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TOWARD A PSYCHOLOGICAL THEORY OF MORALITY

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The current debates over the "new morality" have prompted the re-examination of the psychology of morality. Morality is not merely a personal issue but is a central aspect of socio-cultural existence. Situational ethics has aptly criticized traditional views on morality which have often been culture-bound and laden with neurotic vicissitudes. But situation ethics has ignored the inadequacies of individualistic morality. The psychological theory of ego morality developed in this paper emphasizes the necessity for a balance between individual integrity, social commitment, and ultimate universal values which must be weighed in determining the moral behavior of both the person and his society.

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The current debates over the "new morality" have not only interested theologians, but have attracted behavioral scientists and particularly psychotherapists into a re-examination of the area of morality. This paper is part of an approach to a systematic psychological theory of morality consistent with an holistic view of man.[1]

Morality is a word that usually appears in disfavor in the vocabulary of the psychotherapist. It is often taken as a taboo word or epithet. At best morality is generally viewed as irrelevant to psychotherapy, at worst it is taken to be a destructive anti-therapeutic attitude.

Yet in the face of these negative connotations, there is swelling literature of books and articles concerned with the psychology of morality. (For recent reviews see: 2,3,4,5,6; Major commentaries include: 7,8,9,10, 11,12,13,14,15,16,17,18).

Freud, father of modern psychotherapy, has sometimes been accused of being unconcerned with morality, although Philip Rieff[19] devoted a whole book, *Freud: The Mind of the Moralist,* to demonstration of the central moral issues in Freud's thought. Freud was preoccupied with the vicissitudes of intrapsychic pro-

cesses and did not concern himself directly with the imperatives for morality. However, the late anthropologist, Clyde Kluckhohn,[20] states the issue clearly:

> There is the need for a moral order. Human life is necessarily a moral life precisely because it is a social life, and in the case of the human animal the minimum requirements for predictability of social behavior that will insure some stability and continuity are not taken care of automatically by biologically inherited instincts, as is the case with the bees and the ants. Hence, there must be generally accepted standards of conduct, and these values are more compelling if they are invested with divine authority and continually symbolized in rites that appeal to the senses.

No society can long function without a specific morality. Nor can this merely be left to individual discretion for it is a group requirement as well.

Although it can be oppressive, morality is a central integrative force in culture. If religious faith is dispensed with, then some other faith must replace it. In his important new book, *The Triumph of the Therapeutic: Uses of Faith after Freud,* sociologist Philip Reiff[21] notes that psychoanalysis was instrumental in demolishing moralistic standards and rejecting religion. It thereby contributed to the symbolic impoverishment of our culture and to the establishment of "negative" communities that require no commitment and offer no integrative symbolic. In the past, "positive" communities offered some sort of commitment and a type of salvation to the individual through participant membership. Rieff goes on to say:

> To speak of a moral culture would be redundant. Every culture has two main functions: (1) to organize the moral demands men make upon themselves into a system of symbols that make men intelligible and trustworthy; (2) to organize the expressive remissions by which men release themselves in some degree from the strain of conforming to the controlling symbolic, internalized variant readings of culture that constitute individual character. The process by which a culture changes at its profoundest levels may be traced in the shifting balance of controls and releases which constitute a system of moral demands.

In sum, morality cannot be ignored or dismissed, for morality whether couched in religious institutions or not, provides a core integrative mechanism and content for the development of personality and for the maintenance of society. *Morality, in these terms, then is not a question of prohibitions, but rather the values and definitions of appropriate behavior by which man governs his behavior.*

Two major psychological theorists, Freud and Piaget, have devoted considerable interest to the psychological development of morality. In this paper I shall use Freud's psychoanalytic theory because it has been most clearly defined, but then we shall return to touch on the concepts developed by Piaget since these are complementary rather than competing views of morality.[22]

First, we shall consider the function of three parts of the personality: the superego—that agency of the self which produces feelings of guilt, the ego ideal—that agency of the self which produces shame, and the narcissistic self—that central part of internal self which we experience as basic instinctual needs and wants. (These definitions are to be taken as non-technical abbreviations for this paper.)

Superego

In his 1914 paper, "On Narcissism," Freud[23] anticipated a conceptual framework for morality: "It would not surprise us if we were to find a special psychical agency which performs the task of seeing that narcissistic satisfactions from the ego ideal is ensured and which, with this end in view, constantly watches the actual ego and measures it by that ideal . . . what we call our conscience has the required characteristics."

Here Freud intimated an *evaluative moral function of the ego.* This early broad concept of moral functions of the ego was to be narrowed as the superego concept was refined. The consequence was that in everyday clinical jargon we have since come to consider morality as solely a question of superego prohibitions.

However, this restricted view of superego function and morality was not the only concept Freud had in mind. In 1923[24] he noted that "unconscious moral demands . . . together with the conscious moral exigencies of man . . . have since then been called the superego." Loewenstein[25] comments that Freud had noted that "the superego . . . its contents and functioning often differ widely from the consciously adopted moral codes of the individual," and that the ego was involved in coping with these conscious moral issues as much as with the moral issues of the superego.

Here then is a distinction between unconsciously chosen moral values that are a function of the superego as a punitive condemnatory agency and consciously chosen moral values which are part of the conscious discriminatory ego.

Freud demonstrated that the subjective experience of "conscience" or feelings of guilt stemmed from the introjection of parental prohibitions. The agency of conscience—the superego—was shown to be the arbitrary, unconscious representation of one's moral upbringing. Consequently, this unconscious prohibitive agent is idiosyncratic and provides no reliable guide to adult moral behavior. As a matter of fact, the personality seeks to avoid and evade the prohibitions of the superego, giving rise to neurotic symptoms and aberrant behavior. The most moralistic person with the rigid severe conscience turns out to have an unreliable and contradictory pattern of moral behavior. The private moral code of the unconscious superego is only quasi-morality, or moralism.[26]

Three general attitudes regarding superego morality have been taken. The first regards all superego morality as harmful and to be removed—one would be better off without much of a superego. This view, however, only considers the pathology of superego function.

A second view, represented best by O. H. Mowrer,[27] would recommend greater reliance on superego functions, based on the assumption that all guilt feelings refer to real moral violations. However, Mowrer fails to recognize or accept the intrapsychic distortions that superego functions undergo.

The third view holds that superego function must be placed in appropriate balance. As an adult, one must realign one's superego according to one's adult ego value commitments, while modifying overly strict and erroneously developed superego sanctions. That is, one must learn not to feel guilty about inappropriate matters, and develop appropriate guilt for appropriate matters; appropriate guilt meaning a *signal of guilt*, rather than a punitive overwhelming condemnation.

This third view asserts that internalized superego norms, where appropriate and in the degree appropriate, serve as representatives of our group and cultural morals. Chein *et al*[28] assert:

> The social significance of the superego inheres precisely in the fact that it provides for individual standards of behavior not dependent on a person's limited experience and that their application is not dependent on the limited egocentric perspective of their situationally adaptive value to him. The social need of the superego type of morality rests, on the one hand, on the fact that the capacity of individuals to profit from experience or the range of individual experiences—even when vicariously augmented—are limited and, on the other hand, on the social necessity for a reasonably consistent set of standards even though the latter cannot be rigorously justified in experiential pragmatic terms.

In his *New Introductory Lectures* Freud[29] comments along this line: "Fear of the superego should normally never cease, since in the form of *moral anxiety* it is indispensable in social relations, and only in the rarest cases can an individual become independent of human society."

