlier methods led to an inevitable circular debate about man's inner qualities, drives, instincts, unconscious processes, and nature. This

sounds like debates on the number of angels that could stand on the head of a pin; many ideas were shared but no one ever got the point. While these topics were interesting, they could not be studied objectively and thus lead to formulation of testable hypotheses or practical theories concerning man's behavior.

It was this very circle that the behaviorists did break in order to make psychology a science in the strictest sense. Severing this circular process was not accomplished without a great struggle. Couching this dilemma in the rhetoric of existentialism, one would say that man's psyche would at once be the object and tool of circular discussion and dialog concerning man. Until methods could be developed that would allow for direct measurement and testing of behavior, theories would go untested. Only clinical information and subjective assessment would be available to study man's behavior. Behaviorism came to the rescue in this area and specified the need to study objective, concrete reality that could be consensually validated by independent researchers. The most salient feature of the scientific method for psychology is the demand for inter and intra observer reliability.

### Psychology and Theology in History

The history of psychology is full of instances where the struggle to break through the inductive method has been thwarted by various forces. One such area of conflict is that of early religious tradition and superstition. Due to the suppression of an empirical study of man, both physical and psychological, by organized religion, man's understanding of human behavior was limited. Humanity was being denied truth—scientific truth. "The truth shall make you free," John 8:32. Man was continuing to be bound by ignorance, fear, and superstition. The organized church was apparently frightened by scientific truth about *homo sapiens*. This seems unreasonable since God is the Creator of the universe, man and the natural, as well as physical laws that govern the whole. Whenever science discovers "real" truth, that truth does not differ from the truth authored by God himself. Jesus said, "I am . . . the truth," John 14:6. A scientist's objective description of God's creation will not lead to falsehood. The difficulty comes when man tries to explain the creation without God.

Nowhere is man's fear of the psychologists' "revealed" truth more obvious than in the study of abnormal psychology. Abnormal psychology is one branch of psychology that studies the bizarre, morbid behaviors accompanying personality disorganization. Due to a belief in animism or pandemonism, that was sponsored by early organized religion, man's understanding of mental health was locked into a closet for centuries. *Pandemonism* is a term coined by the author to imply a belief that demons were blamed for any and all aberrant behavior. Because a person was viewed as demon-possessed and not mentally ill, he could be tortured and subjected to all sorts of inhumanities in the name of "Christianity." Demons were thought to be extremely sensitive to pain; by torturing a person, therefore, the demon should be exorcised. This belief in pandemonism lasted well into the 18th century. As late as 1793 an official trial for witchcraft took place in New England (Kisker, 1972, p. 45). Pandemonism

*Psychologists should be aware of the theologian's quest for understanding man. Both psychologist and theologian have a common purpose, understanding man and being of service to him. It is time to call an end to distrust of one professional group by the other and work together.*

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as an idea is too radical and overly simplified. Also, experience seems to show that ruling out demons is inaccurate.

The fact that this article can discuss demons and science side by side is evidence of a change in the thinking of scientists and laymen alike. More psychologists and psychiatrists are willing to consider the concept of demon possession today, which implies a move away from the more psychoanalytically and behavioristically oriented views of mental health so prevalent until the last ten to fifteen years. Conversely most theologians are willing to see that demons are not the cause of all mental illness. Pastors are coming in contact with church members who experience deep emotional and psychological turmoil that could not possibly be due to demon possession. This trend shows that both theologians and psychologists are allowing the facts to speak rather than their stereotypical role expectations. This latter point is a good indication that the reactance between theologians and psychologists may be beginning to dissipate.

### Demonism, Past and Present

The pandemonism of early religious thinkers is similar to neurotic thought patterns that focus attention on the all-or-nothing principle—either all behavior is due to spiritism or none is. Conversely, ruling out the spirit world completely by psychologists would be too restrictive and overly simplistic. Some persons do develop mental disorders due to demon-possession or oppression. Therefore, to say that a portion of mental disorders is caused by demons is plausible. However, when an extreme position is taken an error usually results. Pandemonism implies that one's behavior is not a response to environmental or psychological pressures, but an enactment of an inner spirit. This view leads to a philosophy foreign to therapy as a method for treating mental illness. Belief in pandemonism as the cause of mental disorders reached its peak during the 15th century (Kisker, 1972, p. 43). Two Dominican monks in Germany, Johann Sprenger and Heinrich Kraemer, published a book entitled *Malleus Maleficarum* (*The Witch Hammer*). This book was designed to aid in exterminating witches, and was written as a result of a statement in 1484 by Pope Innocent VIII urging the clergy to do everything possible to detect witches (Kisker, 1972, p. 43). A movement to destroy witches spread, and the end result was the death of hundreds of thousands of mentally ill men, women, and children. It seems that this fanatical behavior was undertaken in good faith, to make the world a better place. However, the true Christian principles of love,

prayer, salvation, grace and Christ's own examples of treating demon-possessed people with love and compassion were overlooked (see Matt. 8:28-34, Matt. 9:32-34, Matt. 17:14-21, Mk. 5:1-20, Mk. 9:14-29, Lk. 8:26-36, Lk. 9:37-43). The greatest of all attributes a Christian can possess is love (I Cor. 13:13). Most organized church behavior during the 12th through 18th centuries did not use Christ's example as a model for treating demon possessed people. There were exceptions, but the majority were not using the example of Christ as their model. It was the demon that Christ banished, not the human soul! (See Matthew 8:28-34.)

A few early scientists and thinkers such as Hippocrates, who lived from 460-367 B.C., felt that mental disorders were not due to spirits or demons, but natural causes. Johann Weyer's book, *De Praestigis Daemonum*, written shortly after *The Witch Hammer* was published, went the way of many before and after. The fire of interest he generated in a naturalistic view of mental disorder was drowned by the "holy water" of the church. This struggle was a bitter one that left its mark on history. It remains for Christian thinkers to explain this phenomenon reported on the pages of history. One thing that needs to be said is that the infamous events tied to the history of the church during those medieval days are man-made errors by organized groups of men resulting from a departure from God's plan of evangelistic, humane, man-to-man encounters.

### Hypocrisy and Behavioral Analysis

Psychologists engaged in the study and treatment of persons having personality disorders have seen how inhumanely such people were treated under the auspices of early organized religion. Behavioral scientists view man's actions as the product of the motives or learning that operate within him. If a person claims Christ as Lord and motivator, and behaves a certain way, it should be because of Christian mandates. If there were no hypocrites, or if the term Christian were not so misused and profaned, the simple cause-and-effect relationship between professing Christian faith and proper behavior would be more sharply defined. Psychologists have had a difficult time correlating principles of Christianity (I Cor. 13, for example) with practices early organized religion used for treating mentally ill persons. As psychology emerged as a science in its own right, it began to trim away the vestiges of misapplied theology and philosophy that had so encumbered its development.

### Outcomes of the Past Conflict Between Psychology and Theology

Many psychologists viewed theology and philosophy as unnecessary and irrelevant to psychology. Once Freud made the break between psychology and theology there seemed to be no need to ever reunite the two. Philosophy was seen as an attitude toward experimental findings, and in this way became a vestige of psychology rather than vice versa. Also, since the break, so many strides had been made in understanding man's behavior that this seemed to further reinforce the schism. Psychologists who adopted radical behaviorism and ruled out mind and soul saw this as

a necessity if progress was to be made in the field of psychology. This monistic "philosophy" was adopted by behaviorists who studied overt behavior.

### Reactance: A Behavioral Outcome

Reactance is a phenomenon made famous by Brehm (1966) in his book *A Theory of Psychological Reactance*. Brehm (1966, p. 9) defines reactance as a motivational state directed toward the re-establishment of the free behaviors which have been eliminated or threatened with elimination. Hollander (1971, p. 119) points out that a freedom we see slipping from our grasp takes on greater value than one which is not immediately vulnerable to loss. Hollander calls this a "boomerang" effect. This is one way of viewing the unfavorable reactions of some psychologists and theologians to one another. Research by Brehm and Cole (1966), and Goranson and Berkowitz (1966) indicate that unfavorable reactions can be attributed to the impression of a loss of freedom, or to the extent of coercion perceived to be operating on another subject. This succinct treatment of reactance shows immediate applicability to the problem that has existed between psychologists and theologians. Both groups can be seen to have unfavorable opinions of one another because each views the other as a threat to their own perceived freedom.

Psychology, having evolved from the parent disciplines of philosophy and theology, can once again allow for their existence without being threatened. There comes a point in a child's existence when accepting one's parents can occur without fear of loss of autonomy. As a child grows and develops a strong, functional self concept, parents no longer pose a threat to autonomy and uniqueness of being. Granted, the struggle to maturity and freedom to be one's self is in many instances difficult. However, once the mature offspring feels at home with "self" it is possible to establish new relationships with parents. These relationships can be reciprocal and on an adult to adult level. When either party refuses to relate in an adult way they are creating a conflict that will lead to faulty communications and eventually to mistrust of the other party. When such failures continue, a valuable and meaningful relationship is destroyed. Child and parent alike can learn from one another. Each exists within a unique world. As the center of our own unique phenomenal world, we view experiences in our own way. Therefore, parent and child can at least learn to view the same phenomenon from different perspectives and allow each a distinct view.

One parent of psychology, philosophy, can be seen as a study of values, how man views himself in relation to his world. Philosophy can be viewed as a way to approach or apply findings of psychology. Philosophy is necessary to give direction to science. Technology is advancing more rapidly than man's philosophy of life and ability to formulate adequate moral codes. Science, as it develops a technology and life style all its own, needs to have some philosophical guidelines. Theology, the other parent, is concerned with man's relation to God, others, and self. Scientists need to see that they do not live on an island unto themselves. Their discoveries come crashing down upon others in their shared environment. Eventually what

they do influence others. Psychologists need to feel a responsibility to others and themselves for their discoveries. Without an adult relationship between psychology, philosophy, and theology the psychologist can lose his feeling of responsibility to anyone other than his fellow professionals. If a group of people do not try to relate to others, they will find a gulf developing and as the silence progresses, breaking this silence with meaningful dialog becomes more difficult.

### New Trends in Psychology

Cognitive theorists were convinced that a monistic approach to man was at best an oversimplification. Behaviorists had been trapped by their philosophy of not allowing anything to exist if it could not be objectively measured. Perhaps the behaviorists' conception of existence was too concrete or their measurement techniques not yet sophisticated enough to do battle with mind (*psyche*) or soul (*pneuma*). Cognitive theorists or those using the concept of mind did not hesitate to study self perceptions. A simple definition of mind could be one's own perceptions of self. As the cognitive theorist began to "reinvent" mind, a third school of psychiatry, called existentialism, began to speak of man's soul. Existential psychology is not afraid of philosophy or theology, but weaves these fields into its view of psychology. This action does not necessarily sacrifice scientific status. As contradictory as it may seem, there are existentialists engaged in experimental research employing the same inductive methods used by behaviorists. To restate an earlier idea, it is not important whether one is a behaviorist or not; what is important is that the method of the behaviorist be employed. If these psychologists who accept mind and soul can still subject themselves to the vigorous methodology of the behaviorist, then this shows hope for lowering distrust among the entire community of psychology to theology. This will lower reactance as both groups no longer need view the other as a threat to their freedom.

Humanistic psychologists have been alarmed at the way man's basic dignity and meaning have been oversimplified to a series of stimulus-response connections. For man to be studied completely, it is necessary to study man as a complex organism that consists of more than overt, directly observable phenomena. Pleasure principle, drive reduction principle, and law of effect are all concepts used to help understand human behavior. These principles lead to a view of human behavior that is logically self seeking, pleasure seeking, and tension reducing. However, with these tools it is impossible to "fix" a theory of man that is comprehensive and preponderantly accurate. Will, search for meaning, love, and superordinate goals are principles which are more abstract, metaphysical or difficult to quantify. These latter principles can be seen as threats to the parsimony of the earlier mentioned concepts. They allow the organism freedom to do itself harm, to do things that do not follow the logic of hedonism.

Why should some psychologists be upset with the present predominant behavioristic method of studying man? For very few reasons actually. The deterministic philosophy, and behavioral views concerning man have been essential in the progress of understanding human behavior. However, what is to be desired is a more

open attitude toward phenomena that can be studied or even allowed to exist in man. What harm does a mind or a soul do to psychology, the discipline? No harm pragmatically as I see it. However, if psychologists accept mind and soul, they are then faced with two concepts that are more difficult to conceptualize and study empirically. This seems to be one reason why behaviorists are so reluctant to allow these concepts to exist. There is nothing wrong with stressing the need for operational definitions of terms. This is necessary. There seems to be nothing wrong with saying that the only things that can be studied scientifically are overt behaviors. However, it does seem wrong (or incorrect to use a less value-laden term) to say that if something does not exist in a way that our finite minds can comprehend or measure, it does not exist at all. This seems to be deistic anthropomorphizing. When Thorndike made his famous statement about measurement and existence, it was needed. However, have we not progressed enough to know that for every fact we have discovered there are myriad other facts hidden from our present view? New technology continually makes overt that which was covert and hidden yesterday.

Psychologists need to be open to new ideas that come along or even to new interpretations of the old. Perhaps theology may provide input to help this process. However, as long as reactance of psychologists toward theology is high, this is nearly impossible. A by-product of reactance is the continuation of a cognitive set that can hinder solution of a problem calling for a new solution; this is rigidity. New data from sources today considered mystical or subjective may tomorrow provide keys unlocking mysteries concerning human behavior. New theories of psychopathology may be necessary to replace or augment classical theories. We know that man is influenced by his culture and society. Culture is changing and developing; therefore, is it not possible that theories that held consistently for one epoch of time may be misleading in a later time? The environmental causes of man's behavior are changing; therefore, psychologists may need to study phenomena heretofore considered irrelevant. Victor Frankl stresses the need to consider a spiritual plane of man's existence and stresses the need to guide people to find a meaning in their lives. This lack of meaning is what he calls noogenic or existential neurosis. This neurosis is different from classical Freudian concepts of neurosis as shown by Crumbaugh and Maholic (1964). Frankl was open to new sources of conflict, value conflict, that led to neurosis. By being open to new sources of data concerning man, new discoveries should be forthcoming.

Reactance by psychologists to subjective areas of study in psychology, e.g., meaning in life, soul, and conversion, should diminish if they can see relevant advances concerning man's understanding of man stemming from a study of such variables. Also, if studying these areas does not remove freedom to do research as dictated by empirical methods, reactance will be lowered.

With the increased understanding of learning processes (cognitive functions) teachers, psychologists, and ministers are able to help persons with learning and behavior difficulties. Therapy techniques utilizing

value assessment and meaningfulness of existence though relatively subjective do alleviate suffering. Theologians have for years been pragmatists. They have accepted ideas that have functional utility. Psychologists should be aware of the theologian's quest for understanding man. Both psychologist and theologian have a common purpose, understanding man and being of service to him. The ways of serving these purposes overlap. It is time to call an end to distrust of one professional group by the other and work together. From the research of Sherif and associates (1953, 1958, 1961, 1962) an effective way to remove the ill feelings built up by mutual reactance is to view working together to improve the conditions for man's existence as a superordinate goal. For the lowering of hostility between groups a continuing need for mutual cooperation toward achieving a superordinate goal has to be maintained over a period of time (Sherif, 1962, p. 11).

#### BIBLIOGRAPHY

- Brehm, J. W., *A Theory of Psychological Reactance*, New York: Academic Press, 1966.
- Brehm, J. W. and Cole, A. H., "Effect of a Favor Which Reduces Freedom," *Journal of Personality and Social Psychology*, 1966, 3, pp. 420-426.
- Crumbaugh, J. C. and Maholich, L. T. "An Experimental Study in Existentialism: The Psychometric Approach to Frankl's Concept of Noogenic Neurosis," *Journal of Clinical Psychology*, 1964, 20, pp. 200-207.
- Frankl, Victor, *Man's Search for Meaning*, Boston: Beacon Press, 1962.
- Frankl, Victor, *The Doctor and the Soul*, New York: Alfred A. Knopf, 1968.
- Goranson, R. E. and Berkowitz, L., "Reciprocity and Responsibility Reactions to Prior Help," *Journal of Personality and Social Psychology*, 1966, 3, pp. 227-232.
- Harris, Thomas A., *I'm OK—You're OK: A Practical Guide to Transactional Analysis*, New York: Harper & Row, Publishers, 1969.
- Hollander, Edwin P., *Principles and Methods of Social Psychology*, New York: Oxford University Press, 1971.
- Jung, Carl Gustav, *Modern Man in Search of a Soul*, New York: Harcourt, Brace and Company, 1934.
- Jung, Carl Gustav, *Psychology of the Unconscious*, New York: Moffat, Yard and Company, 1918.
- Kisker, George W., *The Disorganized Personality*, New York: McGraw-Hill Book Company, 1972.
- Marx, Melvin H., and Hillix, William A., *Systems and Theories in Psychology*, New York: McGraw-Hill Book Company, 1973.
- May, Rollo, et. al., *Existence; A New Dimension in Psychiatry and Psychology*, New York: Simon and Schuster, 1958.
- May, Rollo, et al., *Existential Psychology*, New York: Random House, Inc., 1969.
- Sheridan, Charles L., *Fundamentals of Experimental Psychology*, New York: Holt, Rinehart and Winston, Inc. 1971.
- Sherif, M., "Superordinate Goals in the Reduction of Intergroup Conflict," *American Journal of Sociology*, 1958, 63, pp. 349-358.
- Sherif, M. (Ed.) *Intergroup Relations and Leadership*, New York: John Wiley & Sons, Inc., 1962.
- Sherif, M., and Sherif, C. W., *Groups in Harmony and Tension: An Integration of Studies on Intergroup Relations*, New York: Harper & Row, 1953.
- Sherif, M., Harvey, O. J., White, B. J., Hood, W. R., and Sherif, C. W., *Intergroup Conflict and Cooperation: The Robbers Cave Experiment*, Norman, Oklahoma: University of Oklahoma Book Exchange, 1961.

## Personal Knowledge: An Epistemology of Discovery



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*Two Biblical attitudes, faith in the sense of deep commitment and love in the sense of being self-giving, are both seen to be essential parts of any successful human activity whether in everyday human relations, religious experience, artistic creation, philosophical speculation, or scientific work. Faith is seen as a leavening component of all human experience; as Michael Polanyi has ably pointed out, all human acts of discovery are rooted in a common structure of tacit commitments. The basic presuppositions of Polanyi's epistemology are summarized and considered in the context of scientific knowing. If tacit, personal commitments are a necessary part of the creative process in science, then analogous acts of tacit commitment are present in the more person-centered areas of human knowledge as art, philosophy, and religion.*

### Personal Commitment: The Coupling of Faith and Love

In the first article of the Nicene Creed Christians confess their faith in the "one God—The Father Almighty, Maker of Heaven and Earth, and all things, visible and invisible." This confession contains a profoundly biblical theme—God's guarantee of the trustworthiness and wholeness of creation. The material of which the entire cosmos is made (Heaven and Earth) is an orderly continuum, interwoven and structured together. The very nature of it, its wholeness and trustworthiness, is a revelation of the uniqueness, the oneness, and the totality of God in what He has brought into being. *The Creation is not God but has implanted in it the mark of His nature.* It is therefore quite appropriate that we examine God's revelation, as expressed in the Bible, for general principles that apply to the interaction of humans with all reality.

There are two key attitudes expressed throughout the whole Bible that are essential parts of any successful human activity, whether the endeavor be in everyday human relations, religious experience, artistic creation, philosophical speculation, or scientific work. The biblical attitudes that I am referring to are:

1. *Faith in the sense of deep commitment to God, other humans, oneself, and one's vocation.*
2. *A deep self-giving love with respect to God, other humans, oneself, and one's vocation.*

These two attitudes are intertwined; both must be present for creative accomplishment to take place. Furthermore, the Judeo-Christian tradition teaches that the capacity to express trust and love towards both people and concepts stems from man reflecting, however marred, the image of the infinite-personal creator God.