In describing mature superego development, Jacobson[30] speaks of the development and modification of demanding, directive, prohibitive, and self-critical superego functions that become fused into collaboration with the ego. She goes on to comment:

> . . . we have been more concerned with the self-critical functions of the superego, which passes moral judgment, than with those of the ego, whose evaluation of the self covers a much broader field . . . What we learned from our comparative study was, first of all, the superego, judging in moral terms of right or wrong, good or bad, chiefly regulates our personal and social relations and behavior, and even evaluates our ego pursuits essentially from this perspective. Furthermore, the mature self-critical ego, though participating in this moral self-evaluation, also judges our ego functions and our practical relations to reality, including those to the inanimate object world. Finally, the self-critical ego evaluates behavior not only in terms of correct or incorrect, true or false, appropriate or inappropriate, reasonable or unreasonable, but also from the standpoint of utilitarian or ambitious "worldly" ego goals ("self interests") with regard to their effectiveness and success . . . the ultimate collaboration between self-critical superego and ego functions.

To sum up the role of the superego in morality, we can say that behavior based on the dynamics of guilt-feelings is precarious and neurotically distorted. However, superego sanctions, when aligned with one's conscious value commitments and modified in their force, play a valuable and necessary role in guarding us against our own egocentric biases and blind spots.

Ego Ideal

Various aspects of the affirming, loving, or approving counterparts to prohibitive superego functions have been defined apart from superego as the ego ideal. Ego ideal and superego are closely related in their intrapsychic origin, structure, and function. Further, both ego ideal and superego, with derivative roots in pre-oedipal and oedipal conflicts, both undergo modification, maturation, and integration with ego structure and function during adolescence. Laufer[31] has recently shown how ego ideal models and values undergo crucial revision as childhood models are modified during the adolescent struggle to develop a coherent set of values for one's own self.

For our purposes I wish to point out that the primitive ego ideal, developing out of the introjection and identification of norms and values of idealized adults, may not undergo necessary modification. The result may be that these irrational, unconscious norms then govern our aspirations, decisions, and attitudes. A failure to live up to this ego ideal may result in experiences of shame. There may also be elements of condemnation if one does not attain one's ideal.

In terms of morality, it is obvious that one's ego ideal plays an important role. However, the ego ideal may be modeled along destructive lines, for example if one's ideal is John Dillinger. Or the goals may be too high, forcing the person to neurotically and inappropriately try to achieve those goals by fair means or foul. Or the ideals may be inappropriate to one's talent or role in life, for example the intellectual but clumsy son of a ball player who cannot use his intellect because his internalized ideal involves physical prowess.

As with our analysis of superego, we cannot posit morality in terms of ego ideal alone. It provides powerful motivation and central values around which one's life behavior revolves. But unless the ego ideal is modified in alignment with reality and one's conscious value commitments, it may distort and pervert one's behavior, so that the end result is immoral rather than moral behavior.

The Narcissistic Self

A third intrapsychic source of morality involves the narcissistic self. One must accept, love, care for, and reward oneself before one can do so for others. Much pious self-abnegation and self-denial arises out of fear and anxiety about gratifying oneself directly; and so vicariously and pseudo-altruistically, one gives to oneself through others. This is moral masochism—paying a price for one's pleasure by giving to oneself via others. Unfortunately, this is hostile giving and leads to the attempt to control and dominate others so that one will have foils through whom one can nourish the necessary narcissism of the self.

Kohut[32] sums up the role of the narcissistic needs of the personality and its ambitions as becoming "gradually integrated into the web of our ego as a healthy enjoyment of our own activities and successes and as an adaptably useful sense of disappointment tinged with anger and shame over our failures and shortcomings."

The person who has a grandiose image of himself, as well as the person who has a morbid self-image,

will neurotically distort his behavior to balance the needs of the narcissistic self. These internal demands of ourselves must be aligned with our capacities and our conscious value commitments. If not, these internal self-needs will override whatever conscious moral compunctions one might have—a hungry man steals bread. On the other hand, the needs of the self, appropriately construed, provide a necessary balance between the commitment to self and the commitment to others that is necessary for moral interpersonal relations.

Again Jacobson makes the following pertinent observations:

> Occasionally, we encounter persons who, having lost their health, their work, their money, their position, their social status and prestige, nevertheless do not collapse under the onslaught of such narcissistic assaults, because they find support from their intact ethical and moral codes. Quite in contrast to such rare persons, we may observe in people who are not guided by a firm, coherent set of mature ethical standards a pronounced predisposition to identity problems. In fact, there are gifted and very capable persons with a devouring ambition and amazing careers, who give the appearance of strong personalities and a "strong ego" but who actually have deep-rooted identity problems, because of the particular defectiveness of their superego and the narcissistic structure and fragility of their ego.

Ego Morality

Now we come to the role of the ego in morality. The contributions of the superego, ego ideal, and the narcissistic self are more or less unconscious, predetermined by our childhood experiences, and in the need of realignment in accord with the requirements of reality and the adult values to which one chooses to commit oneself.

Existentialists have long emphasized the role of personal freedom, responsibility, and decision in contrast to the unconscious, determined, irrational aspects of behavior emphasized by classic psychoanalytic formulations. In recent years, however, the ego psychologists, particularly Hartmann, Rapaport, and Erikson, have systematically elaborated the role of so-called autonomous ego functions. I have summarized this previously:[33]

> Although couched in various terms, there is a growing consensus that personality development reflects not only physiological needs, but also value needs. Such needs to "make sense out of the world" have been termed the "quasi-needs" of the ego (von Bertalanffy) the will to meaning (Frankl) ego efficacy (White), cognitive coherence (Festinger). Now, according to Hartmann's formulation of ego development, there is an initial undifferentiated id-ego matrix from which emerges aspects of ego function separated apart from instinctual drive processes; and these autonomous ego activities are involved in the process of developing a coherent effective adaptation to the external world.
>
> These autonomous ego functions assume the function of "ego drives" in contradistinction to "instinctual drives." These ego drives are dependent upon the beliefs and values of the culture and these drives become important if indeed not the overriding determinants of behavior. Thus it can be seen that belief systems or value systems are the data that the ego uses to organize individual behavior. The lack of such cultural value data results in the failure to develop an effective coherent ego structure; or the cultural value system may result in significant distortions in the formation of ego structure. Belief systems, whether they be religious or otherwise, then are both necessary and influential in the development of personality.

The autonomous adult ego, then, chooses the values, morals, norms and standards by which the person shall live. These consciously chosen values, however, must be related to the unconscious values of one's superego, ego ideal, and narcissistic self. The capacity to pursue moral behavior in adulthood optimally occurs when there is a synchronous alignment between all four derivative forces: superego, ego ideal, narcissistic self, and autonomous ego values.

Morality has been usually thought of in terms of static rules, and has been defined as a negative behavior related to avoidance of punitive superego sanctions or meeting of ego-ideal demands.

In contrast, the concept of morality developed here is a dynamic concept emphasizing the selection of goals and values and the process by which the person makes value choices . . . although including avoidance behavior, it emphasizes the positive goal-person directed behavior of the ego. This concept of ego morality posits that there is an evaluating and coordinating structure and function of the ego which is part of its autonomous function, concerned with defining and directing one's life in accord with the values one has chosen.

This latter function of the ego is related to what Engel[34] calls *signal-scanning affect.* His description of the nature and function of this ego mechanism bears directly on our theoretical model of ego morality.

> The *signal-scanning* affects have as their distinguishing characteristics a warning or signal function and a "how am I doing?" or scanning function, yielding information to self and to the environment of good or bad, success or failure, pleasure or unpleasure. They serve as signals and means of reality testing for orientation to both external reality and internal reality "in a continuum extending in all shadings from massive affect experience to mere signals and even signals of signals" (Rapaport). They have both regulatory and motivational properties . . . the signal-scanning affects operate to provide information which is then used by the self-inspection part of the ego as a guide for subsequent ego activities in the service of the reality principle.

Rinsley[35] has pointed out that certain concepts of the observing, evaluating and motivational self which are coherent in a phenomenological view of ego are still difficult to integrate into the existing theory of ego psychology. Nonetheless, at this stage of formulation it seems reasonable to think in terms of a self-aware aspect of ego which is involved in the issues of moral values, and which experiences what Freud had termed "moral anxiety."

The role of the ego in morality is also differentiated by Piaget [36] in his studies on the development of moral concepts in childhood. Early first morality is "moral realism" which is absolute and a morality of constraint. This morality is superego moralism. The child's morality is based on authority and fear of punishment. Morality is a static set of absolute rules. In contrast, in adolescence the child begins to develop a "morality of cooperation" which is a relativistic concept. Morality here is related to ego functions of perception, evaluation, and determination of both consequences and desires. It is a relativistic morality in that the adolescent learns to guide his value choices and behavior in terms of his

commitments to others and to the ideals and goals he posits for himself.

Again Chassell[37] notes that "children who were fixed in a state of moral realism by their peculiarly strong ties to their parents were unable to pass on to moral relativism, and remained bound by the moral realism of the superego."

Recent studies on the development of moral character and moral ideology have found that ego-strength and "good moral character" are closely associated. *It is ego-strength rather than superego that results in moral behavior.* Kohlberg[38] has found that the ego variables associated with moral capacity include:

1. the ability to withstand temptation and to behave honestly
2. to act in conformance with social norms that require impulse control
3. capacity to defer immediate gratification in favor of more distant rewards
4. maintain focused attention on one task
5. ability to control unsocialized phantasies.

Reviews of child rearing practices reveal that parental attempts at specific training in "good" habits fail to produce consistent moral behavior; whereas effective nurturance of a child as a significant, loveable individual with the use of firm, kind, consistent discipline does produce "moral capacity."

Parenthetically it is of note that scholars in the Roman Catholic church have urged their leaders to redefine the pre-adolescent concept of sin in the light of this evidence, for they argue that moral capacity does not develop until after the ego of the adolescent has coalesced into the capacity to make moral commitments and discriminations in the mature sense we have described.[39]

Ego morality I define, then, as the *process and mechanism* of balanced interdependent interplay between superego, ego ideal, narcissistic self-image, and autonomous ego values. Ego morality is the consequence of ego development, such that ego is the *final common pathway* for the establishment of values and moral choice to which the several forces of the personality have contributed.

To conclude in a less theoretical vein, Erickson[40] writes:

> The true ethical sense of the young adult at its best encompasses moral restraint and ideal vision, while insisting on concrete commitments to those intimate relationships and work associations by which man can hope to share a lifetime of productivity and competence. Truly ethical acts enhance a mutuality between the doer and the other—a mutuality which strengthens the doer even as it strengthens the other. Thus, the "doer unto" and "the other" are one deed. Developmentally, this means that the doer is activated in whatever strength is appropriate to his age, stage, and condition, even as he activates in the other the strength appropriate to his age, stage, and condition.

Ego and the Hierarchy of Social Values

The function of ego morality interdigitates with a hierarchy of social values that range along a continuum from relative to absolute. To begin with we can list social values in the following manner:

1. Idiosyncratic values—held by only one person in the group under consideration, i.e., personal preferences.
2. Group values—which are distinctives of some plurality of individuals, whether this be family, clique, association, tribe, nation, or civilization.
3. Personal values—a private form of group values.
4. Operational absolutes—values held by members of a group to be absolute in their application for them.
5. Tentative absolutes—those operational absolutes found to exist in all societies.
6. Permanent absolutes—assumptions that may be asserted but unknowable in any scientific sense.

Anthropologists no longer hold to the radical cultural relativism of a quarter century ago. Rather, there is growing consensus that tentative absolutes do exist —interestingly, a rough parallel to the Mosaic Decalogue.[41] However, these absolutes must be defined and translated into appropriate behavior by each group. In other words, absolute values must be translated into operational and group values *which are to be taken as the moral norms of behavior.* Briefly, absolutes must be reduced to relative values, and these relative values must assume absolute functions. For example, a tentative absolute value is the right of personal property or, negatively stated, stealing is immoral. However, the behavior to be labeled as stealing varies with each group; yet, that group definition must be a fairly inviolable norm for that group.

With this in mind, any particular moral standard is culture-bound. Or more psychologically—relative group and operational values are incorporated by the child and become part of a psychologically absolute moralistic system. For mature ego morality to develop, the person must modify these absolutes laid down in the superego, ego ideal and narcissistic self to fit one's mature moral commitments.

In ego morality, the ego continually balances and weight one's actions in terms of how general absolute values can be put into action in terms of one's group values in accord with one's personal values.

The so-called New Morality of situation ethics is an attempt by theologians to reconstruct a system of morality since psychoanalysis demonstrated the vagaries and immorality of traditional moralism. However, theologians like Fletcher have failed to come to grips with the need for man to rely on more than personal integrity in social context as he sees it. Although they stress love as the penultimate ethic, they fail to recognize that man, left to his own devices, no matter how noble his intent, deludes and defeats himself. Sociologists and philosophers alike have criticized the situational ethicists on this count. Not that the situational ethicists are wrong in crticizing the traditional approach to morality, but rather that the situational ethic fails to take account of the fact that morality is not merely an individual matter. Indeed, individual morality stands in interdependence with group morality.

The concept of ego morality implies that each individual is not alone in determining his value commitments and determining moral choices. The individual is molded by both his culture and his upbringing. His mature commitments are influenced by his social matrix, and his mature moral decisions are not his alone to make, but interdependent on the judgments and evaluations of his peers. This is what theologians are calling "contextual" or "consensus" ethics.

Again, Erikson[42] implies this interdependence in his discussion of the roots of virtue. He notes that man is not guided by a comprehensive and conclusive set of instincts but must learn to develop what he calls the eight cardinal virutes of Hope, Will, Purpose, Skill, Fidelity, Love, Care and Wisdom. He goes on:

> The cog wheeling stages of childhood and adulthood are truly a system of generation and regeneration—for into this system flow and from this system emerge those attitudes which find permanent structure in the great *social institutions*. I have tentatively listed these social attitudes as reverent, judicious, moral, technical, ideological, interpersonal, productive, and philosophical. Thus the basic virtues—these miracles of everyday life—seem to provide a test for universal values, and to contain the promise of a possible morality which is self-corrective as it remains adaptive.

What Erikson intimates, and what ego posits, is that the individual optimally acts to integrate one's behavior into the commitments to oneself and to one's society according to a whole range of social values. In some instances only a matter of personal preference is involved while in others it is a question of decision for one's whole culture.

Guilt, Responsibility and Forgiveness

From the central axiom of ego morality stem certain corollaries in regard to guilt, responsibility and forgiveness which are of importance in terms of systematic theory as well as in practical application in psychotherapy.[43,44,45]

I would define four types of guilt: (1) civil objective guilt, (2) psychological subjective guilt-feelings, (3) existential ego guilt, and (4) ontological guilt.