Faith is a word that is badly misunderstood by our present age. Faith can be defined as an act of affirmation, of belief, or of commitment that leads to positive action by a person. This act of affirmation takes place through a filter or matrix of presuppositions that one trusts in even though the evidence for such trust is *not right before one's eyes*. Faith is not, however, a leap in the dark; true faith is not blind assent. True faith always arises out of the totality of one's prior and present experience.

Faith consists not in what can be *proved by results*. Faith *precedes* results; faith motivates us towards results. Contrary to much popular opinion, faith always without exception precedes logic, intellect, judgment, reason, and the seeking of experimental data (and then leads the knower beyond them). You cannot begin any personal encounter, mathematical analysis, or experimental work in science (as typical examples) without some *prelogical notions* (presuppositions) that you commit yourself to by faith. Figure 1 shows how acts of faith play the role of leaven in all human experience, from simple everyday life to complex artistic, scientific, or religious experience. The ability to express faith, to be able to place trust in people and concepts when all seems to be going wrong is a uniquely personal, human attribute.

In what ways does love join with faith in any act of human discovery? This question has been thoughtfully answered in the recent work of Richard J. Pendergast<sup>1</sup> who has with great insight pinpointed

*Faith consists not in what can be proved by results. Faith precedes results; faith motivates us towards results.*

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the universality and the deeply personal, interwoven structure of the faith—love relationship. He points out that just as a religious act of faith is a free act,

. . . so the natural act of faith one makes in order to understand scientific truth is a free choice. Among the implicits which undergird our acts of understanding are desires, our 'intellectual passions' as Polanyi calls them. The creative act which calls into being a new scientific theory, or even the act by which a person assimilates an established theory is not completely determined by the data. Like the constructions of art and music, these constructions are partly determined by what the person wants. Scientific creation is therefore a moral act, an act which expresses the love of beauty and order which motivates the scientist. In his famous essay on the psychology of mathematical invention, Poincaré<sup>2</sup> suggests that the mathematician's sense of beauty is one of the most powerful enabling factors in the creation of new mathematics. This sense of beauty clearly involves the will's attraction by the intellectual good. The same is true in all fields. Intellectual acts are not only acts of understanding, but also acts of love, though the relative weight of the two components can vary greatly in different fields of endeavor (Pendergast, p. 98) . . .

In seeking understanding of any part of reality

. . . we take a stand toward it, put ourselves into a certain relationship to it. In other words, we decide whether this thing is good or bad for us, whether we love it or hate it. . . . To contemplate it is not only to know it as something distinct from us but also to know it as related to us. This relationship is either one of harmony and peace or of incompatibility and disquiet. The same external object will be symbolized and known quite differently depending on whether we love it or hate it. This is obvious, of course, in the case of human beings. We can't really know another person unless we love him. This is true even in the case of someone like Hitler. The one who knows such a person best is the one whose hatred of his deformities is situated within the context of a more fundamental love of his basic humanity and a painful awareness of the way it has been perverted by evil. The same thing is true in a less obvious way even of scientific or mathematical knowledge. The knowledge of physical or mathematical structures cannot be separated from an appreciation of their beauty. In fact, as Poincaré suggested, those who do not appreciate them will not be able to discover them or understand them well. The person who 'hates math' brings forth a distorted and imperfect symbol of the reality with which he is in contact (Pendergast, p. 119) . . .

### Complete Objectivity in Science is an Illusion: We Know Far More Than We Can Tell!<sup>3</sup>

The average scientist is disturbed upon first hearing Polanyi's assertion that complete objectivity in science is an illusion. How can a man who made significant contributions to physical chemistry disown his heritage? How can a scientist say that experimental evidence is not important? But this is jumping the gun, for it ignores what Polanyi has actually written in *Personal Knowledge* and many other books and articles—it is not first listening to the evidence that Polanyi wishes to introduce! Polanyi is not attempting to downgrade the seeking of clear-cut experimental evidence. What Polanyi is really concerned with are the

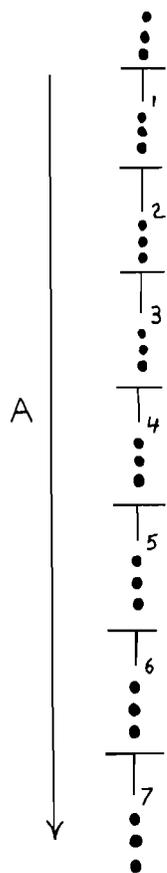


Figure 1. Faith—an undergirding and unifying component of the spectrum of all human experience.

A. The arrow points toward increasing “abstractness” of human experience and accordingly, “seemingly” less direct, personal involvement. By “abstractness” is meant not capable of simple explanation using concepts from everyday experience. Such an “abstract” act often requires deep, personal involvement by an individual. In all of these varied human activities the unifying factor of the leaven of faith is present.

$T_1$ —A husband trusts his wife to always have his best interests at heart.

$T_2$ —An apprentice trusts the master mason he works under to be truly showing him the correct way to lay bricks.

$T_3$ —College students trust that their faculty are presenting subject matter which is both valid and relevant.

$T_4$ —An artist trusts his mental vision and manual skills are sufficient to him in his work to reflect some part of reality (no matter how abstract the art).

$T_5$ —A scientist trusts that the many long and difficult hours spent attempting to get a finicky piece of scientific apparatus to yield complex and often puzzling data will eventually lead to the discovery of “simple” laws truly universal in scope.

$T_6$ —The scientist trusts that the language and concepts of mathematics created originally for sheer intellectual pleasure (Group theory, as an example, with its invariance properties which can be used to represent physical conservation laws) will be applicable to the description of specific physical phenomena.

$T_7$ —The theologian trusts that God has revealed His true nature in one spacetime portion of human history by becoming incarnate in the man, Jesus Christ. This trust in what Christ said and did during his earthly life and ministry enables the theologian to take Christ’s words about Himself as truthful. Thus such trust causes the theologian to formulate the doctrine of the Trinitarian God in order to do full justice to the richness of the biblical revelation concerning the nature of God as revealed in Jesus Christ.

theoretical interpretations of experimental evidence and the basic question of why certain sets of observations are made and considered significant rather than

others (originality in science is partly seeing in existing data relationships that others have not seen). Science is not the collecting of data on a random or wholesale basis and the subsequent stringing out of possible relationships in telephone book fashion. What Polanyi has created, to my mind, is really a model of scientific discovery and this same pattern can be extended to cover all acts of human discovery. Polanyi is concerned primarily with the development of a perspective that emphasizes the unity of the knowing process in all human activity, science, art, philosophy, and religion. All knowing is similar in some ways even though there are distinctions in the objects known in science, art, and religion.

The central presuppositions of Polanyi’s epistemology are:

1. We are as knowers partly conditioned by our environment and genetic inheritance; nevertheless, we can actively commit ourselves to altering our environment; we can take *actions* not determined by our environment and genetic inheritance.

2. As *personal beings* we can actively commit ourselves to the *affirmation* of *our own existential reality* (the self) and the *affirmation* that there is a consistent structure to that reality which is outside us. These personal acts of commitment are to be clearly distinguished from our subjective states in which we merely endure our feelings.

This distinction establishes the conception of the *personal*, which is neither subjective or objective. Insofar as the personal submits to requirements acknowledged by itself as independent of itself, it is not subjective, but insofar as it is an action guided by individual passions, it is not objective either. It transcends the disjunction between subjective and objective.<sup>4</sup>

3. Reality outside us has a structure to which I *entrust myself* (I commit myself in advance—for I do not clearly perceive the whole structure) in the *hope* that through such acts of responsible commitment to perceiving such an open-ended, independent, external structure I may come to know something more about it. I am *indwelling* a set of commitments about reality in order to gain further knowledge. It should be noted that Polanyi strongly argues for the validity of supposedly intangible realities.

For surely, there are a great number of things our knowledge of which dissolves if we look at them in a thoroughly detached manner. The meaning of a word vanishes if I cease to mean anything by it; the proof of a mathematical theorem dissolves if I cease to trust it; and likewise, a moral ideal dissolves if I stop respecting it. I cannot know that someone, say Lincoln or Gandhi, was a great man unless I revere him. You need reverence to observe human greatness, just as you require a telescope to observe spiral nebulae. But reverence is not an objective approach in the tradition of Newton, and hence our ideals—along with the greatness of men who embody these ideals—must cease to be visible if they are approached in this Newtonian sense.<sup>5</sup>

4. The claims of both extreme existentialists and positivists are rejected. In particular, existentialism’s claim that knowledge of myself can be gained independent from any external reality structure is denied, as well as positivism’s claim that knowledge can be gained by completely impersonal means.

Positivism claims that scientific truth is impersonal, possessing an inescapable quality in that discovering

PERSONAL KNOWLEDGE

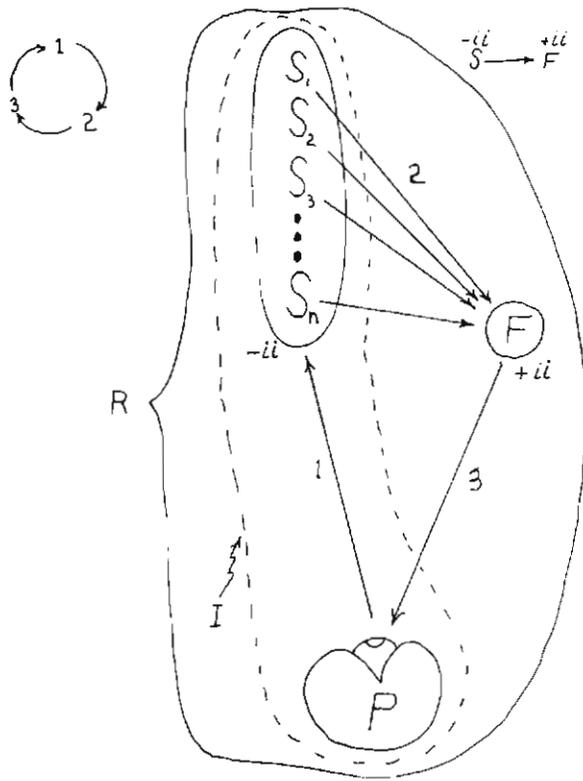


Figure 2. Integrations of perception and the conceptual knowing—the structure common to all human acts of discovery.

R—Reality.  
 S<sub>1</sub>, S<sub>2</sub>, ..., S<sub>n</sub>—Subsidiary clues, details, basic presuppositions that are tacitly accepted.  
 F—Object of focal attention.  
 P—The person, the knower, who causes the subsidiaries to bear on the focus of his attention.  
 I—The person *indwells* the subsidiaries in order to focus on F. Since this indwelling is tacit, we are not able to render them explicitly. +ii—of intrinsic interest in this integration. -ii—not of intrinsic interest in this integration.

- 1,2,3,—indicates the chronological order of the knowing processes.
1. The knower indwells a set of subsidiary clues, particulars, basic presuppositions.
  2. The subsidiaries bear on the focus of the knower's attention.
  3. The knower becomes aware of new details, laws of the focal object.

it is merely a systematic process of testing random hypotheses in an exhaustive fashion until the right one arrives. The typical statements of "scientific method" found in science textbooks are, according to Polanyi, not descriptions of how discoveries are made but rather how to verify a hypothesis already believed by the scientist to be correct. Discoveries are made in science, rather, by a scientist being actively committed to a theoretical framework evolved from the experience of the present and former scientific communities. Acts of personal judgment, or selectivity of commitments to guidelines of "intellectual beauty" acquired by an apprenticeship of working in the scientific community, and finally, an active hope that a theoretical framework will reveal more and more: of such extra-empirical "stuff" is science made. If you do not accept the assertion that science requires commitment, belief—"consider that originality is the mainspring of scientific discovery, and originality in science is the gift of a lonely belief in a line of experiments or speculations which at the time no one else con-

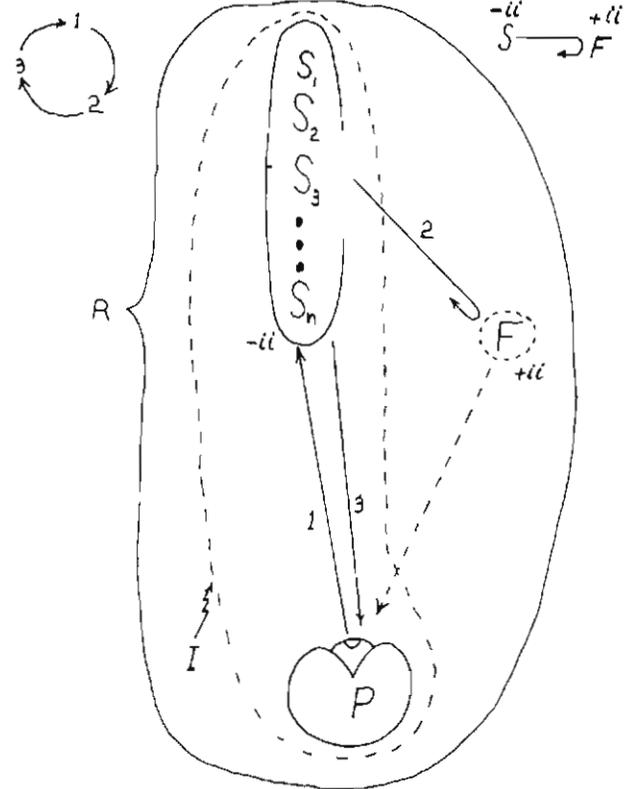


Figure 3. Disintegration of perception and of conceptual knowing. R, S<sub>1</sub>, S<sub>2</sub>, . . . S<sub>n</sub>, F, P, I, + ii, and -ii, 1,2,3 as in Figure 2. But indwelling is no longer tacit.

1. The knower indwells a set of subsidiary clues, particulars, basic presuppositions.
2. The subsidiaries bear back upon themselves.
3. The knower becomes aware of the subsidiaries, but new details, laws of the focal object are no longer revealed.

sidered to be profitable."<sup>6</sup> Furthermore, if you wish to discount intellectual beauty as a scientific guideline and state that a theory's beauty is merely that of simple structure, take heed to the words of Polanyi as he quotes Herman Weyl: "The required simplicity is not necessarily the obvious one but we must let nature train us to recognize the true inner 'simplicity'." In other words, simplicity in science can be made equivalent to rationality (or rational beauty) if 'simplicity' is used in a special sense known only by scientists."<sup>7</sup> Lastly, it should be noted that when we, as scientists, *indwell* such a theoretical framework in order to gain knowledge we are only tacitly aware (or subsidiarily) of the details of the framework—for we focus on the whole perspective which provides the meaning for details. By utilizing a structure of tacit or subsidiary awareness in all acts of discovery we actually know far more than we can tell. Such indwelling knowledge comes to us partly by our experience in living with a community of committed knowers.

In recent work Polanyi has pointed out that a structure from subsidiary to focal awareness is common to many types of perceptive acts. In any act of knowing we tacitly rely on *subsidiary* details which point toward the greater whole of the focal target.

Subsidiaries exist as such by bearing on the focus to which we are attending *from* them. In other words, the functional structure of from-to knowing includes joint-

ly a subsidiary 'from' and a focal 'to.' But this pair is not linked together of its own accord. The relation of a subsidiary to a focus is formed by the *act of a person* who integrates one to the other. The from-to relationship lasts only as long as a person, the knower, sustains this integration.<sup>8</sup>

In Gestalt psychology, this is the way the subsidiary "framework" (the clues, the particular details, the matrix of presuppositions we are committed to) enables us to perceive a whole (what is focussed upon). The subsidiary particulars that a person tacitly indwells, is committed to, point toward the whole of which one becomes focally aware of. If we explicitly "refocus" on the subsidiary "framework" through which we have perceived the focal whole, it is no longer seen, our perception of its structure has disintegrated.

Polanyi's discussion of two examples of from-to knowing is now included:

1. . . . the familiar case of tactile cognition: of using a probe to explore a cavity, or a stick to feel one's way in the dark. Such exploration is from-to knowing, for we attend subsidiarily to the feeling of holding the probe in the hand, while the focus of our attention is fixed to the far end of the probe, where it touches an obstacle in its path . . .<sup>9</sup>

2. . . . the acceptance and use of the intellectual tools offered by an interpretative framework, in particular by the textbooks of science. While we rely on a scientific text, the text is not an object under scrutiny but a tool of observation. For the time being we have identified ourselves with it; and as long as our critical faculties are exercised in a from-to way by relying on this text, we shall continue to strengthen our uncritical acceptance of it.

There is no mystery about this. You cannot use your spectacles to scrutinize your spectacles. A theory is like a pair of spectacles; you examine things by it, and your knowledge of it lies in this very use of it. You dwell in it as you dwell in your own body and the tools by which you amplify the power of your body. It should be clear that someone who is said to be 'testing' a theory is in fact relying, in this subsidiary and very uncritical way upon other tacitly accepted theories and assumptions of which he cannot *in this action* be focally aware.<sup>10</sup>

Polanyi strongly emphasizes that much of our knowledge is tacit as it is inescapably indeterminate. He points out that:

. . . the bearing that empirical knowledge has upon reality is unspecifiable. There is nothing in any concept that points *objectively* or automatically to any sort of reality. That a concept relates to a reality is established only by a tacit judgment grounded in personal commitments, and we are unable to specify all these personal commitments or to show how they bring a given concept to bear upon reality and thus enable us to trust it as knowledge. We are unable to do this because we are *dwelling* in these basic commitments and are unable to focus our attention upon them without destroying their subsidiary function. The coherence that we see when we dwell in the particulars that make it up we see focally. Its particulars (the clues we dwell in) we see only subsidiarily. When we focus upon them making them explicit entities we change their phenomenal character, and we find that they do not, in their new guise, logically imply—i.e., imply explicitly or in a detached manner—the reality we do find them to imply through an indwelling *tacit* inference.<sup>11</sup>

. . . our dwelling in the particulars, basic presuppositions, the subsidiary clues, results in their synthesis into a focal object only by means of an act of our imagination—a leap of a logical gap; this does not come

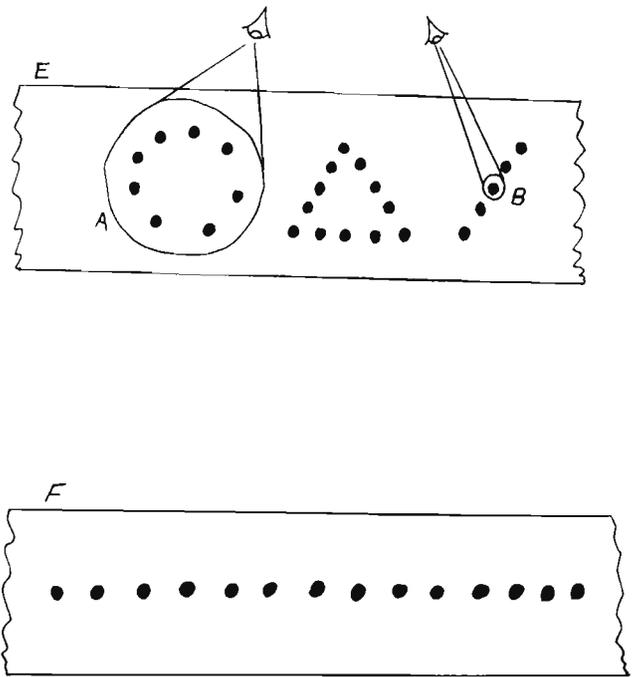


Figure 4. An example of subsidiary and focal awareness: Levels of human knowledge viewed as resulting from the whole (concepts of a "higher" level) being more than the sum of its parts (concepts of "lower" level).

The more complex interaction patterns of the "higher" level (*E* in our example—the level of spacial geometry) form a whole whose components, concepts are qualitatively of the "lower" level (*F* in our example—the level of dots).

A. When we are focally aware of the whole we have only a subsidiary awareness of the parts.

B. If we attempt to focus on the parts themselves, we obtain a more detailed explanation in terms of the components, concepts of the "lower" level; but the qualitative new concepts of the whole due to the more complex interaction patterns of the "higher" level are no longer "seen".