Civil guilt is arbitrary and impersonal. It is the violation of objective rules. Such guilt may or may not be related to morality. For example, the Jewish martyrs to Nazi justice were objectively guilty of violating Nazi law; or a small child may be objectively guilty of property damage. Many instances of civil guilt involve other types of guilt. However, objective civil guilt does not in itself indicate either the morality of the act or the moral consequences for the person.

Psychological guilt is an affect or guilt-feeling. It is the subjective experience of internal condemnation of oneself by one's superego. Guilt-feelings bear no necessary relationship to either existential ego guilt or civil objective guilt. To avoid confusion, I do not believe that the common word "conscience" should be used for either guilt-feelings or for superego function, since these latter concepts refer to specific intrapsychic dynamics.

Existential ego guilt is a violation of relationship between man and man. This guilt, too, is objective, for it is a condition of estrangement between two persons. Existential ego guilt is ultimately a reflection of man's denial of his values and commitments, a denial of his true situation, and a withdrawal into narcissistic isolation from others. Existential ego guilt is not a feeling but is a situation.

Ontological guilt may be understood in theological terms as original sin, that is, man's basic responsibility for his life and behavior. In *Brothers Karamazov*, Dostoevsky puts it that man is responsible for everything and therefore guilty of everything. Sartre pessimistically notes that man can only face himself in making decisions; he has nowhere to turn to affirm that his decisions are right or moral. Ontological guilt is a reflection of the original state of man in the human condition of inadequacy—the fatal flaw of human character that leads man to damn himself—the classic theme of "hubris" of the Greek tragedians—the leitmotiv of our contemporary novelists like William Golding's *Lord of the Flies*—the basic contention of both ancient theology and the modern formulations of theology.

Ontological guilt, in summary, is a situation, a reflection of man's awareness of what he is. One contemporary psychoanalyst, Allen Wheelis[46] in his metaphorical analysis of the limitations of self-enlightenment —*The Illusionless Man*, concludes that the ontological quest for meaning in life is crucial, yet unanswerable and certainly untreatable by the psychotherapist.

The psychotherapist can and does address himself to the other three forms of guilt however. Consequently we must inquire into the management of guilt by the psychotherapist in terms of the concept of ego morality.

A typical therapeutic ploy has been to assume that behavior must be based on choice to be moral, and that one should not feel guilty about one's behavior which has been unconsciously determined. The assumption here is that guilt and morality are integral to each other. However, this view does not account for the variety of circumstances that we call "guilt." Indeed psychotherapists have for the most part concerned themselves with reducing guilt feelings, but ignored the "existential guilt situation."

In contrast I propose that morality is only tangentially related to guilt feelings and is primarily involved with existential guilt . . . that is, the issue of relating to others in terms of my ego commitments to them.

Out of existential human incapacity, rises the conflict between one's own conscious aspirations, and one's own unconsciously determined behavior. Indeed, St. Paul's classic self-confession states: "I do not do the good things that I want to do, but I do practice the evil things that I do not want to do" (Romans 7:19, Williams Translation).

Long ago Freud pointed out that our behavior was more determined by our unconscious than we were willing to admit and that we were more responsible and able to change our behavior than we were willing to accept. Despite the philosophical arguments about

determinism and free will, recent studies of psychotherapy indicate that Freud's maxim holds true.

For example, Gatch and Temerlin[47] compared psychoanalytic protocols from existential psychoanalysts and classic psychoanalysts. Interestingly, there was no actual difference between the two groups—both treated events in the patient's past as if they had been determined and not the patient's responsibility, while both treated the decisions for the future as totally a matter of free choice of the patient who had the responsibility for making these decisions.

It seems fatuous to assume that by rational process we can analyze our behavior into determined and chosen components, as Farber[48] points out. As I have indicated previously, one's moral choices are a *combination* of conscious and unconscious motives and norms, and a combination of determined and free choices. I suggest that we never know, in any conscious rational sense, fully what our motives are or why we choose the way we do. The concept of a rational man is at best a partial truth—the only people that seriously attempt to live by reason alone are paranoids! I assert that we need to rely upon and utilize in an integrated fashion our unconscious and irrational aspects of self as well as our conscious and rational self.

Furthermore, I submit that we are often faced with situations where we cannot determine either beforehand or afterwards whether the alternative we chose was more moral than the other. In Sartre's[49] analysis, we often cannot look to arbitrary external norms, or to others, or to a scientific analysis. Rather, we must accept the fact that existential choice is made by us. That alone may on occasion define our choice as moral. *I have chosen with integrity and that makes it moral.* In terms of psychotherapy, Lewy[50] concludes: "A person must be able to take the consequences of and be willing and able to answer for what he thinks, feels or does; to acknowledge and feel that this is a part of himself." Ego morality implies that one makes one's choices with as much integrity as one has and accepts the consequences of those choices with the same integrity.

We are responsible for what we are and do. But responsibility does not imply that we should be punished even if guilty, in the sense of blameable. Superego moralism condemns the self as worthless and bad; whereas ego morality appraises oneself with integrity without rejecting or punishing oneself. Superego moralism says, *"I feel guilty;"* whereas ego morality says, *"I am guilty."*

The task of the psychotherapist then is not to assuage guilt feelings, although that is often a necessary preamble to successful therapy. Rather the therapist seeks to help the patient to see himself and his relationships with others in the light of how the patient violates the relationships to which he is committed. The resolution of guilt feelings does not change the basic violation of relationship which is existential guilt. Patients would quite willingly settle for pacification of their superego, but are reluctant to undergo the pain of changing their pattern of relationship so that they no longer need to feel guilty!

This then leads to the problem of forgiveness (cf. my previous formulation).[51] Psychological guilt-feelings can be resolved by appeasement, restitution, paying back, or making up. Here punishment is the price one pays to the superego to stop making us feel guilty. This is what I call the punitive model of forgiveness, which is not forgiveness at all. But one must learn to stop punishing oneself for it is of no value to anyone. Rather, one needs to face up to one's existential guilt. As a result, this sense of guilt may be more deep, for one must stop making pretenses and acknowledge oneself for what one is. Only when one has come to grips with the sort of person that one is can one hope to be a responsible moral person, instead of merely evading or placating one's superego. Punishment is no solution to the problem of existential guilt, for it is the hostile, defiant rejecting *attitude* towards authority, one's own integrity, and one's true being. Here it is learning to accept oneself when one realizes that one is unacceptable; and seeking reconciliation from the estrangement one's behavior has brought. This is what I call the reconciliation model of forgiveness.

In terms of ego morality, the question is not one of guilt feelings, but rather the assessment of what one is and how one behaves in order that one may modify one's behavior in terms of one's conscious moral commitments. Guilt feelings are of value as signal affects which the ego must then assess as to their validity and use as spur to action. The resolution of a situation in life where one has violated one's moral commitments is not via punishment but rather via reconciliation.

A Recapitulation

In looking back, we can outline the nature and conquences of ego morality:

1. The ego is the final common pathway for making moral commitments and decisions. Ego morality is the process and mechanism by which we make our moral choices.
2. Conscious and unconscious aspects of personality participate in the values we choose and the moral choices we make. The personality deals with a spectrum of relative to absolute sociological values in this process. Moral decisions are a contrapuntal enterprise between the individual and his socio-cultural milieu.
3. It is impossible and unnecessary for us to fully appreciate the motives for our behavior or the consequences of our behavior. They are ambiguous, opaque and relative. The fact that we choose with integrity is central to ego morality.
4. We are responsible for what we are and do. But this does not imply that we should punish ourselves for being guilty. Rather, ego morality asserts that we must respect and accept ourselves at the same time that we assess our state of existential ego guilt—seeing ourselves for what we are and what we do. The resolution of existential ego guilt comes from a reconciliation of the estrangement we have incurred with others.

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We Wend Our Way Like Worms

Until man's instruments began to fly, mapping was a slow, laborious and expensive operation. It was performed piecemeal and it produced a haphazard mosaic with many pieces missing. Today, not only do man's eyes have wings but his vision has penetrated beyond the visual spectrum into a suprasensual world that is almost wholly new to him. Infrared, x-ray, radar, and microwave; radiotelescopes, sonar, underwater television and photography; Gieger counters and scintillometers have opened the doors to a universe as strange to man as a newly discovered planet. — in *Kaiser Aluminum News.*

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The Fourth R—The Rat Race

It is only in theory, today, that educational institutions serve the student; in fact, the real job of a student at any ambitious institution is, by his performance, to enhance the reputation of that institution. This is true not only of colleges and universities. I have heard teachers at secondary and even elementary schools, in reply to the just claim that students were overworried and overworked, say that if students were less burdened, their test and examination scores would go down and the reputation of the school would suffer. —John Holt in *The New York Times Magazine* — as published in HIS, October, 1966.

THE PHYSICIAN IN A SECULAR SOCIETY

M. O. VINCENT*

Ours is a rapidly changing culture characterized by scientific advances, technologic changes, urbanization and a suspicion of authority in any of its forms. This paper was presented to Christian physicians (C.M.S.) gathered to consider the society in which they live, to note its impact on them and how they in turn may exert a Christian witness in this society. Harvey Cox suggests that evangelism is social involvement "where the action is". The presuppositions of secular theology as demonstrated in "The Secular City" by Cox are examined.

Few would deny that we live in a secular society. In our more honest moments we will all admit that we are strongly tainted with many of the aspects of secularization. We should ask ourselves in what ways is this good—in what ways is this potentially dangerous? The backdrop of our thinking has been "The Secular City" by Harvey Cox.[1] This best-selling, religious paperback printed in 1965, went into its 10th printing in 1966. Here the "secular society" is described as "a society delivered from religious and metaphysical views," concerned more with the here and now, than with the out-there and the future. The secular man is a mobile, tolerant man, who enjoys his anonymity in the modern "technopolis". The secular man is a part of the modern urban community, which is characterized by increased diversity of opinion which tends to downgrade tradition and increase tolerance to different ideas. In this pluralistic society the secular man is mobile, affluent and pragmatic, more inclined to ask "does it work?" than "what does it all mean?"

Eve is reported to have said to Adam as they left the garden of Eden, "Adam, I believe we are living in a period of rapid transition." While change is not new, the speed of change in society has probably never been more rapid than at the present and in the immediate future. It is an exciting time to be alive and to look ahead. Few of us know what the next 15 years holds. I am like Charlie Brown,[2] when his friend was reading Hi Diddle Diddle to him and editorialized as follows, "The way I see it, 'the cow jumped over the moon' indicates a rise in farm prices. The part about the dish running away with the spoon must refer to the consumer. Do you agree with me Charlie Brown?" With a rather superior look on his face, Charlie Brown replied, "I can't say—I don't pretend to be a student of prophetic literature."

However, medical and scientific research seems to be moving away from concern just with controlling and manipulating man's environment, to increased concern about controlling man himself. Our revolution of the future may be in the degree to which we can control human behavior, thoughts, feelings and will. This will raise many questions of . . . what is good? . . . what is deviant? . . . what is to be preserved? . . . what is to be discarded? . . . who is to decide and how? What if we unlock the genetic code? Who can have babies, and what kind of genes are to be considered worthy of perpetuation? If babies can be grown as easily outside the uterus as within, what effect will this have on the family, fatherhood, motherhood, let alone the obstetrician?

We now have cardiac pacemakers. It would appear as if "mood pacemakers" whether electrical or chemical may not be far behind. Will these replace the psychiartist, the psychoanalyst, and if so, why not the clergy?

First tools, and then the Industrial Revolution increased greatly what man could do physically. The computer is at present changing our society. The computer is extending our mental capacities beyond ourselves as the Industrial Revolution extended our phyical capacities. It is enabling us to answer questions and make correlations that were previously impossible. Machines are revolutionizing the whole diagnostic process in medicine in the large centers. It is not unreasonable to suspect that in a few years some difficult diagnostic problems will be solved in seconds by physicians aided by computers. Will this create a kind of cold, impersonal type of medical practice, or can we use such things to our advantage that we may have a closer, more meaningful, less rushed relationship with some of our patients? We are always looking back to the good old days of doctor-patient relationship, perhaps we should look ahead.

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Perhaps both as Christians and Physicians we spend too much time looking back instead of ahead. Let me quote from the Presidential address to the Illinois State Medical Society:[3]

> The amenities of professional intercourse, and the obligations of medical men toward each other and the public, were perhaps better observed in 1850 than now. Then the Doctor, next to the Minister, was the trusted friend and counsellor of every family to whom he ministered. He shared the joys, soothed their sorrows, and every passing year added to and cemented the attachment and affection between them. Now the doctor is regarded more in the light of a tradesman or mechanic, and is employed from the same consideration that a grocer, tailor or shoemaker is. The strong ties of gratitude and affection have almost ceased to exist. Relationship is now placed upon a mere commercial basis, and for this the profession is more to blame than the public!

The speaker was Dr. Robert Boal; the shocker to the modern physician is that this speech was delivered in 1882.

To go back ever further in our beloved physician-patient relationship, we note that Chaucer in his "Canterbury Tales" accuses physicians of loving money, splitting fees with pharmacists and failing to read the Bible. That is, he accused us of being mercenary, dishonest and narrowly trained technicians. Physicians have lost some of their unique status. We represent an ever-decreasing percentage of those holding University degrees. In Canada in 1926 for every M.D. granted there were only 6.5 Bachelor degrees granted.[4] In 1962 for every M.D. granted there were 26.2 Bachelor degrees. In the U.S.A., comparable figures in 1926 were 1 to 24.5; and in 1962 1 to 72. (Statisticians should note that this also proves that Bachelor degrees are more easily obtained in the U.S.A. than in Canada.)

> The increase in degree holders increases the number of persons who can challenge the ancient authorities of minister, teacher, and doctor, as well as challenging the businessman, engineer and even the scientist (the last blasphemy in a secular society).[4]

DuWors notes the marked mobility of the present North American society and that mobility undermines orthodox authorities. The result is that the physician faces a secular society (mobile, educated, suspicious of authority and pragmatic) that knows his irritable colon is not being treated the same way by you that it was in Winnipeg or Minneapolis.

The secular man knows from the daily paper that psychiatrists in Court cannot even agree whether a man is insane or not. And yet you suggest he spend $20.00 an hour to see one of the "headshrinkers" about his problems? He knows we differ in public about cholesterol, anticoagulants, L.S.D. and the pill. We have books by physicians saying that "Calories Don't Count" and that "mental illness is a myth". Law suits, well publicized, suggest to the secular man that there is such a thing as medical incompetence. It is little wonder that the public is ambivalent about its "Doctor-Father figures".

Even our degrees, licenses and diplomas on our office walls are a reflection of our being part of a mobile, highly organized society. These are to make the mobile patient comfortable with the thought that we are technologically competent. The immobile town society did not need such "accreditation".