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about by means of specifiable, explicit, logically operative steps. The depth *seen* through a stereoscope is a new phenomenal experience, not *deducible* in its unique phenomenological character from the clues that the process of tacit integration integrates, just as the heliocentric concept of the planets 'seen' by Copernicus was a new conceptual experience *not* deducible from his available data. We can only point to the existence of tacit integration in our experience. We must be forever unable to give it an explicit specification . . .<sup>12</sup>

. . . These integrations might also be called self-centered integrations because they are made *from* the self as a center (which includes the subsidiary clues in which we dwell) *to* the object of our focal attention. . .<sup>13</sup>

If we accept Polanyi's epistemology as valid, we are entitled to ask the question:

How can a perspective that perceives all truth as gained by tacit (or even explicit) intellectual commitment avoid the charge of not really being in contact with truth, of being in error? I believe that Polanyi would ultimately answer that there can be no acquiring of genuine knowledge without risk of error. We make a working commitment to the authority of what we perceive to be truth independent of us and acknowledged as such by other responsible knowers of similar training, or if not recognized by others yet—we responsibly argue for its validity on the premise

of our common commitments. Part of our responsibility to the authority of external truth is an acknowledgment of risk—a willingness to look for and correct error. Awareness of risk is not itself a denial that “absolute truth” exists or that we may be really in contact with such truth. It is rather that our relationship to it is one of working commitment to its authority—not of absolute certainty. Reality is the final judge of all truth.

Figures 2 through 4 schematically illustrate the structure common to all acts of discovery. Figure 2 shows how subsidiary clues and presuppositions enable us to focus upon and recognize hidden features of reality. Figure 3 shows how such acts of perception and conceptual knowing disintegrate if we attempt to focus on the subsidiary clues and presuppositions themselves. Figure 4 shows an example of subsidiary and focal awareness arising due to different levels of human understanding.

### Conclusion

Positivistic philosophers have portrayed scientific research as completely impersonal, yielding knowledge that is truly “true” devoid of all personal involvement and metaphysical assumptions. What Polanyi has done is to show that scientific knowledge is not completely objective, free of all personal involvement; rather scientific knowledge has its personal component whose structure it shares in common with other human activities. All knowing, whether the subject area be science, philosophy, art, religion, or everyday experience, shares a common structure; acts of discovery are embedded in matrices of personal commitments which the person *indwells* in order to explore reality thereby bringing about new knowledge. Augustine’s insight is still sound: “Unless you believe you shall not understand.” Once more:

... we must recognize belief as the source of all knowledge. Tacit assent and intellectual passions, the shaping of an idiom and of a cultural heritage, affiliation to a like-minded community: such are the impulses which shape our vision of the nature of things on which we rely for our mastery of things. No intelligence, however critical or original, can operate outside such a fiduciary framework. . . . The process of examining any topic is both an exploration of the topic, and an exegesis of our fundamental beliefs in the light of which we approach it; a dialectical combination of exploration and exegesis. Our fundamental beliefs are continually reconsidered in the course of such a process, but only within the scope of their own basic premises.<sup>14</sup>

To accept commitment as the framework within which we may believe something to be true, is to circumscribe the hazards of belief. It is to establish the conception of competence which authorizes a fiduciary choice to be made and timed, to the best of the acting person’s ability, as a deliberate and yet necessary choice. The paradox of self-set standards is eliminated, for in a competent mental act the agent does not do as he pleases, but

compels himself forcibly to act as he believes he must. He can do no more, and he would evade his calling by doing less. The possibility of error is a necessary element of any belief bearing on reality, and to withhold belief on the grounds of such a hazard is to break off all contact with reality. The outcome of a competent fiduciary act may, admittedly, vary from one person to another, but since the differences are not due to any arbitrariness on the part of the individuals, each retains justifiably his universal intent. As each hopes to capture an aspect of reality, they may all hope that their findings will eventually coincide or supplement each other.<sup>15</sup>

Accordingly, as there is only one truth, one external reality, our beliefs are continually to be evaluated and assessed as to how well our matrix of commitments leads to a picture, a model, or a theory that is in agreement with external reality. The only way I can speak of my description of external reality is by making up my own mind with respect to it; in doing so I either rely on an existing consensus as a clue to the truth, or else I may dissent from it for my own reasons. In either case my answer will be made with universal intent; I will state what I believe to be the truth, and what the consensus ought therefore to be. This position is clearly not solipsistic since it is based on a belief in an existence of an external reality and in the existence of other persons who can likewise approach the same reality.

### REFERENCES

- <sup>1</sup>Richard J. Pendergast, *Cosmos*, Fordham University Press, New York, 1973.
- <sup>2</sup>Henry Poincaré, *Mathematical Creation, Mathematics in the Modern World*, W. H. Freeman and Company, San Francisco, 1968.
- <sup>3</sup>Michael Polanyi in the course of his long academic career in both the physical and social sciences has elaborated upon this thesis in great detail. The rest of this paper summarizes his key ideas which have been developed in the following list of books:
  - A. *Personal Knowledge*, The University of Chicago Press, Chicago, 1958.
  - B. *The Study of Man*, The University of Chicago Press, Chicago, 1959.
  - C. *Science, Faith, and Society*, The University of Chicago Press, Chicago, 1964.
  - D. *Knowing and Being*, edited by Marjorie Grene, The University of Chicago Press, Chicago, 1969.
  - E. *Meaning*, with Harry Prosch, The University of Chicago Press, Chicago, 1975.
- <sup>4</sup>Polanyi, *Ibid.* (A), p. 300.
- <sup>5</sup>Michael Polanyi, “Scientific Outlook: Its Sickness and Cure”, *Science*, March 1957, Vol. 125, No. 3246, p. 481.
- <sup>6</sup>Polanyi, *Op. Cit.* book and page reference lost.
- <sup>7</sup>Polanyi, *Ibid.* (A), p. 16.
- <sup>8</sup>Polanyi, *Ibid.* (E), pp. 37-38.
- <sup>9</sup>Polanyi, *Ibid.* (E), p. 35.
- <sup>10</sup>Polanyi, *Ibid.* (E), pp. 36-37.
- <sup>11</sup>Polanyi, *Ibid.* (E), p. 61.
- <sup>12</sup>Polanyi, *Ibid.* (E), p. 62.
- <sup>13</sup>Polanyi, *Ibid.* (E), p. 71.
- <sup>14</sup>Polanyi, *Ibid.* (A), pp. 266-267.
- <sup>15</sup>Polanyi, *Ibid.* (A), p. 315.



## Pseudo-Science and Pseudo-Theology: (B) Scientific Theology



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### INTRODUCTION

Over the last few centuries science has developed into the major "religious" worldview in many parts of the world. This worldview based on empirical knowledge has been perceived by both non-scientists and scientists alike to be inadequate for the full description of human life. Modern disenchantment with traditional science as an ultimate worldview leads to increasing emphasis on alternative worldviews in which elements of science and religion are blended, which appear to offer new dimensions of personal influence and freedom. Such an emphasis might be interpreted optimistically since it opens the way for scientists to consider more favorably the contributions of religion, and for a scientifically-oriented culture to reach beyond the empirical to a context suitable for the whole person. The nature of these alternative worldviews, however, is often such that they are simultaneously more appealing to the scientific mindset than conventional religion, and at the same time are equally as inimical to biblical religion as were the former views of scientism. They offer a subtle blend of science with pseudo-science, and of religion with pseudo-religion, with a sophistication that may mislead the unwary into believing that a major breakthrough beyond empirical science and historical Christianity is about to be achieved.

Two examples of such alternatives, namely that of "scientific theology" and that of "cosmic consciousness," display common characteristics which reveal them to be not breakthroughs at all, but rather modern versions of ancient worldviews that are more compatible with monistic pantheism than with biblical Christianity. It is the purpose of this installment and the next to sketch the outlines of these two alternatives in an attempt to describe the subtle shading of the authentic and the counterfeit that characterizes them.

It is essential for Christians, and particularly Christian men and women of science, to understand these alternative worldviews as thoroughly as possible so that they are able to serve as guides, both to scientists who for the first time are considering religion, and to Christians who for the first time are considering scientific inputs to their theology. The consensus that may become generally accepted, namely that finally a harmony has been achieved between science and religion, is likely to be held only at the expense of the integrity of both authentic science and authentic Christian theology.

### PROSPECTS FOR THE FUTURE

Futurology is an uncertain art and its practitioners disagree widely on suitable scenarios for the future life of human beings on earth. A particularly useful reference point, however, is a book by Robert L. Heilbroner, *An Inquiry into the Human Prospect*,<sup>1</sup> which paints a pessimistic picture of future earthly life. The special utility of this book is that a symposium on its contents was held by the Institute on Religion in an Age of Science in October 1974, with results published in *Zygon* magazine.<sup>2</sup> This issue of *Zygon* is a good reference, therefore, both to the nature of the disenchantment with traditional empirical science and to the efforts to respond to this unhappy prospect of the

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*This continuing series of articles is based on courses given in the Undergraduate Special Seminar Program at Stanford University, at Fuller Theological Seminary, and at Regent College, Vancouver, B.C. Part 1, "Science Isn't Everything" appeared in March (1976), p. 33-37. Part 2, "Science Isn't Nothing" appeared in June (1976), p. 82-87. Part 3, "The Philosophy and Practice of Science" appeared in September (1976), p. 127-132. Part 4, "Pseudo-Science and Pseudo-Theology. (A) Cult and Occult" appeared in March (1977), p. 22-28.*

future with both pessimism and optimism by different authors. Heilbroner sees the future as one in which societal pressures in an environmentally stressed world must lead inevitably to an authoritarian structure (possibly religious) that threatens both human freedom and science. In his 76-page refutation, Ralph Wendell Burhoe, editor of *Zygon*, seeks to develop a "scientific theology" that provides a basis for optimism in spite of Heilbroner's predictions.

The ultimate breakdown of present society, according to Heilbroner, finds its roots in a number of well-defined phenomena. (1) There is a growing universal sense that human beings have lost control over our major problems, and that instead of being the masters of our technological development, we are the victims of a technological explosion. (2) The quality of life seems to be constantly decreasing in such a way that life today already shows marked deterioration from a generation or two ago, and every indication is that this trend will continue. (3) Materialistic affluence has proven unable to provide the needs of the whole human being, with the consequence that there is a general spiritual sickness.<sup>3</sup> (4) The population problem, hopelessly aggravated by successes in modern medicine and agriculture, will lead inevitably either to unprecedented strife or to strict authoritarian control, either to worldwide violence instigated by the poor against the rich or to worldwide violence instigated by the rich to hold back the poor, which only rigid authoritarianism can hold in check. (5) The depletion of the earth's resources must lead sooner or later to a limiting of industrial expansion, which has been until now the very hallmark of our success. (6) If depletion of resources does not limit expansion, then the absolutely rigid limit on thermal energy utilization will, if we are not to melt the polar icecaps and invite flood disaster along every coastline in a manner difficult to even imagine.

Given these and related conditions, Heilbroner sees the only possible consequence of free, intelligent human action as the choice of authoritarian government, a modest lifestyle, and some sense of corporate community consciousness. That human beings might exhibit the social creativity to accept needed limitations voluntarily is judged to be well beyond the reasonable options to be hoped for. Commenting on this perspective, Gilkey says,

Heilbroner's analysis, whether he knows or likes it or not, comes pretty close here to the orthodox theological interpretation of man's situation, if not of ultimate reality. . . . Unintentionally, he has provided an empirical documentation of the symbol of a freedom in self-destructive bondage, of the taint of original sin.<sup>4</sup>

Survival in the future will demand a total overturning of all the values that have been held as axiomatic since the Enlightenment.

Once again, therefore, as before critical reflection and science appeared prominently in history, will myth, ritual, and spiritual techniques become dominant (and probably an authoritarian clergy to enforce them) over scientific hypothesis, laboratory process, innovative techniques, and the freedom to question and to invent.<sup>5</sup>

In his chapter, Gilkey offers no "new theology" that

*"Scientific theology" displays characteristics that reveal it to be no breakthrough at all, but rather a modern version of an ancient worldview more compatible with monistic pantheism than with biblical Christianity.*

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will resolve problems such as these. Instead he makes clear that it is not man's creativity *per se* that is at fault (i.e., sin is not inherent in the created structure of the world), but rather that our consequences have arisen from "our insatiable gluttony in our use of the earth, our unwillingness to share, our resistance to equitable distribution, our frantic use of power to grasp and to maintain security that will in the end destroy us if we are destroyed."<sup>6</sup> From a biblical base, he argues that there can be no fate, no determined future—but only an open future in the hands of God; and that even in the darkest days, "the providence of God offers continually new possibilities in each historical situation and ultimate restoration."<sup>7</sup> Finally he repudiates any perspective in which religion is treated as if it provided simply a pragmatic social function, and insists instead that the theologian must be "ultimately concerned to show that a religious perspective is both meaningful and true."<sup>8</sup>

In a subsequent chapter in this issue of *Zygon*, Victor Ferkiss adds another biblical perspective on the human prospect when he asks whether we have any right to believe that the collapse of Western society must be contrary to the will of God. While working for a better world in spite of overwhelming odds here and now, ignorance about the future state of the world in a hundred years really makes little difference to the Christian.

If we are Christians we not only have to believe in Providence and exercise the virtue of hope but must expect that the fruits of hope may be something other than we expect. . . . What distinguishes the Christian from the non-Christian may be a willingness to accept even Heilbroner's most gloomy view of the future as something which may be God's will and therefore something which we will also.<sup>9</sup>

## "SCIENTIFIC THEOLOGY"

It does not need to be argued at length that the general dimensions of Heilbroner's pessimistic picture of the future are settling into the context of our culture that shapes human thought subconsciously. There is thus a direct challenge to the pre-eminence of science and the scientific approach to life, a threat that survival may demand the overturning of those values that have exalted empirical knowledge, and a demand for ultimate rather than purely pragmatic religious views. Several of the authors in this issue of *Zygon* accept the basic thrust of Heilbroner's analysis, including Gilkey and Ferkiss, cited above. Dunn, however, rejects Heilbroner's analysis, choosing to place his hope upon mankind modelling "his social adaptive processes on a better scientific understanding of evolutionary processes and of mankind's emerging human nature."<sup>10</sup> Burhoe joins with Dunn and sets forth his development

of a "scientific theology" as a reply to Heilbroner.<sup>11</sup>

It is Burhoe's purpose to achieve a synthesis of science and religion and thereby to demonstrate that the prominence of religion in the future is not incompatible with the rationality of science or of basic freedom. He seeks to do this by developing a scientific theology with little resemblance to biblical theology.

The primary point of this paper is to show that now there seem to be dawning in the recent pictures of man and his relation to the "ultimate reality" as portrayed by the sciences a clarification and substantiation of the basic insights of the great religions, but with much more concrete detail and evidence. It is this synthesis to which I give the name "scientific theology."<sup>12</sup>

Thus, scientific theology is an eclectic system, a universal and natural religion, based presumably upon the major insights available to us through modern science, essentially the insights derived from an interpretation of human evolution. The potentialities of historic Christianity are dismissed summarily with the naive acceptance that historic Christianity and a God-of-the-Gaps are essential correlatives.

The mainstream of Christian theology . . . had to separate its realm of spiritual and moral values from the scientific world view and thus remove itself to a "God of the gaps" position in which it has been withering as the scientific world view proceeds to fill the gaps.<sup>13</sup>

Uppermost in Burhoe's mind is the conviction that scientifically minded moderns cannot accept or relate to the traditional categories of biblical thought.

I shall seek to address myself to the elaboration of a scientific picture of religion that will be convincing to the scientific and skeptical minds who have not yet been provided with much scientific evidence for its virtues and potential. . . . to show how religion may be reformulated and revalidated in the light of the sciences as salvatory for the present human predicament.<sup>14</sup>

Religion is a part of human nature with both biological and cultural significance; as biological evolution proceeds via genetic evolution, cultural evolution proceeds with religion as the prime transmitter of values. Cultural evolution transcends the individual human and focusses instead on the "sociocultural system;" information is stored in the genotype for biological evolution, in the "culturetype" for cultural evolution. Even if this model in which religion is the agent in cultural evolution, were to be accepted, Burhoe sees four main problems which scientific theology must address: (1) the effectiveness of religious beliefs for scientifically oriented people, (2) the authoritarian context in which religion is normally set, (3) the question as to whether religion can be sufficiently motivating to lead men to plan for the future even if this means voluntary denial in the present, and (4) if a religion meeting all these requirements were to be found, would this not then be the consequence of this-worldly human efforts rather than of a "Lord of History" implied by traditional religions? The answers of scientific theology to these four questions reveal a good deal of its content and methodology.

### The Effectiveness of Religious Beliefs

Religious beliefs are the product of an evolutionary development, leading from primitive ritual, to primitive

beliefs or myths, to theology, and finally to scientific theology. We are at the breakthrough between theology and scientific theology at the present day. Christian theology is seen as "a high step toward converting primitive or 'mythical' explanations of religious ritual into the sophisticated, rational, scholastic, or theological 'myths' of Greek philosophy."<sup>15</sup> Although old religious systems have wisdom in them, this wisdom cannot be utilized in a new social context until the symbols of this wisdom in the old cognitive scheme are translated into appropriate symbols in the new cognitive scheme. Today the failure of the symbols of Christian theology are evident.

University students and cultural leaders in the bulk of the countries of the world find little in their traditional religious beliefs that grips their hearts . . . something grander and more effective than the emergence of Christian theology is called for.<sup>16</sup>

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*"Scientific theology" perpetuates another ancient fallacy: that knowledge inevitably leads to wisdom, and that wisdom leads to salvation.*

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Scientific theology is the answer to this need.

the religious reformation now . . . will be a theological adaptation of traditional religious beliefs and rituals to the modern sciences. The new religious and theological language will be as high above that of five centuries ago as contemporary cosmology is above the Ptolemaic, as contemporary medicine, agriculture, communications and transportation concepts are above those of the fifteenth century.<sup>17</sup>

I prophesy human salvation through a reformation and revitalization of religion at a level superior to any reformation in earlier histories.<sup>18</sup>

This new religion rests upon the revelation of modern science, the insights of which will be incorporated in old belief systems to revitalize them and provide a scientific basis for moral and religious problems.

With such glowing descriptions, we are expectant to learn examples of this revitalization process. One of the first and most central of these is this: the old symbol "God" is to be identified with the new symbol, "nature." Such a revolutionary development makes it possible to say that scientists investigating nature are actually doing theology. (It is also, of course, the central theme of *monistic pantheism*, and the position of ancient idolatry as old as the human race.)

Prior stages of religion need not disappear in the new age of scientific theology, for this major step ahead "is only for those who function in the outer cortex of brain and scientific culture."<sup>19</sup> Apparently, then, scientific theology is only for the scientifically elite. Is not the setting up of a sophisticated inner teaching while the common person is kept happy with traditional interpretations as old as ancient Egypt?

### The Meaning of Human Freedom

The second problem that Burhoe faces is that of the meaning of human freedom within the kind of author-

itarian framework typical of a religious perspective. Here, in keeping with his symbolism transformation described above, in which "the ultimate reality system called 'nature,' 'the natural system,' or 'the way things are' in the sciences" corresponds to that which in Christian theology is "called God or the Kingdom of God,"<sup>20</sup> the biblical paradox of God's sovereignty vs human responsibility is translated into Nature's sovereignty vs. human responsibility. If science presents to us the picture of "an omnipotent and sovereign environment,"<sup>21</sup> how then can we meaningfully maintain human freedom?

Within the limitations of his impoverished model, Burhoe responds to this question in a quite positive and useful way, exactly the same way, it might be added, that the problem has been treated in terms of biblical theology by Christian theologians.