It is important for us to realize that a training in science, biology, chemistry, anatomy, pathology, is not necessarily a training in scientific attitudes. This is a problem we may share with the non-Christian secular man. If we put more emphasis on what we know than what we don't know, or in what we know rather than how we get to know it, then our scientific attitude is deficient. I think this is true of many secular physicians who tend to regard science as a body of facts rather than a process. Said another way, science is a methodology or attitude, rather than a body of truth. Then it follows that the truth of science is tentative and changing. Here we can concur with the relativity and probabilistic approach to truth of our secular friends.

Behind the scientific "facts" is faith, faith in the scientific method and in the uniformity of nature. But it is dangerous to be dogmatic, some of the assumed uniformities have been dropped already. We must be clear that the assumption of the secular man that all truth can be reached by the scientific method is just that, an assumption, and is a narrow, intolerant one at that.

Almost as dangerous and more subtle an approach to truth is the position of accepting other approaches apart from the scientific, but to make scientific findings too central. They become so central that for example Christian revelation becomes peripheral and controlled by science. This view is apparent in Cox's "The Secular City".

Harvey Cox is concerned with communicating to the secular man. We too must be concerned with communicating Jesus Christ to secular man. To do this we must be clear on what it is we wish to communicate and we must know something about our Mission Field. That is we must know the attitudes and assumptions of the secular man around us. For this reason I think it is worthwhile to review the presuppositions of Harvey Cox as demonstrated in "The Secular City". While we are inclined to think of him as a secular "theologian", I think his presuppositions tell us clearly the presuppositions of the secular "man". He qualifies as a truly secular man by his own definition, namely that he has been "delivered from religious and metaphysical views" as a good secular man should. However, he has not been delivered from presuppositions. Some presuppositions apparent in "The Secular City" are:

1. Man Has Come of Age.

This carries the connotation of maturity. It means man no longer needs mythical props such as God. It means he realizes this world is more important than any relationship with God, the Creator and sustainer of the Universe. Man is described as God, with knowledge of good and evil—the race is mature and needs no guideposts.

But what if he's wrong? What if the race has not come of age, and if it hasn't, maybe God knew this in

His divine foreknowledge and gave us guideposts, even some absolutes?

Does the assumption that man has come of age stand the pragmatic test? If man has come of age, he must have been a mess in his adolescence, let alone when he was being toilet trained. Are wars, concentration camps, organized crime, segregation, cheating on campus, crooked politics, signs of man's maturity? As a psychiatrist I am not too impressed with my maturity, let alone yours. Do mature people spend more money for alcohol and tobacco and color T.V. than for the world's starving millions? We as a people do! The writer of 1st John 3:17, seems closer to the concept of maturity when he says: "But if any one has the world's goods and sees his brother in need, yet closes his heart against him, how does God's love abide in him?" Our generation is so mature that it has buried God and resurrected Batman! In spite of Cox's insistence that man has come of age, he too documents man's immaturity and need for authority and absolutes as he seeks these sources of security by carefully reading "Playboy" to see what is currently in vogue. He brilliantly documents this new form of legalism.

2. Man and Christianity Can Be Understood by an Exclusively Sociological Approach.

His approach to man and Christianity is not a holistic approach. He assumes therefore that the Church is just a sociological phenomenon and nothing more, an assumption that runs contrary to Biblical Christianity. The Church is influenced by its cultural environment, and in some places at some times seems to be captive of its culture. But the Church is always more than just a cultural phenomenon that evolved as men sought to find God. The Church should and must be at odds with its culture. When it is, it will be criticized. However, when it is not, it is derided as a mere upholder of the status quo. We must therefore choose carefully those things with which we will concur and those things with which we will be at odds. Mark Van Doren is reported to have said in a class at Columbia University,[5] "Jesus was far different from the ministers of today who try to be one of the crowd and take a drink at a cocktail party to prove it, or tell an off-color joke." Van Doren paused and added, "Maybe that's why we hate them so much". So secular man is watching and drawing conclusions. So the Beatles were not the first to say that, "Jesus Christ was okay but his followers are a bit square".

Cox assumes that religion is only a sociological phenomenon, and to be religious is to be active in society, so logically he states, "The starting point for any theology of the Church today must be a theology of social change".[6] Hence it follows that Christ is a sociological saviour, not a personal saviour. The "good news" is not that Christ came to reconcile man to God. The "good news" was Jesus came to announce the arrival of a "new regime".[7]

The purpose of Cox's Church is to reconcile man to man, "The Church has no purpose other than to make known to the world what God has done and is doing in history to break down the hostilities between peoples and to RECONCILE MEN TO EACH OTHER."[8] The same theme is reiterated in the context of how we speak of God in a secular fashion.[9] He says, "Jesus Christ comes to his people not primarily through ecclesiastical traditions but through social change."[10] I feel he would be quite content to say not through a personal relationship but through social change also. This is an impersonal salvation, impersonal like Harvey Cox's own sociological orientation and "The Secular City" itself.

To be interested in the individual does not imply that we must be disinterested in the larger society. We as physicians work primarily with the individual but are deeply committed to and indebted to the area and principles of public health. A primary concern of the individual does not deny the importance of social action whether in the context of Christian social action or context of preventive medicine.

Cox's emphasis on changing society without changing individuals has hazards apparent clearly in one area of social change with which Harvey Cox has identified himself. This is the problem of equality for the negro. Bringing social change without personal change shows us that the negro like his white brothers has not come of age. Rather what we are seeing is non-violence evolving to "Black Power" to we know-not-what. The gospel of racial equality is an important Christian message, but how different things might be if the leaders of the social change had been even equally as busy getting across the concept that God was in Christ reconciling the world to himself, and that the reconciled man loves his neighbour as himself and therefore is active in society.

Perhaps historic Christianity is reaping something of what it has sown in emphasizing personal conversion while turning a blind eye to the negro and his problems. Cannot pragmatic man see that social change such as making the poor rich, the slave free, the segregated integrated, the ignorant educated does not really solve man's problems? A pig is still a pig even when transplanted from a pigpen to a castle.

3. He Presupposes That Man's Problem is Man.

That is to say, he underestimates the forces involved in man's struggles, on the one hand the Triune God and on the other hand the power of evil. For the Bible writers, "principalities and powers" refer to Satanic influences. He says, "we must get behind this pre-scientific language." Interestingly he is very much aware of the problem of evil in the world. He sees it as clearly as any of us. It is only the Biblical explanation of the evil we all see that he rejects. Here his preference is for current psychological theories (probably transient) over Biblical Revelation. So he speaks of evil originating in the individual and equates this with the Freudian concept of the Id or the Collective Unconscious of Carl Jung. But these are really just words. Cox would call it "naming" things. This is not an explanatory concept. There are many people who reject either the concept of the Id or the Collective

Unconscious, or both. No one has ever seen an Id or a Collective Unconscious. They are as undemonstrable to modern, secular, skeptical man, apart from faith, as is Satan.

So there is no Satan, but there is an Id for Cox. Does it matter how or what we name this evil? Is this just a semantic problem?

Yes it matters because it effects our whole approach. He believes that man has the power and responsibility to rule over his Id, that is to be mature and come of age. If man's only problem is his Id, Cox might be right. But if Satan exists the power for evil is greater than just man's immaturity. Paul believed in Satan as the source of evil and tells us that our choice is to be a slave to sin or a slave to righteousness.[11] If Paul is right, Harvey Cox is dead wrong about man being able to rule over evil in his life by himself.