In the scientific picture of man, both his freedom and his responsibility are determined or given him by his environment. Responsibility means that man has a goal or value which he wants or must attain. *One meaning of freedom is that man is free to, or has the capacity to, pursue and accomplish that goal . . . A second meaning of freedom is, when man has not yet found the way or power to maintain himself in a new environment, he is forced into an open and at least partially random search for it.*<sup>22</sup>

The relationship between freedom and the determining effects of the environment are brought out: man's freedom to act in the world is realized only by recognizing the constraints of nature in such a way that the foundation for freedom is laid by the determining characteristics of reality. In language much like that which I have used for the same purpose,<sup>23</sup> Burhoe writes,

he can never violate the ultimate laws and facts of the cosmos. Man does not and cannot repeal the law of gravity when he flies. . . . If a self-centered vanity leads us to suppose we are independent of the larger realities of our environment and we choose to violate them, we are lost and disappear just as a waterfall disappears if there is no stream bed and no supply of water.<sup>24</sup>

Submission to what the ultimate reality system requires is indeed our greatest freedom.<sup>25</sup>

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*"Scientific theology": nature is God, the natural system is the Kingdom of God, the supernatural is anything not covered by common sense, science is truth, evil means non-viable, and salvation is man's quest for survival.*

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This conclusion, however, is quite independent of Burhoe's structure of scientific theology. Biblical theology has always maintained that the ultimate reality system was the result of the creative activity of God, a system that was separate from but not independent of God. Burhoe's elimination of the role and relationship of God in this problem does not contribute in any way to the solution he proposes. This fact is all the more clearly demonstrated by the words with which Burhoe con-

cludes this particular section:

man's greatest freedom comes from his proper service to his society and God; man's freedom is a heritage or gift ordained or fully determined by the reality system that produced us.<sup>26</sup>

### Altruistic Motivation

Burhoe's third problem for scientific theology is whether or not man can be motivated to sacrifice his present advantages in order to provide for future ones. Once again his positive response is based to a considerable extent upon the appropriation of the biblical approach within his own truncated model of religion:

traditional religious myth and theology as well as modern scientific theology provide essentially the same answer, which is: Man has, can, and must gladly deny present satisfactions, even to the point of risking his life, to provide for the welfare of future generations far beyond his great grandchildren.<sup>27</sup>

This answer on the part of biblical theology, however, derives its entire motivating power from the work of God in the lives of individual men and women; it is only because God has acted in history and in Jesus Christ to reclaim human beings through divine forgiveness that sinful men and women can be "born again" and receive a newly motivated spirit through the newly re-established bond of fellowship unity with God in Christ. How does scientific theology provide this kind of motivating power?

Burhoe's response is biological and evolutionary:

the natural history of all organisms shows that self-sacrifice for the larger whole of which it is a part is the order of the day. Also, the invention of sex and death in the evolution of living systems probably some billion years ago was perhaps the greatest step forward to making possible the evolution of higher and more stable forms of life.<sup>28</sup>

He recognizes that "animals are genetically programmed naturally to like to go about this necessary business, oblivious of what good they are doing,"<sup>29</sup> but he does not hesitate to extrapolate this to human beings who are not so genetically programmed, if indeed the claim made for animals is as broad as Burhoe implies. It is the input of scientific theology that will make the difference for human beings; when living in the "kingdom of God" is successfully translated into living in the "perspective of true reality" rather than in the "limited and hence false views of common sense," such self-sacrifice will also become possible for man. What is this input? Essentially it is the realization that man's true self has no ultimate relationship to his body,

I can be altruistic and still respect myself sufficiently . . . by noting that looking out for "number one" becomes altruism when number one is reconceived in the dimensions of the larger self, sometimes called soul, which is more than the body and which extends in time and space to embrace a larger part of the domain of the reality that is "my" life system—a domain that includes my nongenetic "brothers" in society.<sup>30</sup>

This may not go all the way to an embracing of monism, but it is certainly a fundamental step upon which to build in that direction. By *understanding* "true reality," man, according to Burhoe, is transformed.

At the level of those who 'dwell in the kingdom of God,' of those whose vision of the self is thus transformed, altruistic service becomes a responsibility to the self that comes naturally.<sup>31</sup>

It is essentially then that knowledge, the correct perspective, the proper insight, the true key to reality—these are what save a person and bring about his moral transformation. Thus scientific theology perpetuates another ancient fallacy: that knowledge inevitably leads to wisdom, and that wisdom means salvation. There appears to be very little scientific basis for the acceptance of this progression; and, of course, such an approach is the very antithesis of biblical theology since the beginning.

### Relation to "The Lord of History"

The fourth and final problem raised for scientific theology by Burhoe is how such an approach can still claim to have a relationship to the 'Lord of History' of traditional religions. His reply is that in our present scientific day, there should be no problem in translating the unacceptable terms of biblical theology into the acceptable terms of scientific culture without losing their essential meaning. Thus the term "supernatural" can be seen to be synonymous with "reality or nature at higher levels of abstraction than ordinary sense perceptions" as already "penetrated by the conceptual system of physics." In other words, Burhoe would call nuclear physics supernatural. When applications of applied physics in electronics and medicine are viewed as "miraculous," then there is no difficulty in associating such phenomena with the "supernatural." And since science has already become synonymous with "truth," there should be no difficulty in linking "scientific and religious truth." It is evident that if such philosophical reductionism is permitted, then there is no problem, for the biblical terms never did have content beyond that conveyable through the sciences. As Burhoe's early dismissal of historical Christianity was based on his assumption that such a view must opt for a God-of-the-gaps, so his dismissal of extra-scientific meaning is based on his assumption that scientific knowledge has shown that there is no such meaning to "supernatural." Both conclusions are philosophically naive and indicate a distorted notion of just what science can and does show about the world.<sup>32</sup>

Burhoe does effectively criticize the present forms of humanistic religion "in which man is perceived to be himself, alone, master of his fate and determiner of his destiny, whose every private wish can be fulfilled by a technological fix—which this century's history is teaching us is a kind of fool's freedom and paradise."<sup>33</sup> It is true, then, that Burhoe's scientific theology, in its recognition of an independent ultimate reality, is closer to biblical theology than such humanistic religious forms. Such corrective influence over humanistic religion, however, should not be interpreted as meaning that scientific theology provides *the* answer. Instead it constructs its own reductionistic and idolatrous edifice, which again misleads man.

Burhoe's view of the "Lord of History" appears to be amazingly earth-bound. He characterizes as a "solidly based 'theology,' one where man's meaning will again be found grounded in a credible reality that is transcendent to man," the identification of "the Lord

of History" with "the real nature of the total ecosystem."

It is not surprising that other traditional theological categories also come in for radical reinterpretation in Burhoe's scientific theology.

"Evil" is the name for what man's consciousness presents to him as an existing or potential pattern of the life system . . . that has or will become destructive of whatever it is that is good. As a first approximation, good is usually identified with what is conducive to life and evil with death.<sup>34</sup>

*man is never separate from God.* In the scientific picture, man is a creature of nature, a phenomenon of dynamic flow completely dependent upon the boundary conditions set up by an ecosystem's evolution over billions of years of the natural dynamics of the earth.<sup>35</sup>

The particular imagery or formulation—such as the resurrection of the body, transition of a soul to another realm or world, or transmigration of soul to another body—is not important except for purposes of coherence and credibility within a particular culture.<sup>36</sup>

In due course all wicked and evil (nonviable) ways will be selected out of the picture of the omnipotent God (nature's requirements for viability or being).<sup>37</sup>

It is no surprise that here there is no mention at all of Jesus Christ. There is also no mention of love or prayer. The symbol "God" has become the impersonal forces of the universe, and Jesus must have been wrong when he used the symbol of "father" to refer to God. There is no moral rebellion, no personal fellowship with God, no Body of Christ. Relief to present ecological failures of man is sought in a pantheistic emphasis.

Too much emphasis on and pride in the human aspects of God, incarnate in man, and too little regard for man's continuing need to adapt to, or reverence, the ultimate requirements of the total reality system are what is bringing Christendom and Western civilization to their knees.<sup>38</sup>

Finally salvation and eternal life must also be reinterpreted in scientific theology.

Salvation is in the end man's continuing search and discovery of the next steps in the unending staircase of the "preferred configurations" in the "hidden strata of stability," one above another . . . in our universe (which) the evolutionary process climbs . . . one by one. . . . The evolutionary process of billions of years of discovering (by chance or design), internalizing (remembering), and acting out (expressing) this truth of nature's design for life is salvation or eternal life in God's kingdom.<sup>39</sup>

The individual man is submerged in mankind as a species; salvation and eternal life are not applicable to individuals who live here and now, but only to the total human race.

What hope does scientific theology provide that mankind will indeed learn and respond?

It is my view that the omnipotent processes of the cosmos will continue and that men will be brought to their senses, will reform their ways and adapt themselves to the requirements for life and ever more advanced life to which the Lord of History on earth has destined them.<sup>40</sup>

At his best, what Burhoe has done is to take biblical truths, reduce them to a natural level, and then choose such scientific descriptions as seem suitable to him. He may be enumerating scientific descriptions of the ways in which men describe the activity of God in the world; he is not producing a scientific theology. With-

out the foundation of biblical theology, he would have nothing to reinterpret. By supposing that the scientific description is the only possible description, that it excludes other parallel descriptions, and that it removes the significance of the transcendent personal God of the Bible, the Father of our Lord Jesus Christ, Burhoe commits the usual error of reductionists.

### SUMMARY

When it is assumed that a fundamental conflict exists between modern scientific understanding and the doctrine of the biblical record, there are two ways to respond. In the first, it is supposed that the scientific understanding takes precedence and that the task is to reinterpret the essence of the Biblical doctrine under the categories of modern science.<sup>41</sup> This is the choice made by "scientific theology." In the second, it is supposed that the difficulty lies with the traditionally limited approach and categories of science; the solution is to reinterpret science in such a way that openings are left for a wide variety of phenomena not describable by traditional science. This is the choice made by variations on "cosmic consciousness" that are described in the next installment. There is of course a third response, in which the conflict between science and biblical teaching is seen to be apparent, and not actual; the resolution in this case is to view scientific descriptions and theological descriptions as different kinds of descriptions of the same one reality. This is the choice that I would make and have discussed at some length elsewhere.<sup>42</sup>

We may summarize "scientific theology" as follows. It is based on the presuppositions (independent subjectively chosen faith assumptions) that the modern scientific mind cannot accept truth in the form of the biblical categories, that religious beliefs are wholly human products, that in the final analysis it is knowledge and understanding that save, that adherence to the traditional biblical position inevitably leads to a defense of a God-of-the-Gaps, and that individual life will not be preserved as individual life beyond this world. In view of these presuppositions, the attempt to reinterpret biblical categories into scientific ones results in an eclectic universalistic religion in which nature is God, the natural system is the Kingdom of God, the supernatural is anything not covered by common sense, science is truth, evil means non-viable, and salvation is man's quest for survival. By maintaining a category of sovereign nature within which man must live, and thus an understanding of freedom that is not as far from the mark as other contemporary views such as "cosmic consciousness", such a "scientific theology" does manage to preserve a small portion of the biblical teaching. But in giving away everything else and essentially converting biblical religion into a variation of monistic pantheism, "scientific theology" falls far short of its goal. Finally, optimism in the future must rest on the frail hope that increasing knowledge will lead men to do what they must to save themselves. The God who calls, empowers, forgives, loves and acts is no longer there; only the impersonal silence of the total ecosystem remains.

*The God who calls, empowers, forgives, loves and acts is no longer there; only the impersonal silence of the total ecosystem remains.*

### REFERENCES

- <sup>1</sup>Robert L. Heilbroner, *An Inquiry into the Human Prospect*, Norton and Company, New York, N.Y. (1974)
- <sup>2</sup>*Zygon*, Volume 10, Number 3, September 1975, "Papers from the Institute on Religion in an Age of Science Symposium on the Human Prospect."
- <sup>3</sup>In commenting on this point, Langdon Gilkey ("Robert L. Heilbroner's Vision of History," Ref. 2, pp. 218, 219) adds also "feelings of unrest, disaffection, alienation, and anger at the dominant scientific, technical, libertarian, and capitalist culture felt throughout the Third World, by our minority groups, and by much of our youth—not to mention the radically anti-Enlightenment spirituality latent in the present widespread concern for parapsychology, Eastern religions, and the occult."
- <sup>4</sup>Gilkey, Ref. 2, p. 224
- <sup>5</sup>Gilkey, Ref. 2, p. 225
- <sup>6</sup>Gilkey, Ref. 2, p. 231
- <sup>7</sup>Gilkey, Ref. 2, p. 232
- <sup>8</sup>Gilkey, Ref. 2, p. 233
- <sup>9</sup>Victor Ferkiss, "Christianity and the Fear of the Future," Ref. 2, p. 262
- <sup>10</sup>Edgar S. Dunn, Jr., "Heilbroner's Historicism versus Evolutionary Possibilities," Ref. 2, p. 297
- <sup>11</sup>Ralph Wendell Burhoe, "The Human Prospect and the 'Lord of History,'" Ref. 2, pp. 299-375
- <sup>12</sup>Burhoe, Ref. 11, p. 349
- <sup>13</sup>Burhoe, Ref. 11, p. 333
- <sup>14</sup>Burhoe, Ref. 11, p. 304
- <sup>15</sup>Burhoe, Ref. 11, p. 321
- <sup>16</sup>Burhoe, Ref. 11, p. 323, 324
- <sup>17</sup>Burhoe, Ref. 11, p. 328
- <sup>18</sup>Burhoe, Ref. 11, p. 328
- <sup>19</sup>Burhoe, Ref. 11, p. 333
- <sup>20</sup>Burhoe, Ref. 11, p. 342
- <sup>21</sup>Burhoe, Ref. 11, p. 336
- <sup>22</sup>Burhoe, Ref. 11, p. 337
- <sup>23</sup>R. H. Bube, "Science Isn't Nothing," *Journal ASA* 28, 82 (1976)
- <sup>24</sup>Burhoe, Ref. 11, p. 338
- <sup>25</sup>Burhoe, Ref. 11, p. 339
- <sup>26</sup>Burhoe, Ref. 11, p. 346
- <sup>28</sup>Burhoe, Ref. 11, p. 347
- <sup>27</sup>Burhoe, Ref. 11, p. 347
- <sup>28</sup>Burhoe, Ref. 11, p. 347
- <sup>29</sup>Burhoe, Ref. 11, p. 348
- <sup>30</sup>Burhoe, Ref. 11, p. 350
- <sup>31</sup>Burhoe, Ref. 11, p. 351
- <sup>32</sup>R. H. Bube, "Science Isn't Everything," *Journal ASA* 28, 33 (1976)
- <sup>33</sup>Burhoe, Ref. 11, p. 358, 359
- <sup>34</sup>Burhoe, Ref. 11, p. 363
- <sup>35</sup>Burhoe, Ref. 11, p. 362
- <sup>36</sup>Burhoe, Ref. 11, p. 363
- <sup>37</sup>Burhoe, Ref. 11, p. 364
- <sup>38</sup>Burhoe, Ref. 11, p. 365
- <sup>39</sup>Burhoe, Ref. 11, p. 366
- <sup>40</sup>Burhoe, Ref. 11, p. 367
- <sup>41</sup>There is, of course, the analogous position in which biblical doctrine is given precedence over all scientific knowledge, and troublesome scientific inputs are simply discounted on principle without detailed consideration. This position constantly fights a rear-guard action, and although today it is perhaps a sizably defended position, I cannot conceive of any future for it, unless rationality is completely forsaken.
- <sup>42</sup>R. H. Bube, *The Human Quest*, Word, Waco, Texas (1971)



**SELF ESTEEM** by Craig W. Ellison, Editor. Oklahoma City: Southwestern Press, 1976. 134 pp. (paper).

Here is good news. The Christian Association for Psychological Studies has sponsored and here published the first in a projected series of monographs on "Christian Perspectives on Counseling and the Behavioral Sciences." The editor of the series and of this monograph, Craig Ellison, is Associate Professor of Psychology at Westmont College. The intent of this series is in Ellison's words to: "describe and analyze relationships between the Christian belief-system and psychology from an orthodox theological perspective . . . to provide a systematic forum for evangelical professionals . . . valuable as supplementary texts in colleges and seminaries." The intent is timely, the goals laudable, and so we look forward to further offerings in this series.

Ellison opens with a survey of current research in social psychology on the determinants of self-esteem, including social sources, parent-child relationships, community and culture. Next follow Calvinist theology of self-esteem by Hoekema, and a Wesleyan theology by Wise. Busby reviews psychiatric theorists and Shostrom presents a self-actualizing viewpoint. Moberg comments on social aspects of self-esteem, followed by a personal account by an Inter Varsity staff member, Cathy Schilke. Rottschaffer concludes the clinical sections with an analysis of the relationship between self-esteem and depression. The final sections discuss self-esteem in education, and some psychometric means of measurement. Schilke was real, the psychologists abstract.

A broad waterfront is covered in a quick type of tourist excursion. You see the sights, but you really don't get to know the city. What have we learned? (1) The level of serious scholarship has gone up. It is a pleasure not to find much special pleading here, but rather some fairly serious scholarship, both psychologically and theologically. (2) So much new territory whizzes by that at times the scenery is blurred. A clear definition of self is never given. So it is difficult to know what the difference is between self and self-esteem. Often these two concepts are blurred by the authors. (3) The discussions are more provocative and evocative than systematic, coherent, and explanatory. Thus I had to continually re-orient myself in a maze of differing orientations as I progressed through the book. (4) The book does not lead to any really specific guidelines for either the thera-

pist, minister, or educator. The tone varies from that of "just love everybody" to "it's better to be nice than nasty" to "you have to be realistic."

The most fundamental problem, however, is interdisciplinary. Psychology and theology each begin with different sets of constructs. The same words have different referents in each system. The "self" before God, is not necessarily the same as "self" before and between humans. The theological concept of the depravity of man is not necessarily the same as psychological depravity. And so on. I believe that an interdisciplinary discourse is both possible and necessary. But a careful vocabulary must be constructed. This book does not attempt nor provide that vocabulary.

Attempting a difficult task, the book does not fully succeed. But the attempt is noteworthy. If nothing else, it should provide students and professors with sources of ideas, and enlightened discussion. A great first step! Our congratulations to the CAPS organization and to Professor Ellison for a good beginning. Let us hope to shortly see more volumes in this series.

*Reviewed by E. Mansell Pattison, M.D., Professor of Psychiatry and Human Behavior; Social Science; and Social Ecology. Vice-Chairman, Department of Psychiatry and Human Behavior, University of California, Irvine.*

**THE FUTURE OF RELIGION** by James O. Unwin, Exposition Press, N.Y. 1973, 126 pp., \$4.50.

Out of the hands of an active civil engineer comes a unique work attempting, through mathematics, to invalidate Christianity. In the introduction Unwin states that he is dealing "primarily with the Medieval Christian beliefs which are the basis of modern Christian belief" (p. 7), hoping by discrediting these beliefs to discredit Christianity today. His own theological background appears to be limited to Catholicism, and this is reflected in the statement, "Christianity is Judaism passed through the minds of a celibate clergy headed by an absolutist monarchical, religious-political authority, the Medieval Papacy" (p. 9).

The unique aspects of this treatise are centered around mathematics. Claiming an Arabic numeral system for the Hebrews, he tries to show the change to the Roman numeral system in Medieval Christianity as a leap in the wrong direction.

Chapter 2 "Infinity Becomes Limited", contains the argument that Christianity limits the infinite by confining God to the Trinity, bread and wine, and the

## BOOK REVIEWS

risen Christ. He sees these in direct contradiction to Hebrew concepts of a less concrete God, and a commandment that "Thou shalt erect no graven image of God." Unrecognized in his text are equally "confining" Old Testament features such as the Ark of the Covenant and the Holy of Holies. This reviewer sees none of these Old or New Testament features as limiting, but for the sake of this argument, at least equivalent.

Among the following chapters are: "Abstraction: Law Becomes a Person"; "Abstraction: Law Becomes a Person Who Sets Aside the Law"; "Abstraction: Law Becomes a Person; Inalienable Rights Become Alienable; Whatever the Top Man Permits." In each chapter he relates mathematical reasoning to the two religions, with the purpose of demonstrating that Judaism is the only logical belief system of the two.

Each chapter includes "alternative Christian beliefs" covering the periods before Christ and after Christ. These sections sum up the chapter's arguments about the particular math concept and its relation to Christians and Jews, and though the alternatives are not exhaustive, they do give good insight into Unwin's reasoning. For example, one option "After Christ" in the chapter "The Person Becomes Perfect" (referring to Jesus) states: "The Hebrew religion is still valid but obsolete". Unwin argues,

The Hebrew understanding of the lack of perfection of persons is the common sense one in agreement with modern mathematics. If it is obsolete, then common sense and modern mathematics are obsolete too, as is the idea of rule by the common people. Since common sense and modern mathematics are still valid, Christ is not perfect except in an imaginary 'make it up as you go along' sense. The New Testament concept of perfection of real objects is the old obsolete one, discarded along with the rest of Roman numerals about eight hundred years ago (p. 79).

On page 75 he extrapolates, "If one accepts the perfection of Christ, one must accept those who imitate Christ, the celibate Clergy, as being perfect and as having the right to rule with Christ."

One readily obvious weakness of the book is the lack of literature citations. The bibliography is adequate, but reasoning in the text is diminished by the lack of referencing to both Scriptural and non-Scriptural sources.

A lack of objectivity by the author is evident at many places in the book, often taking what appears to be a bitter stance against the Church, such as, "... the imitation of the celibate who has a mythology that authorizes him to dominate and provoke others" (p. 49). His choice to write in such a way is a great detraction from the book's scholarship, though his cynicism is often entertaining.

The book is an interesting one to read, and one of special attraction to Christians in the sciences. It is doubtful that those well-grounded in the Scriptures will find it convincing. In fact, if the reader will track down Biblical references as the reading progresses, in all likelihood a reaffirmation of his own faith should occur.

This exercise at quantification (albeit a negative one) is admirable, but problems are naturally inherent. When reducing spiritual matters to strictly empirical ones, less than total representation occurs. This particular case of oversimplification, though down

to a workable scale, misses the main features of Christianity (which are non-empiric), much as a knife-wielding lumberjack who attempts to fell a giant Redwood, and unable to do so, settles for a piece of its bark.

Reviewed by E. Steve Cassells, Asst. Prof. of Anthropology, Judson College.

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**RELEASE FROM FEAR AND ANXIETY** by Cecil Osborne, Waco, Texas: Word Book Publishers, 1976, 209 pp., \$3.95.

I stopped by the local Christian bookstore the other day to browse. A whole section caught my eye: paperback "do-it-yourself" books of counseling, self-help, self-understanding, self-therapy, self-release, self-actualization . . . and on. This was one of the books—at least 50 copies thereof, so it must be selling well.

The book itself is not unusual for its type, not too good, not too bad. The author, a Baptist minister, pastoral counselor, and executive director of Yokefellows, Inc., focuses on guilt and anxiety as two basic troubling emotions. His intent is to give the reader insight into the workings of these and kindred emotions so that they can be used productively instead of destructively. His discussion is personal, homely, and pretty sane and savvy. The not so good part is a

### *Books Received and Available for Review*

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

- Austin, William H., *The Relevance of Natural Science to Theology*, Barnes & Noble, 1976.
- Burkhardt, Walter J., *Woman: New Dimensions*, Paulist Press, 1977.
- Colquhoun, Frank (ed), *Hard Questions*, IVP, 1977.
- Editors of *Pensée*, *Velikovsky Reconsidered*, Doubleday, 1976.
- Engstrom, T. W. & E. R. Dayton, *The Art of Management for Christian Leaders*, Word Books, 1976.
- Hall, Brian P., *The Development of Consciousness: A Confluent Theory of Values*, Paulist Press, 1976.
- Harnik, Bernard, *Toward a Healthy Marriage*, Word Books, 1976.
- Hefley, James C., *Textbooks on Trial*, Victor Books, 1976.
- Loewen, Jacob A., *Culture and Human Values: Christian Intervention in Anthropological Perspective*, William Carey Library, 1975.
- May, Gerald G., *Simply Save: Stop Fixing Yourself and Start Really Living*, Paulist Press, 1977.
- Ransom, C. J., *The Age of Velikovsky*, Kronos Press, 1976.
- Seaton, R. S. & E. B. Seaton, *Here's How: Health Education by Extension*, William Carey Library, 1976.
- Sider, Ronald J., *Rich Christians in an Age of Hunger: A Biblical Study*, IVP, 1977.
- Taylor, B. J. & T. J. White (editors), *Issues and Ideas in America*, Univ. of Oklahoma Press, 1976.
- Vree, Dale, *On Synthesizing Marxism and Christianity*, Wiley, 1976.
- Wagner, Dennis A. (editor), *Student Essays on Science and Creation*, Creation Society of Santa Barbara, 1976.
- White, John, *Eros Defiled: The Christian and Sexual Sin*, IVP, 1977.

persistent ring-kissing obeisance to medical "authorities", whether they be psychiatrists, obstetricians, endocrinologists, family docs, or off-beat faddists. Painless childbirth, megavitamins, organic diets, primal screams, psychoanalysis, prayer, hypnotism, and sincere religiosity are given about equal weight throughout. Why not a little bit of everything on the happy road to good feelings?

Which leads me to my dissatisfaction not only with this book, but the whole section of similar books by well intentioned and variously informed and informing Christian psychologists, psychiatrists, pediatricians, pastoral counselors, and lay healers, etc. First, the books all have a remarkable sameness even to the point of drabness; like hearing variations of the same rock tune, beat, and words on the local radio station. The message is the now accepted "conventional wisdom" of Christendom. We all know that Christians should and can rid themselves of those noxious and bothersome feelings. So maybe these books are not really "helping" change people; maybe they are just affirming how people are thinking, feeling, and behaving already.

My second dissatisfaction stems from the first. What does this say about our current operating assumptions about the desiderata of the Christian Life? Following the activism of the 1960's, the mood of the country has turned inward and personal private values have become paramount again. Personal satisfaction and the values of the life lived come not from contributions toward larger goals beyond the self, but *simply* from "feeling good within oneself." In psychiatric jargon we label this narcissism—excessive preoccupation with the importance and function of the self. I know people who don't exercise because it makes their body ache, people who don't think about current social problems because it perplexes and frightens them, people who don't pray because it provokes awareness.

I am quite aware of the crippling disability that doubt, fear, guilt, anxiety, jealousy, hostility, timidity and the rest of the panoply of emotions can produce. There are certain segments of Christendom that have promoted denial, repression, and neurotic mismanagement of our emotions, and it is refreshing that we have moved beyond that. But I still feel uneasy. We lack a coherent and consistent theology for construction of an emotional agenda for life. The genre of book under discussion seems to support the notion that the Christian life is fulfilled in internal emotional tranquility. Is this merely a sanctified version of cultural narcissistic pre-occupation? I find it remarkable that young people are flocking to religious and quasi-religious movements that call them to commitments that involve and extend them beyond themselves. Emotional pains may not all be neurotic, and so what if they are? Great men and women have probably exhibited more of their share of neurotic elements than the happy, healthy, sane everyman on the street. These books, whole shelves of them, seem to suggest that Christian fulfillment is a state of decent feelings. But I should like to quote a current popular song: "Is that all there is, my friend?"

*Reviewed by E. Mansell Pattison, Professor and Vice-Chairman, Department of Psychiatry and Human Behavior, University of California, Irvine.*

**DEATH: THE RIDDLE AND THE MYSTERY** by Eberhard Jüngel (translated by Iain and Ute Nicol), Westminster Press, Philadelphia, Pennsylvania (1974). 141 pp. \$6.95.

For each of us, death is the last ultimate reality we must confront on this earth. Death comes to every person and we are usually ill-prepared to meet it. Perhaps in ages past, when men lived closer to nature, when people interacted more closely and more frequently, death could be confronted and dealt with because it was seen, not hidden. Today our society is extremely depersonalized and compartmentalized. Until recently, death could not be employed as a topic for polite conversation; euphemisms were used when the subject was discussed to avoid facing the matter. Dying is no longer done at home; it takes place in the violence of the street or the battlefield or in the sterile, lonely hospital room where the patient is surrounded not by friends and family, but by intricate mechanical and electronic devices which quietly click and hum as they accurately measure out the last hours of a person's life.

There is a rebellion taking place against this hiding of death and once again we are feeling free to discuss openly this aspect of our existence. The pioneering work of Elizabeth Kübler-Ross opened the door to an extended consideration of death and a flood of books and articles have come forth since her work first appeared. Debate has been raised on the question of when death actually takes place; many legal, medical and moral decisions depend on a reliable, consistent answer to this question. Much helpful information has come forth on practical aspects of dealing with death in the family. As our technology threatens to depersonalize us, we reassert our humanity by grappling anew with basic issues that affect us as persons.

Religion plays an important role in any discussion about death, for it is the role of religion to provide ultimate answers to man's questions. Eberhard Jüngel enters the discussion by considering how theology approaches the findings of medicine, sociology and philosophy related to death. Formerly professor of systematic theology at the University of Zürich, Jüngel is currently on the faculty at the University of Tübingen. His book is divided into two sections: the first is entitled "The Riddle of Death" and approaches the question from an anthropological, medical, psychological and sociological point of view; the second section, "The Mystery of Death" approaches death from a theological standpoint and deals with the Biblical teachings regarding death and the resurrection.

In considering death as one of life's questions, Jüngel first explores the thoughts of a variety of authors and attempts a synthesis of the varied outlooks. Although coming from different directions, all the writers acknowledge the inevitability of the process and see some value in facing the reality of the question.

The discussion of physical death considers the various signs of death. Jüngel does not explore one of the current and crucial questions surrounding death: when is a person "really dead"? He leaves the medical and ethical considerations of this key area to others to explore and contents himself with a simple description of some of the more obvious and less controversial

aspects of physical death.

When he comes to philosophical aspects of death, Jüngel begins to develop the theological concepts he will explore in the second section of his book. Unfortunately he limits his discussion to a consideration of pre-Christian Greek philosophy, probably out of his concern for their influence on early Christian thinking about death. Some mention of current philosophical approaches and problems regarding death would have been of value in dealing with contemporary questions about the subject.

When Jesus said "I am the resurrection and the life. Whoever believes in me will live, even though he dies . . ." (John 11:25), he laid down a challenge to all the forces which strive to limit our existence. When he was crucified, buried and then raised from the dead, he showed the power of God that transcends death and conquers it. The Christian faith affirms that we can overcome death and that our lives need not be limited by the grave. The Old Testament view of death is shown by Jüngel to be a limited one, affirming God as giver of life, showing life to be a relationship with God and viewing death as terminating that relationship. There is no hope of life beyond the grave and death is seen as the end to all things. It is not until we come to Christ and the New Testament writings that a promise of life after this earthly one is offered. Jüngel considers the role of the death of Jesus, his resurrection and all its implications to the Christian community.

The book is concluded with a consideration of the death of death. Since we die to sin, are buried with Christ in baptism and arise to walk in new life (Romans 6), physical death no longer offers a threat to the Christian. Removal of the fear of death of the body brings new responsibilities and new challenges to the Christian.

Eberhard Jüngel has written a challenging book that raises many questions and offers answers to some. Its weakness (if it be such) is in the intricate philosophical discussions that may not prove especially useful to many in considering death in contemporary society. Its strength lies in an exploration of the Biblical concept of death and the implications for each of us in knowing that death has been conquered by Jesus Christ.

*Reviewed by Donald F. Calbreath, Ph.D., Director of Clinical Chemistry, Durham County General Hospital, Durham, North Carolina 27704.*

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**DEATH BY DECISION: *The Medical, Moral, and Legal Dilemmas of Euthanasia***, by Jerry B. Wilson, The Westminster Press, Philadelphia, PA, 1975, hardback, \$7.50, 208 pp.

Jerry Wilson's book, from his Ph.D. thesis, fairly and objectively examines the pros and cons of "easy death," surveying various positions of the past and present with a critique of each. Included are summary views of Protestant theologians Dietrich Bonhoeffer, Paul Ramsey, Karl Barth, Joseph Fletcher, and H. Richard Niebuhr, and of Catholic theologians Gerald Kelley, Norman St. John-Stewas, Bernard Haring, and Joseph Sullivan. A discussion of Bible passages dealing

with death and dying is responsibly presented.

Euthanasia is seen by Wilson as one of the contemporary moral crises intensified by scientific and technological developments in human medicine. But among the reasons why euthanasia is a problem are the following disorientations in our customary points of view: (1) The secularization of our cultural orientation toward death. (2) The sick attitudes of our society toward death and dying, such as avoidance, denial, the conspiracy of silence, the inability of the patient's family "to acknowledge the inevitability of his death and to overcome their grief and guilt," and the belief and practice of some doctors to "preserve life as long as possible regardless of how hopeless the patient's condition."

Anxiety and fear of death account for the failure of both the medical profession and society in general to grasp the potentially demonic consequences of useless extension of life, on the one hand, and of furtive ad hoc decisions to 'release' the sufferer, on the other.

(3) The outdated definition of legal death. "Appropriate terminal decisions could be made with much less difficulty if human life were understood to include at least the potentiality for consciousness and if death were recognized when the physical substratum for this level of existence has been destroyed or has degenerated." The distinction between loss of vital functions and organic death or brain death should be taken seriously. When the sanctity of life is understood in human terms then brain death is the "appropriate basis for a legal as well as a medical definition of death."

Wilson gives a good discussion of the sanctity of life principle. "As a basic principle of Christian ethics, the sanctity of life affirms a person's right to live," but "does not translate this right into a necessity." "From the perspective of Christian faith, the sanctity of life is not destroyed by death, for death is understood as a process of life as it is created and sustained by God."

A theocentric medical ethic rejects absolutistic medical and legal norms against euthanasia because they place more importance on the life of the patient than on his personal needs. Theocentric love begins with the needs of patients as persons. The patient, in so far as he is able, should be permitted to make his own medical decisions. When "his suffering cannot be relieved adequately or his condition renders his life hopelessly intolerable, he should be permitted to refuse treatment to prolong his life."

'Voluntary euthanasia, both active and passive, ought to be sanctioned in response to the needs and claims of the dying,' because each person is the master of his own body. Euthanasia is justifiable at the request of a competent terminal patient or when it is not against his wishes, with his nearest relative or guardian deciding in his incapacity. 'The right to die should not be denied.'

In October 1976, California became the first state in our nation to legalize the "living will" for death with dignity, whereby a terminal patient of sound mind may declare his refusal of treatment to prolong his life.) Legislation to permit voluntary euthanasia with the safeguards mentioned would protect each patient's right to die and to preserve his right to live. A reform

of "professional and legal standards of medical practice to make them more responsive to patients who are suffering and dying" must be made by people of "faith and good will in order to exercise wisely and humanely the power of life and death created by contemporary science and technology."

Wilson summarizes 5 principal arguments for euthanasia: (1) The dignity of life is superior to the value of life *per se*. (2) The relief of suffering is more important than the physician's responsibility to prolong life at all costs. (3) The patient's right to be at liberty has precedence "over the value of life which is radically restricted" (the principle of individual autonomy to decide what is to be done to his person). (4) The right to justice or fair treatment in permitting the practice of euthanasia. Although

the law in theory is a product of medical ethics and social norms that take seriously the role of the physician as the preserver of life, . . . the legal decisions that are made and the judgments . . . that are rendered suggest that we tend to regard the practice of euthanasia less as a moral evil or crime and more as the unfortunate but necessary and humane response to human need and suffering.

Many cases are cited to illustrate his points. (5) The principle of utility or "usefulness as a means to the ends prescribed by society" considers the burdens of suffering and dying without euthanasia that are placed on society. However, "responsible medical care cannot condone euthanasia as a eugenic measure."

All Christians need to evaluate these concerns and think through their own responses based on biblical principles, as Wilson does in this book.

*Reviewed by Jerry D. Albert, Mercy Hospital and Medical Research Facility, San Diego, CA 92103*

**FRANCIS SCHAEFFER'S APOLOGETICS: A CRITIQUE** by Thomas V. Morris, Chicago: Moody Press, 1976, 128 pp., \$2.50.

Francis Schaeffer is one of the most active and prolific Christian apologists today. It is no surprise then that someone, such as Morris, has written an analysis and critique of Schaeffer's apologetics. The book is divided into two parts. The first outlines Schaeffer's apologetic particularly as presented in *The God Who Is There* and *He Is There and He Is Not Silent*. According to Morris, Schaeffer's arguments are largely "arguments from design". Schaeffer looks at the universe and man around him, then demonstrates that the nature of the universe and man is such that certain presuppositions or hypotheses (in this case Biblical Christian presuppositions), explain it better than others. He subsequently argues for the truth of the presuppositions which fit best with the facts about man and the universe. His argument follows the same pattern as that of a scientist in defending the "best" of several competing hypotheses.

In the area of metaphysics, for example, Schaeffer argues that human personality is real, and hence a model of the universe (the Christian one) which explains origins in terms of a personal beginning has greater validity than a cosmogonic model based on an

impersonal beginning. He claims that the impersonal beginning does not adequately explain human personality, man's need for fulfillment, meaning, purpose, love, beauty, and order. Similarly, in the area of epistemology, Schaeffer rejects the modern position that the universe is a closed system of cause and effect, in favor of the biblical view of an open universe. He claims that the former leads to a divided field of knowledge, because when the universe is viewed as a determined machine, there is no place for purpose or meaning in human life. Since man cannot live consistently without purpose and meaning he has to reintroduce them irrationally into a separate compartment of his mind. Thus, the biblical view provides a better basis for man's knowledge of himself and of the world around him. Schaeffer also goes on to demonstrate the congruity of the Christian gospel with man's moral nature. On the basis of these arguments he claims to have demonstrated the necessity of the Christian position, and hence elicits assent from his reader to the truth of Christianity.

Morris criticizes Schaeffer's position in two ways. In each argument, Morris maintains that Schaeffer has overstated his case. He has claimed to have shown that the Christian position is the only tenable one. However, according to Morris, he has shown only that the Christian position is a relatively more probable one, in that it fits better with our knowledge of our own humanity and the real world around us. Morris's second major criticism of Schaeffer is that he views human thought and decision making processes as much too logical and mechanical. There are a multitude of non-logical aspects of human thought. We do not necessarily think in a series of logically necessary steps. We are influenced by our emotions, predispositions, metabolic state, etc., and Schaeffer does not adequately consider these non-logical aspects of human thought.

The second part of Morris's book attempts to justify the use of apologetics in evangelism. Morris states that the major role of apologetics is to make the claims of Christianity more probable to the listener, and to move his thinking closer to the Christian position. However, he recognizes the limitation of apologetics, and points out that an apologetic alone is incapable of bringing a person into the Kingdom of God. Jesus said, "No one can come to me unless the Father who sent me draws him".

This is a very valuable book for anyone interested in Schaeffer's presentation of the gospel or in the role of apologetics in evangelism. Morris raises some serious criticisms of Schaeffer's work. Most important, in my mind, is the charge that Schaeffer often overstates his case and reaches conclusions unjustified by his data. However, the criticism is leveled in a constructive manner, and should be of great use to anyone who uses Schaeffer's books and arguments as one means of presenting the gospel. I would rather have the weaknesses in my arguments pointed out in Christian love by a friend, than by my adversaries.

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

**SCIENCE AND BELIEF: COPERNICUS TO DARWIN** published by the Open University of Great Britain, distributed through Harper and Row, Publishers, Inc., New York, N.Y. 10022. Paperback, 8" x 11 1/4" (1974).

- Volume 1. *The Conflict Thesis and Cosmology* by C. A. Russell, R. Hooykaas and D. C. Goodman, 128 pp., \$6.00.
- Volume 2. *Towards a Mechanistic Philosophy* by D. C. Goodman and J. H. Brooke, 96 pp., \$5.25.
- Volume 3. *Scientific Progress and Religious Dissent* by R. Hooykaas, C. Lawless, D. C. Goodman, N. Coley, and G. Roberts, 112 pp., \$5.75.
- Volume 4. *New Interactions between Theology and Natural Science* by J. H. Brooke, R. Hooykaas, and C. Lawless, 88 pp., \$5.00.
- Volume 5. *The Crisis of Evolution* by J. H. Brooke and A. Richardson, 128 pp., \$6.00.
- Volume 6. *The New Outlook for Science* by R. Hooykaas, C. Lawless and C. A. Russell, 72 pp., \$4.50.