He also underestimates God's power. Christ can come only in social change and the power of the Holy Spirit is not mentioned, nor is the Holy Spirit necessary if man's only problem is one of immaturity. In short, his God is too small. The Father has become "the ground of our being", the Son "the man for others", while the Holy Spirit is totally eclipsed.

4. He Asssumes There Is No Closed Metaphysical World View Possible.

He says there can never again be any "closed system" approach to reality, yet his own system is so closed that God cannot reach the individual until social change occurs.[12] Instead of saying "God is Dead" he says, "Metaphysics is Dead". This is a mild form of the same thing, like being "a little bit pregnant." This assumption is shaky and explains less than traditional Christian theism. It can be accepted only if Cox knows so much about the Universe that he is in the position to make such an absolute statement and also only if the Biblical view of the Universe is totally in error.

Traditional Christian theism sees God as Creator and Sustainer. His relationship with man is influenced by his love so that he has been seeking man's redemption throughout history. In this world view, exploitation of personality is as taboo as in Cox's humanistic world view. We must face that modern, secular man is NOT interested in a world view that is concerned only with his life after he leaves the present world. But, neither is Jesus Christ interested in such a view. Interest in a man's soul does not decrease but heighten concern for his social and economic problems.

5. He Presupposes That All Values and Standards Are Relative.

This is of course a very absolute statement for one who believes that all things are relative. However, it is in keeping with his presupposition that Christianity itself is an evolved social institution. He believes that all value systems, "are the products of human decision, so they can be altered."[13] Not only is there no ethical certainty, but he goes further and says, "it is idolatrous to think your values are ultimate". This combination of pragmatism and relativism is true if we are products of *chance* evolution as Nietzsche pointed out. These views are essentially a rehash of John Dewey's views expressed earlier this century.

But if Jesus is God, if he said, "If you love me, keep my commandments", then everything is not relative. We are back to the basic question Jesus asked Peter, "But who do you say that I am?" If we answer with Peter, "Thou art the Christ, the Son of the Living God", then we are faced with some absolutes. We must then search for the absolutes and for the principles that will guide us in contextual or situational problems for which there are not absolutes. Conservative Christianity must guard against making relatives into absolutes. On the other hand, Harvey Cox has made the "absolutes" all "relative". Situation ethics without any guidelines opens up many interesting possibilities. The story is told of the man being asked what he would do if he found a million dollars and his reply was, "I'm basically honest, if a poor man lost it, I'd return it".

6. He Assumes People Are Not Asking Religious Questions.

I believe they are but it is up to us to let them know that their questions do have religious significance. In fact Cox himself pointed out the religious significance of the Miss America pageant, which presents a Goddess for the American people and of Playboy the deity of the insecure, secular young man. He rightly points out that we sometimes miss the "religious significance of cultural phenomena outside the formal religious system itself." The significance of this is illustrated by the concerns of our popular magazines. *Time* recently described the "Life Extension Society" with its Newsletter, "freeze—wait—reanimate, the Frozen Way to Immortality."[14] Here we learn that people are buying nitrogen capsules at $4,000 with maintenance costs of $150 per year. *Time* reports a modern, secular lady said, "with bad luck, I'll stay simply dead. With good luck, I may live again. It's worth trying."

Do we Christians have anything to say to people so obviously concerned with immortality? Isn't this an open invitation to be pointed to the message of John 17, verse 3, "And this is eternal life, that they know thee the only true God, and Jesus Christ whom thou has sent."

But what does *Time* say the modern, sociologically-oriented theologian says? Well John Maquarrie, Professor of Systematic Theology at Union Theological Seminary in New York is quoted in *Time* as explaining philosophical errors of those buying nitrogen capsules, apparently they had listened too much to Plato. Then *Time* says, "what concerns Macquarrie are the moral problems that reanimation poses, such as the overpopulation of the world." One gets the feeling that it has been a long time since Macquarrie has been at the bedside of a dying patient. I have never seen a dying individual who was unduly concerned about the over-population of the world, but I have seen them concerned about immortality. Aren't some modern theologians missing the question?

In the same issue of *Time*, there was an article on "The Necropolis". It describes how Hubert Eaton became a millionaire in Glendale, California with his famous "Forest Lawn Memorial Park" dedicated to burying the dead while denying the fact of death. This man was able to make a million dollars largely because of people's concern about dying. Ironically the article appeared in *Time* because the man who had spent his life making death less real was dead. A psychiatrist recently characterized an estimated 10% of students in large Universities using Marijuana as "in a fruitless search for 'inner truth' and 'inner peace'; students who share the common denominator of being dissatisfied, bored, curious and in desperate need of finding something 'different' to experience". He pointed out that the next step for the intellectual student is to go on L.S.D. as an escape while the less-intellectual escapes into heroin.[16] Aren't these people asking questions about meaning, value and purpose? Is this not a search for spiritual meaning? I think young people are disillusioned about the reality they see round about them and in many ways are rebelling against society as hypocrisy. Sometimes this is expressed aggressively or more passively as in beatnik-withdrawal. I think many of these young people are not finding answers to their questions about genuine meaning.

Somehow we must communicate Christianity to the secular world around us. As much as I learned and benefited by Harvey Cox I do not think he is communicating Christianity to the secular world that he understands so well. He does not call secular man to repentance and faith in Christ, but calls them to use social and political action to change the institutions of society. Cox himself points out that modern preaching is often powerless because it does not confront people specifically with a challenge, that the summons is issued in general rather than specific terms. There seems to be an excessive concern about what modern man "can believe" or "can swallow". Martin Thornton stated it concisely thus, [15]

> Like William Temple, and unlike the modern pastoral apologist, I am not asking how much Jones will swallow; I am Jones asking what there is to eat. I am deaf to the parrot cry that the Church can survive only by coming to terms with the modern world because, with Harry Blamires, I am extremely doubtful about the survival of the modern world, while remaining certain that the Mystical Body of Christ is the one thing that can never be destroyed.

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A NEW APPROACH TO STUDYING SOME SOCIAL PROCESSES

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I Introduction

The purpose of this paper is to describe techniques for modeling or simulating the behavior of complex social processes which have been made possible by rapid developments in computer technology. Uses of this simulation method will be discussed which indicate the role that simulation plays in the larger process of system cybernation or control and the use of simulation as a means of developing and testing scientific theories. Four basic types of simulations will be described along with what appear to be the major current limitations of the method. An indication of the current state of development of the field will be provided by brief descriptions of two significant simulation studies in the area of voter attitude change.

The latter portion of the paper describes in some detail an idealized simulation model of the process whereby attitudes are propagated within a population of human beings.

The model is an example of what is termed the macrodynamic type of simulation and includes a basic causal mechanism characteristic of a class of attitude

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propagation processes. Tests of the simulation model are described which explore the implications of the model and serve to illustrate the application of such a model.

II Modeling or "Simulation"[1]

For a number of years computers have been used in the physical sciences for the purpose of modeling or simulating physical processes. Some of the earliest applications of "computer simulation" were in the aircraft industry where computer models were used to provide information on the behavior of proposed designs without expensive and time consuming construction of physical prototypes. With the rapid advance of computer technology and advances in the understanding of social processes, attempts have been made in recent years to apply computer simulation to the study of social processes. The present state of computer development is such that a large modern computer can do, conservatively speaking, fifty man years of computation in one hour. As will be seen this capability is opening up new areas of investigation in the social sciences.

In this section the capabilities and limitations of the simulation approach will be discussed along with attributes which characterize four general types of system simulations. A brief description of significant work done to date in the simulation of social processes will illustrate the current status of the field.