These books, together with additional reading (*Genesis and Geology* by C. C. Gillispie, *Science and Religious Belief: A Selection of Primary Sources* by D. C. Goodman, *Religion and the Rise of Modern Science* by R. Hooykaas, and *Science and Religious Belief: A Selection of Recent Historical Studies* by C. A. Russell), and radio and TV programs, constitute a course by the Open University of Great Britain. They are a resource which is invaluable to anyone involved in understanding the historical relationships between science and Christian thought, and particularly to anyone who is teaching a course or seminar in this area. Taken as they stand, supplemented with external reading, the books form an excellent basis for a year-long course that would provide profound insight into many of the controversies that still exercise those seeking to relate science and Christian faith.

The orientation of the writing is toward deriving understanding of historical events and opinions from an analysis of the historical writings themselves. Thus references to original writings of scientists and others are sprinkled throughout the text, as well as being referred to in the supplementary reading selections. The student everywhere is encouraged to think for himself, is provided with clearly stated guides for the evaluation of his progress, and is constantly given opportunities for thinking through a problem before proceeding to the author's particular responses. Starting with an assessment of the problems involved in writing a history of scientific thought, the books pick up the issue with the Copernican controversy and follow it through the aftermath of the Darwinian controversy.

A very brief sample of the topics covered would include: four historical treatments of the science and belief theme, biblical exegesis and the motion of the earth, Galileo and theology, a thorough analysis of Descartes including his account of living things, mechanical philosophy and the Providence of God, three pitfalls of historiography, English deists and freethinkers, Voltaire, evolution vs creation in the 18th century, Quaker contributions, the rise of natural theology, re-

ligious attitudes of geologists, uniformitarianism vs catastrophism in the early 19th century, the nature of life, the balance of nature, Darwin, difficulties in the reception of the Darwinian hypothesis, history of nature, historical and physical causality in nature and history, and the specific challenge of Darwinism to religion.

The student fortunate enough to be guided through these pages by a perceptive teacher will be struck repeatedly by the continuity of ideas over the past several hundred years, and by the similarity between many issues now aggravating the Christian community and corresponding issues of the past. It has been said that whoever neglects the past and fails to learn from it is sentenced to relive the past. In our own time we find a distinct disinterest in the lessons of history. Careful attention to the material of these booklets will be a healthy antidote.

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**AN INCOMPLETE GUIDE TO THE FUTURE** by Willis W. Harman, The Portable Stanford, Stanford Alumni Association, Stanford, CA. Paperback, 1976. 145 pp.

**THE EXISTENTIAL PLEASURES OF ENGINEERING** by Samuel C. Florman, St. Martin's Press, N.Y. 1976. \$7.95, 160 pp.

Here are two books written by non-Christians with quite different perspectives, which if taken together make a fascinating basis for a seminar among engineering students in a Christian context. They both agree that the basic trouble with the world lies in human nature; Harman sees a way out through a new consciousness, whereas Florman sees no way of changing human nature. Using these two perspectives as counterpoint to the Christian approach provides useful insights.

Harman carries out an analysis of the causes of our present social predicament and prescribes solutions for that predicament. His book consists of three well-defined parts, with no necessary connection between them. First he offers a cogent analysis of the nature of future dilemmas (growth, work-roles, distribution, control) and of their basis in the presently accepted industrial paradigm (industrialization, scientific method, material progress, pragmatic values). Then he proposes ideals for social restructuring through a new social paradigm emphasizing the importance of value postulates, a re-evaluation of science, recognition of a spiritual order, an ecological ethic, and a teleological perspective. Although all of these ideals are exactly correlatable with the biblical perspective, Harman rejects the historical religions as being authoritarian and enters into instead what might be briefly described as special pleading for monistic pantheism. The ultimate weakness of his conclusions lies in his implicit assumption that to know what is ethically beneficial will automatically provide the human will to do that which is ethically beneficial. He makes the traditional error of almost all non-Judaeo-Christian religious perspectives in seeing ignorance as evil and education as salvation.

It is Florman's task to challenge all the modern

## BOOK REVIEWS

prophets of doom who see technology as the cause of society's troubles and the engineer as the ally of the devil. He argues that it is not a lack of morality on the part of the engineer that has gotten us into such troubles as technology may have brought us, but rather the nature of human wants. He boldly takes on the prophets of anti-technology such as Jacques Ellul, Lewis Mumford, Rene Dubos, Charles A. Reich and Theodore Roszak, and does a reasonably effective job of standing their arguments on their heads. Florman's major weakness is his conviction that positions calling for a change in the nature of man are hopelessly idealistic.

Contemporary man is not content because he *wants* more than he can ever have. . . . Man has always been afraid of his urge to do more and know more. . . . But he is constitutionally unable to restrain himself. (p. 75)

Florman is also challenging when he argues that there is a proper and necessary place for "materialism" in human life. He makes the needed distinction between letting material things become our gods, and the healthy rejoicing in the works of our hands. He finds a healthy regard for human craftsmanship in the Homeric tales and in the Old Testament, and a disquieting depreciation of human craftsmanship in the Periclean Age and in the New Testament. In the Old Testament,

The engineering impulse comes to man as a gift from God. Material enterprise is not to be shunned; it is to be pursued energetically, but with the service of God always kept uppermost in mind. (p. 112)

In the New Testament, however,

The lesson is repeated again and again in resounding prose. It is foolish as well as profane to be concerned with material goods, since they do not endure. Fire, rust, and moth are ever at the ready to destroy our handiwork. It is prudent as well as pious, therefore, to concentrate on thoughts of eternity. (p. 103)

. . . the effect of our Greek and Christian heritage has been to convince us that materialism is a defect in human nature. We refer to our materialistic society with shame. We feel guilty because we are not more spiritual. (p. 103)

Here are questions for Christians to consider, especially in the context of the meaning and significance of applied science, engineering and technology in society

today. The exploration of their full significance appears to lie at a very fundamental level of the relationship between Christian faith and applied science. I would like very much to see ASA members develop a Christian response to Florman, which is a somewhat more difficult task than to formulate a Christian response to Harman.<sup>1</sup>

<sup>1</sup>R. H. Bube, "The Biblical Basis for a New Social Paradigm," *The Reformed Journal*, (1977).

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

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**IN TWO MINDS** by Os Guinness, Downers Grove, Illinois: Intervarsity Press, 1976, 306 pp., \$4.95.

Os Guinness was a former associate of Francis Schaeffer at L'Abri Fellowship in Switzerland. He now lives in London. His first book, *The Dust of Death*, was designated by *Eternity* magazine as the most significant book of the year.

*In Two Minds* is about the dilemma of doubt and how to resolve it. Guinness defines unbelief as a wilful refusal to believe or of a deliberate decision to disobey whereas doubt is a state of suspension between faith and unbelief. He thinks that it is possible to distinguish between faith, doubt and unbelief in theory: to believe is to be in one mind, to disbelieve is to be in another, and to doubt is to be in two minds. In practice the distinction is not always clear.

The book is divided into four main parts with seventeen chapters. In part one, Guinness defines the problem of doubt. In part two, he talks about families of doubt. In part three, he writes of care and counsel for the doubter. In part four, Guinness deals with doubt from insistent inquisitiveness and doubt from impatience or giving up.

Guinness writes well and he has the ability to express complex issues simply. He readily supplies apt illustrations. He deals with doubt sympathetically from both the psychological and biblical perspectives. His insights are very helpful. Their impact will be felt especially by doubters who happen to read this book, and that includes everyone at some point in life.

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

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*Our contemporary problem is distressingly obvious. We have too many people wanting too many things. This is not caused by technology; it is a consequence of the type of creature that man is. There are a few people holding back, like those who are willing to do without disposable bottles, a few people turning back . . . and many people who have not gotten started because of crushing poverty and ignorance. But the vast majority of people in the world want to move forward, whatever the consequences. . . . Many of them recognize that "progress" is not necessarily taking them from worse to better. But whatever their caution and misgivings, they are pressing on with a determination that is awesome to behold.*

Samuel C. Florman

*The Existential Pleasures of Engineering*, St. Martin's Press, New York (1976), p. 76.



### Appreciated Critique of Jay Adams

I have appreciated the ASA enthusiastically since I began to read it a couple of years ago. The particularly useful piece recently printed and to which I should like to call attention is "An Analysis and Critique of Jay Adams' Theory of Counseling" in Volume 28, Number 3 for September 1976. My purpose in calling attention to it again is that I may endorse the editorial policy, the journalistic superiority, the professional excellence, and the Christian wholesomeness of that treatment of Adam's work.

I am convinced that Adams' theory and publications are a pernicious and overtly destructive force in an area of intense and vulnerable human suffering. Dr. Oakland's general assessment of Adams was eminently comprehensive and balanced. George Venable and Rosemary Camilleri were extraordinarily incisive and warrantable in their evaluations. Gerald North touched a key point in a resoundingly Christian way.

Venable's emphasis upon the fact that both Scripture interpretation and the interpretation of natural science data is a historical investigation, subject to the rubrics and constraints of scientific method is absolutely crucial. It is, moreover, a point that enthusiastic and devoted Christians frequently overlook in their scholarship. He made a weighty point in a telling way when Venable pointed out that some statements are in Scripture "in order to enable revelational truth to be communicated, but they are part of that revelational truth."

Gerald North's contention that Adams' treatment of traditional schools of psychotherapy is a very judgmental and uninformed one is a matter of great moment. The negativism and hostility in Adams at that point reflects his own anxiety about his scholarship, his inflexibility, and likely his own peculiar personality pathologies. He should be more self-reflective and less dogmatic.

The tragedy latent in Adams' posture is that his assertive, inflexible, and peculiarly religious approach so consistently plays into precisely those pathologies peculiar to intense, conservative, evangelical Christians which Adams is most likely to see in his practice and which are likely to be seen mainly by the kind of counsellor who is likely to read Adams' books.

Rosemary Camilleri put her finger on the really central issue. Adams has no joy in human discovery, no acknowledgement that all truth is God's, that general revelation in science and psychological research is as surely revelation into God and God's way with us as is Scriptural exegesis, and that the Spirit may be encountered in our humanness and even our pathology as well as in special revelation. "This is the handbook of the frightened evangelical: frightened of psychological study, and psychiatric practice, and — Christ or no Christ — frightened of sin."

Rosemary hit the nail on the head. I commend you for this astoundingly effective presentation.

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### Disappointed in Critique of Jay Adams

I was disappointed to read "An Analysis and Critique of Jay Adams' Theory of Counseling" in the *Journal ASA*, September, 1976. While James Oakland's summary was quite accurate, the evaluations appear to be mere pot-shots at individual aspects of

Adams' theory while avoiding the balance of all the aspects within the system. (I am indebted to Rev. Roy Wescher for help in sorting through the critiques.)

Brent Stenberg objects primarily to Adams' "interpretation" of Scripture. This interpretation is apparently sufficiently general for Adams' material to be endorsed and reprinted by Reformed (his own background), Evangelical, and Charismatic bodies. There is an agreed "historical-grammatic" hermeneutic. Is Adams the one who is barring Christians from the ranks of professional psychology (which Stenberg suggests is an implication of his interpretation)? Consider the case of Dr. Rich Gantz (now an associate of Adams) who was effectively barred by his own colleagues in psychology when he became a Christian mid-way into his career.

George Venable is on spiritual quicksand when he makes empiricism his first presupposition and attempts to separate "revelational" from "non-revelational" material in the Bible . . . Venable asks whether Adams would make "mind" a mere physical-chemical entity. Adams is a dichotomist, linking soul and spirit, and thus would say that "mind" is moral. How does Venable define "mind"? Adams infers that the Holy Spirit is neither "helpless" nor limited, but that He always uses God's Word (not man's techniques) as means. Nouthetic counseling is basically for Christians. Adams' point is that believers should not be running to non-Christian therapists, since their reference-point, values, and concepts of man differ from those of Christian truth.

Kenneth Bowers argues that the morass of sin is so great that nouthetic counseling is a "dead-end street." Adams agrees that we can deal only with the exposed part of the iceberg. But by God's grace, we *can* discover sinful behavior, we *can* be forgiven, and we *can* try to obey. This is a very optimistic approach.

Adams' system is not as rigid as Gerald North would make it seem. His primary criticism of other Christian authors is their willingness to build a system for some humanistic framework (Freudian, Skinnerian, Rogerian), rather than from a specifically biblical base. If one cannot communicate the essence of psychoanalysis (and Freud suggests one cannot), he has moved into the area of total subjectivity and existentialism. Adams would suggest that we are best off to know the new birth by experience (which we can communicate) and the blame-shifting and introspection of analysis only by hearsay.

Rosemary Camilleri has oversimplified Adams' position. Some problems are physical. Confession is a first step, not a "panacea." Camilleri misses the point of the Prodigal Son parable: the son had already repented.

Nouthetic counseling will have its difficulties (and its failures) but it rests on the biblical view of man and the problem of man. It is also meant to function in an atmosphere of love and trust between two forgiven sinners, which can be far more healing than a therapist-client relationship.

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### Commends MacKay

The recent exchange between Donald MacKay and Jerry Cramer (*Journal ASA*, September, 1976) is the first time in my recollection that the *Journal* has dealt with ideas which MacKay has been developing for 25 years. MacKay's views should receive careful consideration from those with skills in philosophy and theology. His is a significant attempt to provide a broad integration of science and Christianity which has for the most part been tacitly accepted or ignored on this side of the Atlantic. Dr. MacKay's frequent visits to this country allow opportunity for dialogue in local section meetings and on an informal basis. Those who would joust with MacKay should be warned that there lies beneath that winsome exterior a razor-sharp mind which insists on exact adherence to meanings of words and details of arguments and makes gentle mincemeat of spurious thinking.

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### Journal Guilty of Misrepresentation?

I'm writing in regards to the *Journal ASA*. When I joined the Affiliation, I was given to understand that a number of different points of view shall be presented.

Take for example the Creation-Evolution controversy. Every

time the subject is brought up, the only opinion that is presented is the theistic evolution one. (You may have 100 different names for it.) In your Book Reviews, the books that support the literalist position, or Special Creation, are derided and put down. I'd appreciate it greatly, if something was done to alleviate this misrepresentation, even though it is a minority view and opinion.

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*Editor's Note:* I guess it's true that we see only what we want to; and that it must also be true that we don't see what we don't want to. Apparently reader Chatzivassilion missed the following articles published in the *Journal ASA* over just the past 6 years (not to mention, of course, the June 1977 issue) which do *not* take a theistic evolutionary perspective on creation and evolution.

- H. Bredesen, "Anatomy of a Confrontation: Interview with Vernon L. Grose," 23, 4, D, 146 (1971)  
D.T. Gish, "An Inconsistent Position: Comment on 'The Protein Clock'" 23, 4, D, 125 (1971)  
R.W. Maatman, "Contains an Unprovable and Inadmissible Element: Comment on 'Biblical Evolutionism?'" 23, 4, D, 142 (1971)  
R.W. Maatman, "Dialogue: Inerrancy, Revelation and Evolution," 24, 2, J, 80 (1972)  
C. McDowell, "The Relationship between Immanuel Velikovsky and Christian Catastrophists," 25, 4, D, 140 (1973)  
J.N. Moore, "Dialogue: Paleontologic Evidence and Organic Evolution," 24, 4, D, 160 (1972)  
E.K. Victor Pearce, "Proto-neolithic Adam and Recent Anthropology," 23, 4, D, 130 (1971)  
L.C. Steinhauer, "The Case for Global Catastrophism," 25, 4, D, 129 (1973)  
G. Colwell, "Malice in Blunderland," 26, 3, S, 99 (1974)  
P.K. Jewett, "Really Makes No Sense - Response to 'Original Sin as Natural Evil'," 27, 4, D, 176 (1975)  
R.D. Long, "A Revolution in Ancient Radiocarbon Dating," 27, J, M, 24 (1975)  
G.C. Mills, "Hemoglobin Structure and the Biogenesis of Proteins," 27, 1, M, 33 (1975); 27, 2, J, 79 (1975)  
A. Plantinga, "Makes God Responsible for Sin - Response to 'Original Sin as Natural Evil'," 27, 4, D, 178 (1975)  
W. Stanford Reid, "Difficult to Think of Evolution of 'Image of God' - Response to 'Original Sin as Natural Evil'," 27, 4, D, 174 (1975)  
D.L. Willis, "Alternative Views of Evolution," 27, 1, M, 2 (1975)

### Comments on "Cult and Occult"

Relative to the article "Pseudo-science and Pseudo-theology: Cult and Occult" (*Journal ASA* 28, 22, 1977), having studied the theology of Jehovah's Witnesses (JW's) for a number of years I felt you presented some minor distortions. First of all, the belief of JW's is far removed from the writings of Charles T. Russell. Russell founded a legal corporation which the present board of directors through a series of legal maneuvers now control. There is a vast difference between the writings of Russell and modern day Witnesses, although in some ways JW's are returning to some of Russell's beliefs and attitudes. Most of those who strongly believed in Russell's have left the Witnesses and are affiliated with a large number of other groups who still adhere to most of the teachings of Russell. Further, although Witnesses do not accept the Trinity, they do teach the deity of Christ although Jesus is taught to be a God (both with a small "g" and a capital "G") of somewhat lesser stature than the Supreme God or the Father. Thus, JW's are polytheistic, actually teaching there are 3 basic gods - Jehovah, Jesus Christ, and Satan, as well as a number of other entities or beings which are loosely termed as "god."

The Witnesses not only do not follow the writings of Russell but strongly discourage their members from even reading his works which are considered, to some degree, "false religion." JW's stress a progressive revelation and thus their beliefs tend to be constantly in flux (this is also partially due to the theological problems they get into due to rather shallow scholarship, theological problems which necessitate a doctrinal change.)

The observation that "these 4 cults maintain fairly close communities and are not open to genuine scholarly interchange or debate with either the scientific community or the Christian community" is a very astute and correct observation for the 4 groups you delineated except possibly Mormonism. Mormons are

increasingly becoming active in the scholarly community, producing 4 scholarly journals of their own which includes both discussion and criticism of Mormon doctrine, theology and history in a rather open fashion - there are quite a number of Mormons that are members of the ASA, CRS and contribute to the scholarly world. There are very few JW's, though, partially due to the general low level of education among them and their concentration on what they believe is at present the only important work - preaching.

Relative to TM, it is very hard for me to understand why the commotion has been made over this technique of meditation. The benefits of TM are clearly attributal to, as you discussed, a special technique of relaxing (sleeping is not necessarily relaxing) and the same benefits can be achieved from relaxation therapy as practiced by Dr. Fink. Often even while we are sleeping we are not relaxing (and thus wake up with headaches, backaches, neckaches, etc. etc.) The benefits accrued from relaxation therapy - which is essentially to help the person relax each muscle and learn to have more control - are clear and the benefits of TM are only because TM involves techniques which are conducive to relaxation therapy. The flowers, frills and prayers are nothing more than religion and do not have any benefit any more than the believer feels they will have or God forgivingly bestows upon each practitioner. I feel here is another example of a group of people taking advantage of a religiously gullible public. It is like a person chanting, manipulating prayer beads, mumbling and going through other gyrations and then having a shot of adrenalin and concluding that the mumbling resulted in the spirit of God being imbued in one's psyche. The benefits of TM are clear and real but have nothing to do with the rigamarole associated with it but all to do with the training that results in a high degree of relaxation - a beneficial activity in our society.

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### Did Jesus Predict Present Heart Disease Epidemic?

(*Luke 21:34 - A Medical Language Word Study*)

"And take heed to yourselves, lest at any time your hearts be weighed down (*barunthōsin*) with dissipation (*kraipālei*) and drunkenness (*mēthei*) and cares (*merimnais*) of this life . . ."

1. *barūno*: to weigh down, overcharge.  
*baréo*: to burden, weigh down, depress. (Thayer)

Same in Hobart: *Medical Language of Luke*, "*barūnein*. This word is very frequently employed in medical language. . . ." Quotes Hippocrates five times, Dioscorides one time, Galen four times. ("Baro" - Baroreceptors - Hyperbaric, etc.)

*Comment:* J.B. Phillips - "heavy heart" - cardiomegaly. Could refer to the enlarging of a diseased heart so very, very common. "Baro" refers to pressure and perhaps hypertension which is epidemic and causes: (a) a burdened heart and enlargement and (b) death like a "snare" suddenly as people are unaware of its gravity and at present most often drop out of treatment even if begun. This is a major epidemic as is congestive heart failure ("overcharged"), and a "depressed" myocardium is epidemic. Heart disease, as Jesus foretold, is the number one killer in the western world.

High blood pressure "weighs down" the heart. The cardiologist speaks of a high afterload which leads to a large end diastolic volume and pressure in left ventricle ("overcharged").

2. *kraipālei*: "to toss the head about" due to wine, giddiness and headache, caused by excess wine. (Thayer)

Hobart - "*kraipālei* is peculiar to Luke, and is employed by the medical writers to denote "drunken nausea." Quotes Hippocrates four times, Aretaneus one time, Dioscorides one time, Galen two times.

3. *mēthei*: "drunkenness" (Thayer) - Ever increasing in society. *Comment:* Alcoholic cardiomyopathy is a well established fact. "Beer drinkers," heart is not uncommon in Europe. The high caloric intake of all drinkers causes obesity, an established factor in the etiology of myocardial infarction and congestive heart failure.

4. Root, *mērimna*: drawn in different directions, distracted, care, worry, anxiety, especially about things of this life, troubled (Thayer). With *biotikaís*, pertaining to worry about the affairs of this life.

*Comment:* Little comment is needed about the devastating effect of worry on the heart and its role in the present epidemic where heart disease is the number one killer as Jesus foretold: a

sign of the end.

*Addendum:* Verse 26 "... men's hearts failing them for fear, ..." Hobart: "*apopsúchein* is peculiar to Luke, and found here only." "*psúchein* and its derivatives were widely employed in medical language. Luke uses four of them, which are peculiar to him." *apopsúcho:* to breathe out, faint away, die. (After Green)

*Comment:* Hobart quotes heavily from Hippocrates and Galen. My interpretation, medically, "syncope" or "cardiac standstill" are caused by sudden rhythm disturbances induced by fear that would be untoward for the organism.

*ekpsúchein*, "to expire" rarely used by any except medical writers - Luke uses it.

*Conclusion:* The Great Physician made a pronouncement most readily understood by Luke, "The Beloved Physician," i.e., in the end-days a cardiac disease epidemic would carry multitudes away in death.

Green, T.S.: *A Greek-English Lexicon to The New Testament*. Bagster & Sons. London.

Hobart, Wm. K.: *The Medical Language of Saint Luke*. Baker Book House. Grand Rapids, Mich.

Phillips, J.B.: *The New Testament In Modern English*. MacMillan, N.Y.

Thayer, J.H.: *Thayer's Greek-English Lexicon of the New Testament*. American Book Co., New York.

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## A Christian In Industry

Most of my working life has been spent in the energy sector of the economy and I have direct experience of all the fuels except nuclear fuel and oil. Against this background I would like to share something of my experience of the problems and the opportunities which arise for a Christian working in this environment. But first I would like to make one or two preliminary points.

I'm not sure that I see very much point in talking about being a Christian in industry to those who are not. I do not think there is much essential difference between being a Christian in industry and being a Christian in anything else. In that sense I often think there is a touch of vanity in the urgent question - what shall I do with my life? It is surely well for us in the West to remember that most people throughout history have had very little choice. They have grown up and tilled the ground that their fathers had tilled before them. To the question - what shall I do with my life, there is only one answer - give it to Christ; and then I think the particular circumstances of it assume much less importance. Wherever our lot is cast the race we run is essentially the same and the obstacles are essentially the same though they will present themselves to us in different shapes and sizes. But further, I'm not sure that it helps you if I tell you the clothes the Devil wears when he comes to see me at work. You'd laugh if he came to you dressed like that. He'll dress appropriately for you as he does for me.

As Christians we justify our participation in the industrial process in terms of the mandate given to Adam in Genesis 1:28-30. It is a legitimate occupation. We have the right to "subdue" and to "use" what God has given us. The business of the industrialist is to find, recover, grow, shape, distribute and exchange the good things which God has given us all. I am convinced that a large part of the problem of Christians in industry arises from the complexity and the specialization inherent in the modern economy. It is fairly easy to understand what we are doing if we are ploughing or fishing or mining. It's much harder to see clearly the point if you are an insurance clerk or a rental car firm operator or even a university lecturer! It is not entirely by chance that I have persevered in, what economists call, the primary sector of the economy. At the emotional level I find a satisfaction and a "validity" in the mining of coal and the distribution of oil and gas but I accept that the distinctions of this kind are only emotional. There is no distinction in principle between work in the primary, secondary or tertiary sectors of the economy. There are valid and worthwhile occupations for Christians in all these areas.

It is currently fashionable to see in the Old Testament, and particularly in the Minor Prophets, a prospectus of the kind of society which we, as Christians should want to see and a kind of manifesto for Christian political action. I am not convinced that this is the right thing to do, but in any case I think that is more instructive to study the behavior of Joseph in Egypt and Daniel and his friends in Babylon if we are looking for guidelines for our

deportment as Christians in a secular society. In both cases we see two important things. First, we see that neither of them shrank from the opportunity of high and influential positions although the societies were pagan. But secondly, neither of them were under any illusions about their position or the fact that the seed of confrontation with the authorities was inherent in the situation.

In my experience there are three great difficulties in the position of a Christian in industry. Because they come from my own personal experience, I should say that they are difficulties which arise particularly in large organizations such as my own. I would call the first *the difficulty of being influential*.

In industry there is very little opportunity for the exercise of private judgment. All decisions are made jointly and, certainly when you are in a janitor capacity, you will have very little influence over them. Now I know that this is in the end a matter of degree. None of us can, or should, get our own way in any area of our lives. And yet the problem has been acute enough to drive many Christians from the public service and from industry to the profession of law or accountancy or to medicine where the scope for the exercise of personal judgment is significantly greater. In this situation I would urge two things on you. First, learn to be persuasive. I believe that a Christian can be persuasive quite beyond his station in life. He should be diligent above the rest and I believe that he should be clear headed above the rest because he dare face the truth and tell the truth and face with courage the conflicts of opinion which are the stuff of business life. But I do not think that either prayer or flair will see you through. There is no substitute for a profound competence at your job and this will be the source of your persuasiveness. But secondly, I would implore you to relax. I have learned only slowly and with great difficulty that God does not hold me responsible for decisions and actions which I did not have the power to control. Learn to urge your view vigorously, relax when the decision goes against you and implement the decision with energy. This I believe is the beginning of a good testimony.

But then there is a second and more subtle difficulty. It is the *difficulty of contentment*. Large businesses (and Government departments) are organized in hierarchies and it is from this structure that the managements derive their ability to govern them. They persuade the staff to co-operate by inducing the fear of dismissal or stagnation and hinting at the possibility of promotion. In this society the only way to justify your view and your advice is to succeed and the measure of success is promotion. It is a mistake to think of the rat race as a race for the good things of life and an ever expanding standard of living. The rat race within a corporation is the struggle for influence over its affairs. This is not difficult to prove. It is little consolation to a man to be told that he will keep, or even improve, his income if he is being edged out of the powerful seat in the company. Obviously therefore the temptation to join in the jockeying and the elbowing and the backstabbing is acute. After all, the nearer the top of the company, the more influence we shall have as Christians. So what is the Christian response? The response is not outward but is an attitude of heart and mind. The Christian in this situation must look to God for the justification of his contribution and the advice he gives his boss. He must be ready to let his case rest there and not need the endorsement of reward or promotion. I am not speaking here of the separate ethical problem of ambition. I am speaking of the more profound need to be able to rest in God without the need of further endorsement. Without this attitude of mind I think that life is both restless and wearing. But further, we must trust. In particular we must trust God to decide how far up the tree we climb and how great our influence ought to be. And I believe that to display this attitude of mind and to allow it to pervade our conduct of affairs in the office is to do something very startling indeed.

But thirdly, there is inevitably always for the Christian the *risk of confrontation*. As it was for Joseph and Daniel so it will also be for us. We shall from time to time meet both personal malice and genuine conflict of principle. Potiphar's wife is still very much alive and so is the pressure to eat the King's rich food! But in my experience, situations of this kind are very rare. Those outside of industry sometimes seem to think that it is uniquely a place where people falsify and cheat. I can say only that I have not found it so. I find, for example that the integrity of argument in the public service and in commerce compares well with what I find among theologians; I cannot say that as a general rule I find the personal lifestyles of the "bosses" in industry either more or less admirable than doctors or teachers or anyone else. Obviously no Christian will work for a firm whose basic objective is unsatisfactory or where the pervading ethos is thoroughly substandard. If you find yourself in this situation you have to leave. But I want to suggest to you that conflicts of principle will be very rare. In business there are from time to time quite sharp differences of view about policy and these different judgments can give rise to passionate argument

and confrontations between personalities. But these seldom have a moral content. If you think a conflict is arising I would plead with you to ask yourself earnestly and prayerfully whether you are being principled or stubborn, whether this is a difference of judgment or of principle. I would advise you always to discuss the matter with a Christian friend who is far removed from the battle before making it a serious issue. Yet, on the other hand I want to stress that there may be times when we have to stick to our guns and bear the consequences. Some Christians (particularly those who have made a lot of money from industry) talk as if we go into battle armed with the philosopher's stone that turns everything to gold. But God promises us no such thing. He promises to honor those who honor him but he does not promise us seats on the Board. Joseph was not saved from the consequences of malice. He went to prison. Nor did Daniel avoid his fall from power or the ordeal of the lion's den. We may have to be prepared to go too. But we should know that we go out with God as we went in with him.

The great opportunities for a Christian in industry all arise from his response to the difficulties themselves. His testimony is founded in these responses. It is not peripheral to his main activity; it is integral to it. And only with this foundation laid can we earn the right to speak of Christ to those with whom we work. We have the opportunity within the "politics" of the organization to eschew the "dog eat dog" ethic and in this way to say plainly that our goals are different and that our trust is not in the lobbying and the maneuvering which is so central to the struggle for power. Then in the economic questions we can search for and insist on justice or fairness in wage negotiations, in contract negotiations, in advertising material and so on. These things most surely make their mark.

Finally I want to mention the strange love-hate relationship which, in my experience, develops often with your non-Christian colleagues. "The Lord blessed the Egyptians for Joseph's sake" and there is almost a superstitious sense in which they will like to have you around. They'll wheel you in when the going gets rough or when they want you to "bless" what they propose to do. But then on the other hand you are an embarrassment to them as well. I don't suppose that Daniel was the magicians' favorite man or that the satraps and astrologers were part of his intimate social circle! You will be cold-shouldered as well as courted and must be quietly and confidently prepared for both. In conclusion I would ask those of you who are in industry to support us in your prayers and those of you who are pastors to try in your ministry to learn to nourish and refresh those of your congregations who daily face the temptations and the challenges of which I have spoken. And for those who are embroiled in the day to day turmoil of industrial life I wish an influential humility in your advancements and a quiet confidence in times of disappointment so that we all join with Daniel in his prayer. "To thee O God of my Fathers I give thanks and praise for thou hast given me wisdom and strength and hast made known to me what we asked of thee for thou hast made known to us the King's matter."

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### Reply to the Replies to Sir George Porter

In the March 1976 issue of the *Journal ASA* an article by Sir George Porter entitled "The Relevance of Science" was reprinted from *Engineering and Science*.<sup>1</sup> The article, and the myriad responses which accompanied it, raised some rather stimulating questions. Neither the article nor the majority of the responses managed to approach the questions from a sufficiently transcendent perspective however. Each, for the most part, seems to share an excessively bounded view of science. It is to this problem that the present article is directed.

At the risk of oversimplifying the issue, Porter's argument is developed around three key points. First of all, he joins such contemporary prophets as Skinner and Toffler in directing our attention to a sort of technological addiction. In the spirit of the optimism of the late nineteenth century, science has made tremendous progress in its fight against hunger, disease, and ignorance. Yet, as Skinner suggests,<sup>2</sup> the tools science has given us have not been implemented optimally nor have they been implemented with impunity. Pollution, depletion of resources, nuclear roulette, the specter of *Brave New World*, and more have been attributed directly or indirectly to scientific progress. Further, in stripping men of their ethereal belief systems, science seems to be reducing subjective happiness rather than increasing it.

Porter's second point is that "Most of our anxieties, problems, and unhappiness today stem from a lack of purpose . . ." Traditionally, religion provided this sense of purpose. However, as Colin Brown has documented in *Philosophy and the Christian Faith*,<sup>3</sup> religion in general and Christianity in particular became associated with the reality "which could not be tested." An analogue of Cartesian dualism with science set against religion emerged. As the 'unknown' fell to the onslaught of science, Christianity apparently retreated. Its facade of solidity seemed to be slipping and Homo sapiens' sense of purpose seemed to slip with it. Indeed, Schaeffer<sup>4</sup> argues that "this change in the concept of the way we come to knowledge and truth is the most crucial problem, as I understand it, facing Christianity today."

Few would take exception to Porter's development so far. It is with regard to the conclusion he draws from this lack of purpose that the debate is waged. Again, like Skinner, Porter argues that the answer is not less science, but rather the situation calls for more science. Skinner even hypothesizes the form such a scientifically derived purpose might take. Purposes, ethics, and beliefs are forms of human behavior. A science of human behavior must therefore be able to deal with them. As science discovers the nature and the dynamics of such entities, to the extent that they intrinsically exist in man, it should be possible to bring man more effectively under their control.

Clearly, 'herein lies the rub.' The indomitable reviewers, and very likely the average Homo sapiens himself, feel that indeed there are areas within which science will not find a receptive environment. Among them is the area of man's purpose. Jerry D. Albert<sup>5</sup> succinctly exemplifies the point of view when he says, "Science can have or can be given a purpose, but science itself is incapable of leading to or discovering ultimate purpose for anything." It is likely that behind this idea is the assumption that science studies things which can be measured or controlled and "ultimate purpose" does not fall within such a classification.

A second thrust of the replies deals with the hoary issue of revelation. Scripture does what science cannot do. It provides us with information concerning God, the creation, and God's relationship to the creation that is not obtainable in any other way. No amount of scientific 'works' can do what God has done in His love in revealing this information to man. As 2 Peter 1:21 says, "No prophecy ever came by the impulse of man, but men moved by the Holy Spirit spoke from God." In this sense, Porter is an embodied version of Paul's statement that "they became futile in their thinking and their senseless minds were darkened." (Romans 1:21) Even worse, he may be a form of false prophet, as his heresy directs intellectual commitment away from the true purpose of man, and the true answer, in Christ. In this light the righteous indignation which Porter's statements arouse is not particularly surprising, nor is it unjustified.

It is appropriate at this point to step back and look at the ideal situation with an 'enlightened objectivity.' Presumably there is little quarrel with Porter's assertions concerning a crisis of meaning and the historical phenomenon of the abdication of conscience. Further, there seems to be agreement concerning the fact that science per se is a method of understanding which involves systemization, mutual verification, and so on. The parting of the ways, however, stems from disagreement concerning the subject matter of science.

The issue is a complex one, but perhaps the perspectives of the two camps can be summarized in the following manner. Porter recognizes a physical universe which can be subjected to scientific study. For him, if purposes are real (in the sense that ideas, concepts, feelings, etc. are real) they exist within or are defined by the universe. They are, therefore, valid objects for study. The replies to Porter, on the other hand, agree that there is a physical universe which can be subjected to scientific study. They wish to argue however, that there is another, or encompassing nonphysical universe which is not subject to scientific study. It is here that the realm of purpose lies.

Emerging from these two points of view is the realization that indeed, science is a methodology, and that methodology is to be applied to reality. That is the subject matter we wish to understand. A particular methodology may be more or less useful in its application, perhaps even not useful at all, but when we speak of science it is with respect to all of reality that we must be concerned. It should be added that the universe is not divided into two categories, physical and nonphysical. Rather, the reality we are concerned with can be conceived of hierarchically with our physical reality being a part of a greater reality.

This is not a particularly remarkable notion. Paul argues that, "Ever since the creation of the world His invisible nature, namely, His eternal power and deity, has been clearly perceived in the things that have been made." (Romans 1:20) God has revealed Himself to man through miracles, prophecies, and in the most

profound way through His Son. God created and upholds the universe. Romans 8 even suggests that the creation itself is "groaning" from the spiritual fall of Adam. The whole spirit of Scripture speaks to the fact that, while the physical universe is distinctive, it is little more than a subset of the larger reality. It is the fallen state of man which prevents him from grasping or acting upon the implications of the manifestation of the metaphysical within the physical. Nevertheless, the information is there and all men have access to at least some of it.

Aside from the various questions of natural revelation, the phenomenon of Scriptural revelation is an interesting case in point. God's word concerning His unseen nature and prescriptive laws is continually attested to in real space time by physical activity. Thus Acts 2:22 says "Jesus of Nazareth, a man attested to you by God with mighty works and wonders and signs which God did through Him in your midst, as you yourselves know . . ." It is because of the acceptance of this as real evidence, real testable information concerning the metaphysical, that we can speak of a science of theology.

Science is a general methodology composed of topic specific particular methodologies. It is directed towards an understanding of all reality, but due to its unique nature its point of access is physical reality. The Biblical restriction on knowing is not defined by the nature of science, it is defined by the nature of fallen man. Man can know his purpose. He can know what is right or wrong. He can know the metaphysical, at least in part. He chooses not to by rejecting God. Thus, while man resists the knowledge and understanding of all of reality, to the extent that the increment of understanding that science could ideally yield would serve to improve the conditions of mankind, the Christian working as a scientist stands as a unique channel for that aspect of God's love. It is with these qualifications that Porter's quotation of Tolstoy's remark can be repeated, "The highest wisdom has but one science, the science of the whole, the science explaining the Creation and man's place in it."

<sup>1</sup>Sir George Porter, "The Relevance of Science," *Journal of the American Scientific Affiliation*, vol. 28 (1), 1976, pp. 2-3.

<sup>2</sup>B.F. Skinner, *Beyond Freedom and Dignity*, New York (Bantam Books), 1971, pp. 1-23.

<sup>3</sup>Colin Brown, *Philosophy and the Christian Faith*, Chicago (InterVarsity Press), 1969.

<sup>4</sup>Francis A. Schaeffer, *The God Who is There*, Chicago (InterVarsity Press), 1968, p. 13.

<sup>5</sup>Jerry D. Albert, "Man Without God, Groping for a Purpose," *Journal of the American Scientific Affiliation*, vol. 28 (1), 1976, p. 3.

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### Reply to Lindskoog on the Virgin Birth

I would like to answer and discuss the letter of Kathryn A. Lindskoog on "The Trouble with the Virgin Birth," *Journal ASA*, 29, 44, (1977). Like me she believes in the truth of the virgin birth. Unlike me, she has not yet given up trying to explain that miraculous sign. She "can't think much about the biological truth of the virgin birth," seemingly because she can't explain it. All miracles were signs. This birth, being different from all others, indicates that there is something special about the One so born.

Let us consider her questions in order.

1. "Could God have used a kind of parthenogenesis within Mary?" Yes, but if so, a double unexplained miracle occurred. In parthenogenesis, as we know it, the offspring is like its parent (mother), a female, and the New Testament, especially John 1:30, tells that Jesus was a man. A parthenogenic man — God could do it, but did He?

2. "If the ovum was never fertilized, then Jesus' genes were all from Mary. What are the biological implications of that for the kind of man Jesus was? What could have been the nature of His chromosomal pattern?" There need be no implications, although there could be. In the ovary during the process of development of the sex cells a cell having the diploid (full) number of chromosomes may not have divided into two cells having the haploid number, as would be usual; this cell with the diploid number may have given rise to Jesus' body. An obvious problem is present; two XX chromosomes and no Y should have produced a

female, but Jesus is a man. A miracle is necessary.

The divine nature and human nature blended to make Jesus' personality.

3. "In contrast, do any Christians hold the theory that the Holy Spirit, implanted a zygote (fertilized ovum) within Mary? If that were the case, Jesus was no more a physical descendant of Mary than of Joseph, but her body nurtured Him without contributing any genetic material. Would this tie in with Christ being the second Adam, a new creation?" Yes, at least two Christians hold this view — Henry M. Morris and John D. Jess. According to Morris, "Although He was born in the family of David, it must be remembered that neither of His earthly parents was connected with Him genetically. He was conceived by the Holy Ghost and simply placed in the womb of the Virgin Mary — He was not genetically connected by direct heredity to His parents, since He was miraculously placed in an embryonic form into Mary's womb by the Holy Spirit, thus entering the world by the virgin birth." Transplantation of fetuses has been successfully done in cattle and in monkeys, and the offspring was born from a female that was not the genetic mother. What's wrong with the theory is that it contradicts Old Testament prophecies and New Testament conclusions. If the theory were true, Jesus would not be the seed of the woman (Gen. 3:15), was not a descendant of David; although possibly a human being, He would not be a member of our human race and should not have been called Son of Man. This is a very dangerous explanation.

4. "The only alternative I can see to the two ideas above is the idea that God implanted a sperm full of chromosomes into Mary's body to unite with her ovum. Is that an acceptable idea to orthodox theologians? Supernatural insemination." At first thought this might seem acceptable. The need for a human male parent is eliminated; there is only the human parent, a woman. But the prophecy is, "A virgin shall conceive and bear a son." In nature a virgin can conceive, but a virgin does not bear a son; the female is not a virgin after conception, whether conception is by intercourse or by artificial insemination. If Mary received a sperm from God, was she a virgin? This theory reminds us of some ancient pagan accounts of cohabitation between women and gods.

5. The question has the same objections as question 4. The use of a celestial sperm bank eliminates virgin conception, wherever the original source of the sperm may be. If God used a sperm from Joseph, Joseph and Mary might just as well have had normal sexual intercourse to produce Jesus. The idea of "twenty-four unfallen chromosomes" from Adam is one of the many mental gymnastics to protect the God-Man, Jesus Christ from original sin — as if God needed any protection.

6. "My final question sounds zany," — Perhaps so, but it is sincere. In this paragraph God has a time machine, takes something from one moment of time and uses it at a time before its actual existence. Since we say that God can do anything, we won't say that the explanation is impossible, but it seems very improbable.

The final paragraph of Mrs. Lindskoog's letter says, "In conclusion, I am willing to happily accept mystery at the point where human reason and knowledge fall short." This is what Christians did for nineteen centuries; they believed in the virgin birth without explanations. It seems that only in this century have Bible-believers tried to explain the virgin birth. Some preach their explanation as if it were Bible truth. We know no more about how God produced the physical body of God Incarnate than we do about how He put together the elements to make the first man.

Let us accept the facts as recorded in Scripture. We need not accept extra biblical explanations. With a trusting mind as of a little child we may believe the divine mysteries, for Jesus said, "Unless you are converted and become like children, you shall not enter the kingdom of heaven." (Matt. 18:3). Extra-biblical explanations, even from Bible-believers, can be anti-biblical.

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### Understandability as Criterion for Belief

Let us consider what happens to a person who considers what the world is like. Do you think that such a person can choose his starting point and then work out a consistent position?

A person might take one of two basic positions as he considers the world. First, he might assume that man cannot necessarily comprehend everything, but that there is a sovereign God Who not only comprehends but controls everything in Creation. Second, a person might assume that he does not need a god-concept, or any other concept that he cannot understand. In short, such a person says in formulating his picture of the world that the only things

which exist are those which he can, at least in principle, understand. He would even claim that an *idea* would have to be understood before being accepted. Whether or not there are positions other than the two just described is not the issue here. Nor is it necessary to consider here the first position, the position of the Christian. Let us consider only one matter at this time: Can a person be consistent in building up his world picture if he assumes at the outset that the only things which exist, and the only ideas which need be accepted, are those things and ideas which can, at least in principle, be understood?

At first, setting up understandability as a criterion for accepting the existence of a thing or an idea seems innocent enough. Why not start out this way if one has not made a faith commitment to the Christian position? Isn't it possible for us to look at the world around us, attempt to understand what we see, and, when we encounter that which we cannot understand, claim that man will eventually gain understanding? It is unfortunate for the person who embarks on such a program that serious, perhaps insurmountable, problems arise. Two of those problems are considered here.

The person who believes that man's ability to understand is the measure of all things is also a person who rejects belief in miracles. In what follows, an attempt is made to show that a problem arises because of this rejection.

(1) The heart of the position is the idea that man can, in principle, understand all things, including events and valid ideas. Thus, the "fact" which cannot be understood is in his mind actually a "non-fact."

(2) Since man is then to sit in judgment to decide whether a thing exists or an event has occurred, man is required to sift evidence.

(3) Statement (2) implies that all evidence will be treated impartially; if it is not treated impartially, wrong conclusions can be made.

(4) No matter who it is that defines a miracle, the idea that a miracle is not understandable is included in the definition of a miracle.

(5) Therefore, the person who uses understandability as a criterion for existence does not accept miracles.

(6) Therefore, according to such a person, there can be no valid evidence that a miracle has ever occurred.

(7) It follows that evidence which could show that a miracle has occurred is automatically rejected; such evidence is not even considered. For example, the Virgin Birth is not actually rejected by such a person on the grounds that the evidence is weak. Rather, such a person rejects the Virgin Birth because there *could not have been such an event*. It is even denied that miracles can occur in the future.

(8) Statements (3) and (7) contradict each other. Therefore, there is an *internal* inconsistency in the position of the person who uses understandability as a criterion for existence.

Notice that it has not been concluded above that the person who rejects any idea of a god is wrong because miracles have, in fact, occurred. Of course, it is *also* true that he is wrong for such a reason. What is claimed here is that the world has been made so that a person cannot *with consistency* maintain that things, events, and valid ideas are, in principle, understandable. Such a person cannot formulate a program in which he examines evidence impartially.

There is another serious problem which arises for the person who claims to use understandability as a criterion for existence. Such a person says that he cannot understand how man and animals could suddenly appear on the scene. Nor can he understand how plants or, indeed, life itself, could suddenly appear. It is not relevant here to debate the evolution question, but it must be pointed out that the various creation events recorded in the Bible are rejected by the person who uses understandability as a criterion. He rejects the historicity of such events just because creation events are not understandable. What is relevant here, however, is that we notice how the no-creation idea has been extended. Many persons who insist upon understandability as a criterion now claim that there never was a beginning. They extend the idea of rejecting certain creation events (of man, animals, etc.) to the entire cosmos: it was always there.

Those who hold to the no-beginning idea use reasoning something like the following: "As we try to understand the world around us, we find that the natural ways we then formulate describe only processes. Those laws never describe beginnings. Therefore, our attempt to understand can never lead us to an understanding of the idea of creation. Since we should accept only that which we can, at least in principle, understand, we should not accept the idea of creation. Therefore, we are left with the only alternative, the idea of no beginning. We do not understand the no-beginning idea either, but that does not mean we will never be able to understand this idea. We cannot say that the no-beginning idea is *in principle*

an idea we cannot understand."

In effect, the person who uses understandability as a criterion for the existence of a thing or an event and for the validity of an idea chooses between the following two statements:

(1) The world was created.

(2) There never was a beginning.

He chooses the second statement. Since he insists on the understandability criterion, it is easy to see why he rejects the first statement. Such a rejection forces him to choose the second statement. Notice, however, what he is in addition *forced* to say:

(3) *The idea of no beginning is in principle understandable.* There is no way out. He who accepts the understandability-criterion must also accept Statement 3. He says that man is capable of understanding the no-beginning concept; in fact, he says, man may some day actually understand such a concept. Here is the crux of the matter: *If understandability is the criterion for accepting the existence of things and events, and for accepting the validity of ideas, how is it possible to accept Statement 3?* In the very nature of the case Statement 3 can only be accepted on faith, without supporting evidence.

Notice that the person who takes this position is not criticized here because Statement 3 seems ridiculous, although such a statement *does* seem ridiculous to those accustomed to thinking in Christian categories. Rather, the criticism made here is that it is impossible to accept Statement 3 without proof and also accept the understandability criterion. The person who says he will accept only those things, events, and ideas which are understandable is forced to be inconsistent.

Thus, in two different ways we can see that a person is inconsistent if he starts out with the idea that everything is understandable. Too often we Christians assume that once a person has a starting point, regardless of what that starting point is, he can work out a consistent picture of the world. It seems that such a consistent picture cannot always be worked out.

Do these considerations prove that the Christian starting point is the correct one? No, they do not. The Christian idea of how things are is based on faith, a gift which comes from God. We do not prove the truth of the Christian faith in the way we prove a mathematical theorem.

What Christians should teach is that one cannot simply say, "You pays yer money and takes yer choice." The Lord did not make that kind of world.

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## On World and U.S. Population Growth: Or Is It Growth?

This communication is the outgrowth of a lecture delivered at Covenant College in the spring semester, 1975, in a course dealing with the problems of population, world starvation, ecology and energy. This lecture dealt *only* with world population numbers.

1. Consider a square 12 miles by 12 miles—the area of a good-sized city. The area of this square is about 3.6 billion square feet. If there was one person standing on every square foot, the entire world population would fit into this 12 x 12 mile square. Furthermore, it has been estimated that the world population is doubling at the rate of once every 30 years;<sup>1</sup> if such a rate were to continue, it would take over 300 years for 0.1% of the earth's surface to be occupied by standing people. These numbers are offered as "counter-rhetoric" to those who insist<sup>2</sup> that there will not be any room on the planet in another 500 years or so.

2. There is a rightful concern about starvation, ecology, energy, etc. Unfortunately, there appears to be a tendency to lump all these problems together, and to call this lumped aggregate "the overpopulation problem." The difficulty here is that the label "overpopulation" presupposes that the answer to each of the three individual problems (starvation, ecology and energy) lies in the active control of the world population by one means or another, whereas the real answers to these problems may lie elsewhere. For example, if a man is found starving in the street, one could take him into one's home and feed him, thus solving this particular problem. However, if *overpopulation* is the problem, then the obvious answer is simply to pull out a gun and to eliminate the man.

3. Not all countries have an increasing population. In Ireland,<sup>3</sup> for example, the population apparently increased drastically around the early 1800's to a peak of over 8 million. Then, a potato blight struck, and about a million starved. The population continued to dwindle somewhat, even after the blight, so that the population in 1960 was about 4 million, (about *half* the 1835

peak). Ireland currently has one of the oldest marriage ages, one of the lowest marriage rates, and a relatively stable population. No doubt there are other countries whose populations are quite stable.

4. There is serious question as to the accuracy of population estimates of countries such as Mainland China. "Both the Chinese admission that they have no knowledge of the previous growth rates, and the round progression from 1.9 to 2.0 to 2.1 percent per year, suggest some rather arbitrary estimates."<sup>14</sup> Therefore, it is difficult to tell whether or not China's population is even growing, let alone how fast it is growing.

Having made the above points about the world population in general, let us consider an analysis of the U.S. population in particular (which is measured to a high degree of accuracy) and evaluate the demographers' estimates of what the population is doing as a function of time. The procedure is to fit a mathematical curve to the census data from 1790 to 1970. Short-term predictions then are made by simply extrapolating the mathematical curve. In making such an extrapolation, it is assumed that the past and the present are the keys to the future, at least on the short-term basis. Assumed also is that there will be no drastic deviation in population growth unless a catastrophic or other significant event takes place, affecting everyone.

The curves are plotted on semi-log paper to show any deviation from exponential growth. The actual data (taken from the 1974 Statistical Abstracts of the U.S.) and the mathematical fit are shown in Figure 1. The data are represented by circled dots, while the mathematical fit is represented by the solid line.

Note several things:

- (1) The population increases exponentially (doubling about every 25 years) until about 1860.
- (2) The projection of the population level at 1970 (based on extrapolation of data from 1790 to 1860) is 900 million! (What would have happened had we worried about our population "explosion" back in 1850?)
- (3) The U.S. population started to deviate smoothly from exponential behavior at about 1860, without any government edicts controlling the population.
- (4) Note the smoothness of the curve, even through depressions and wars.
- (5) The net population effect of the 1930 depression and the post World War II boom was to affect a cancellation and to put the population trend back to where it was in the 1920's as shown by the curved dotted line in Figure 1.

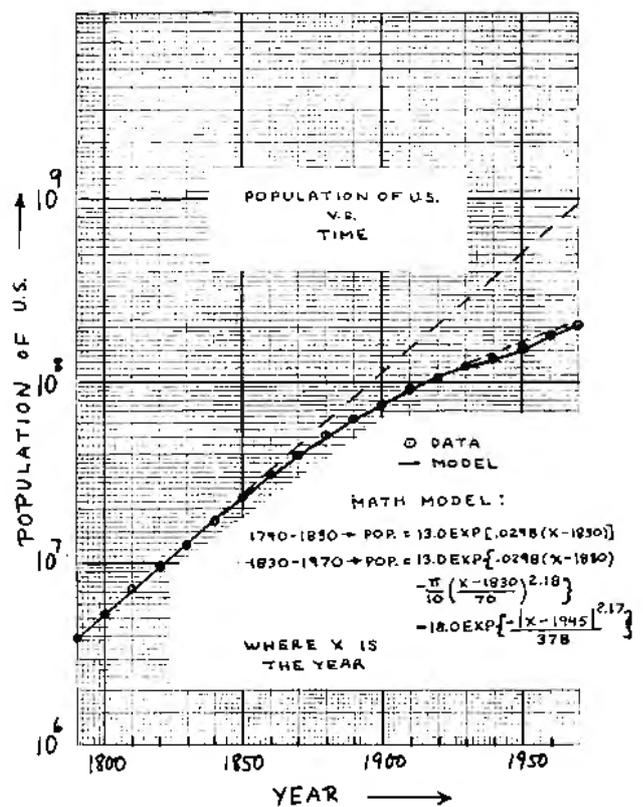
How about predictions of things to come? Demographers have calculated what are called A, B, C, D, E, F, and X curves, based on fertility rates (assumed in all cases to reach a constant level), and a constant rate of immigration. The A curve has the highest fertility rate, and the F curve has the lowest rate. Reference 5 (a 1971 pamphlet) pointed out that in 1971, curve A had been dropped and curve E had been added. Then, in the 1974 Statistical Abstracts,<sup>6</sup> curve B was dropped and curves F & X were added. Curve C assumes a leveling off birth rate of 2.8 children/woman; D has a final rate of 2.5, E is 2.1 (so-called replacement rate) and F is 1.8 (below replacement rate). Curve X has a birth rate of 2.1 with no immigration, while curves C-F assume an immigration rate of 400,000 per year. The projections for curves C-F and X for 1972 are quite good, but by 1975 the C and D projections start to show considerable deviation from the actual data, while curves E, F and X, together with the mathematical fit of Figure 1, seem to predict the 1975 population the best.<sup>15</sup>

Why can't demographers come up with a good model? Why must they keep adding and dropping curves? The primary reason (as they themselves have stated) is that they are trying to second-guess the birth rate of people free to make their own decisions about their families, a Congress and an Executive branch capable of regulating immigration, and a Supreme Court capable of legalizing abortion. Let us consider each of these three aspects separately.

The demographers in each of their separate graphs are assuming a leveling-out process for the birth rate. Does past history justify this assumption? The rate dropped drastically in the 1930's, rose by almost a factor of 2 from 1935 to 1960, and then fell again by close to a factor of 2 from 1960 to 1970.<sup>8</sup> Therefore, assuming constant (or nearly constant) fertility rates over decades is a very risky business, based on past history.

How about the second assumption - constant immigration? A drastic plunge in immigration rate from close to 1 million/year in 1900-1910 to less than 0.1 million/year in 1931-1940 has occurred within the time span of 30 years.<sup>9</sup> Clearly, past history shows that the assumption of constant immigration rates is not a good one to make. The laws affecting these immigration rates are outlined in Reference 10.

Abortion is an issue not directly incorporated in any of the assumptions involved in curves C-F and X. How much of an effect is the abortion ruling recently made by the Supreme Court? According to the New York Times Index,<sup>11</sup> legal abortions are



estimated to be about 900,000 in 1974. It is estimated that 1/3 of these would not have been made if the Supreme Court ruling had been unfavorable toward abortions. This suggests, therefore, that there were 300,000 less people in the U.S. in 1974 as the result of this Supreme Court ruling. Since this reduction is close to the immigration rate (about 400,000/year), it would seem that abortion ought to be considered by the demographers. Furthermore, abortions are on the increase at a rate of more than 25%/year since 1972.<sup>11</sup> An extrapolation shows an abortion rate of 100 million/year by 1996, a figure no more ridiculous than some of the current world population extrapolation figures,<sup>12</sup> in the author's opinion.

The demographers themselves are at variance with one another. Estimates of the increase in the U.S. population by the year 2000 range from 20 million to 100 million, or a variation of a factor of 5, depending on the demographer.<sup>13</sup> If in a situation in which the data are well known, demographers vary in their predictions of U.S. population growth by a factor of 5, over a 30 year period, what about their predictions of world population growth, where the data are not well known?

One should be very cautious about advocating control of world population. One cannot adequately control what one does not understand. The solution to starvation, ecology and energy may lie elsewhere.

The author gratefully acknowledges discussion and comments from Dr.'s Nicholas Barker, James Hurley, and John Muller, all of whom are professors at Covenant College.

<sup>1</sup>Associated Press article, *Chattanooga News Free Press*, Sept. 19, 1971.

<sup>2</sup>*Penthouse Magazine*, Isaac Asimov, "The End," Vol. 2 No. 5, Jan. 1971, 26-28.

<sup>3</sup>*Expanding Population in a Shrinking World*, Marston Bates, p. 16f - cited in *The Myth of Over Population* by R.J. Rushdoony, Craig Press, 1969, p. 41.

<sup>4</sup>*China: Population in the People's Republic*, Population Reference Bureau Bulletin Vol. 27 No. 6, Dec. 1971, p. 9 & 10.

<sup>5</sup>*The Future Population of the United States*, Population Reference Bureau Bulletin Vol. 27 No. 1, Feb. 1971, p. 15.

<sup>6</sup>1974 Statistical Abstracts of the U.S., p. 6.

<sup>7</sup>*The Future Population of the United States*, op. cit., p. 13.

<sup>8</sup>*Ibid.*, p. 22.

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<sup>9</sup>1974 *Statistical Abstracts*, op. cit., p. 97.

<sup>10</sup>1974 *Statistical Abstracts*, op. cit., p. 95.

<sup>11</sup>The New York Times Index, Feb. 1-15, 1975, ABORTION.

<sup>12</sup>Op. cit., *Penthouse Magazine*, Vol. 2 No. 5, where Asimov asserts that "at current rates of increase," the total mass of human population will equal the mass of the earth by 3530 A.D., and the mass of the universe by 6826 A.D.!

<sup>13</sup>*The Future Population of the United States*, op. cit., p. 20.

"It should be noted that a very recent revision has been made in the curves used by demographers for the U.S.A. population. Specifically, in an Oct. 1975 issue of *Projections of the Population of the U.S.*, p. 25, No. 607, all of the lettered curves A-F & X, have been replaced with curves labeled I, II, III & II-x, with changed demographic assumption, (i.e. lowered birth rates, etc.). Needless to say, most of these most recent curves fit the July 1, 1975 data quite well!

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*Editor's Note:* In connection with Dr. Keister's assessment of the U.S. population growth problem, it is interesting to take note of a 1960 prediction for world population set forth by von Foerster, Mora and Amiot:<sup>1</sup>

$$N = \frac{1.79 \times 10^{11}}{(2026.87 - t)^{0.99}}$$

where N is the world population and t is time measured in years. A.D. Serrin<sup>2</sup> points out that this expression fits world population figures very well from 1750 to 1960. In 1975 the above equation predicted a world population N = 3.65 billion persons, whereas the best estimate for world population as of that date is 3.97 billion persons. The equation predicts a world population of 5 billion persons in 1990, and of course a rather catastrophic occurrence late in the year 2026!

1. H. von Foerster, P.M. Mora, L.W. Amiot, *Science* 132, 1291 (1960)
2. J. Serrin, *Science* 189, 86 (1975)

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Carl F. H. Henry  
*God, Revelation and Authority, Vol. II God Who Speaks and Shows*, Word Books, Waco, Texas (1976), p. 22.

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