A. Simulation Defined

The following is presented as a working definition of simulation:

> Simulation is the process of constructing and testing computer models of a real world system which "act like" the real world system, usually for the purpose of controlling system behavior to desired ends.

The historical development (5, 6, 7, 8, 13) indicates that simulation is usually part of the larger process of system control or—cybernation (3,14).[1]

This attribute of simulation has significant implications for the social sciences and will be discussed in some detail. On the other hand there are some limitations of the simulation methodology which often have to do with determining when a simulation "acts like" the real system. These also will be discussed in what follows.

B. The Potential of the Simulation Method

The most significant potential of the simulation method would appear to lie in the important role that a system simulation can play in the control or cybernation[2] of that system. The relationship of system simulation to the larger process of cybernation is illustrated by Figure (1). The figure depicts an arbitrary system which is being controlled by a "controller". This system has a set of controlled variables, designated "C" in the figure, which are to be adjusted so that they are approximately equal to a corresponding set of desired values "R". The behavior of the system as measured by the values attained by the variables "C" is determined by the "input" variables to the system, "M" and "D". These are independent or exogenous variables which are not dependent upon the system under control. "M" represents the set of control*ling* variables—those variables which can be specified in order to achieve changes in the controlled variables "C". On the other hand "D" represents a set of exogenous disturbances (in most cases random) which cannot be used as controlling variables but rather make control of the variables "C" more difficult.

The "controller" in figure is shown receiving information about "C"—the current state of affairs, "R"—the desired state of affairs, and two other sets of information "F" and "S". "S" represents information concerning the structure of the system under control and the relationships that exist between the control*ling* variables "M" (causes) and the control*led* variables "C" (effects). "F" represents any forecast information which may be available about the future values of C, R, S, and D.

On the basis of these definitions the operation of a general cybernetic process will be described. Simply stated the "controller" receives "feedback" information concerning the actual state of affairs "C" which it compares with the desired state of affairs "R". On the basis of system information (S) and forecast information (F) it generates a set of control signals (M) which will cause C to more closely approach R. Reflection will indicate that this basic control process is common to many areas of human experience social as well as physical.

Before proceeding to discuss the role that system simulation can play in this cybernetic process a specific example of this process will be given which will serve to illucidate the above discussion while providing a basis for discussing the need for a system simulation. Consider the system under control to be a human being and the automobile he is driving. In this case the variables to be controlled, "C", include the speed of the car, its lateral position on the highway and its position relative to other cars. The variables "R" in this case are the desired speed and position as determined by the driver. Disturbances "D" might include bumps in the road, actions of other drivers and other external factors which impair controllability. Forecast information "F" includes knowledge concerning curves ahead, cars ahead and their speed etc. System information "S" is embodied in the "feel" that the driver has acquired about the characteristics of the car through experience—sensitivity to changes in throttle and steering wheel position, roadability etc. On the basis of all this information, the controller, the driver's brain, generates a set of control signals which through muscular motion adjust the throttle, brake and steering wheel positions (the control*ling* variables "M") such that the actual position and speed of the car are acceptably close to the desired values.

In the example cited the information "S" concerning the characteristics of an automobile is indispensable to the satisfactory control of the system. A driver must

learn to drive (or learn to control) by experimenting with an automobile and learning its characteristics. In many complex social systems human beings find themselves in an analogous control situation but with an important restriction. *They are usually not able to experiment adequately with the system in order to acquire the information necessary for satisfactory control* ie, due to the risks involved it is not usually practical for economists to "experiment" extensively with the national economy. Social scientists have, by-and-large, had to content themselves with the experiments and data that circumstances provide them.

At this point the impact of system simulation upon system cybernation becomes quite clear. Suppose that in place of the "system" in Figure (1) a system stimulation is inserted which "acts like" the real system. Numerous and varied experiments can be carried out using this simulation by simply making changes in a computer program. On the basis of these experiments and the resulting system information, S, a set of refined control signals "M" is derived which can be applied to achieve improved control of the real system. At the present time the "controller" function in most complex systems is performed by human beings but many prophets (3) foresee the day when highly sophisticated computers will prove superior to human beings in this function and ultimately replace them. (If this is a frightening thought perhaps comfort can be taken in the fact that man would still be responsible for establishing goals "R" and would hopefully provide constraints on the means used to achieve goals.)

A second potential of the simulation method will be briefly mentioned here. Simulation, as an extension of mathematical modeling techniques, is a means of testing scientific theories and can play a significant role in the development of theories. The simulation, a theory about the real world, can be quickly exercised under various conditions to determine the consequences that logically follow by deduction. It can therefore be determined whether or not a given theory satisfies certain necessary conditions for validity. The simulation, then, serves as a means of testing a theory. Should the theory prove inadequate as initially conceived, the simulation can be used as a part of the creative process whereby the theory is refined. Information "fed back" to the investigator concerning the deficiencies of the theory (simulation) can lead to changes in the structure of the theory which cause it to better represent the real world—that is make it a better theory. This iterative procedure whereby tests of a simulation lead, through human intelligence, to successive theory improvements can be viewed as a special case of the cybernetic process of Figure (1).[3]

C. Classes of Simulations

For purposes of discussion here it will be useful to define four broad classes of simulations. These classes arise from consideration of how simulations are constructed and what they are designed to do. A simulation may be designed to simulate the interactions of basic system units or the interactions of aggregates of basic system units. In the former case the simulation will be termed "microscopic" and in the latter case "macroscopic". Thus a sociological simulation may be designed to simulate either the behavior of individual people or the behavior of groups of people. The microscopic approach to simulation has the advantage that it is probably more realistic than the macroscopic approach but it may prove to be prohibitively complex in certain cases. Due to its relative simplicity, the macroscopic approach appears to be preferable where the error introduced by aggregation is not intolerable. Some significant work relating to aggregation and the conditions under which aggregation may logically proceed is due to Ando, Fisher and Simon (2).

A second basic distinction which proves to be useful arises from consideration of what a simulation model is designed to do. A simulation may be designed to predict the state of the real system variables at one single point in time under a fixed set of exogenous conditions or it can be used to predict the *time path* of the real system variables given the time path of exogenous conditions. In the former case the simulation is said to be "static" and in the latter case "dynamic". Cohen (4) refers to static simulations as being "computer models" and dynamic simulations as "process" models. Examples of static and dynamic simulations taken from the literature will be cited below.

Before examining the current status of social simulation as reflected by the literature, terminology will be introduced which aids in classifying simulations on the basis of the attributes described above. The options microscopic–macroscopic and static–dynamic, give rise to four basic types of simulation models which will be referred to as:

microstatic
microdynamic
macrostatic
macrodynamic

The possibility of constructing hybrid models incorporating two or more of these basic types also exists but will not be discussed further here.

D. Current Developments in Social Simulation

In light of burgeoning developments in this field an attempt will be made to briefly summarize what appear to be two of the more important sociological applications of simulation to date. It will not be possible to discuss important economic applications (4, 5, 6, 7, 8, 9) here.

Perhaps the most advanced social simulations to date are those of Pool, and Abelson (13) and Abelson and Bernstein (1). The former study simulates certain aspects of the 1960 U.S. presidential election and is an example of what has been referred to above as a macrostatic simulation model. The model is macro because it considers the U.S. voting population to be aggregated into 480 voter types which are handled by the computer instead of individual voters.[4] These voter types are defined on the basis of party preference, geographical location, race, religion, economic status, sex and upon whether the voter resides in an urban or

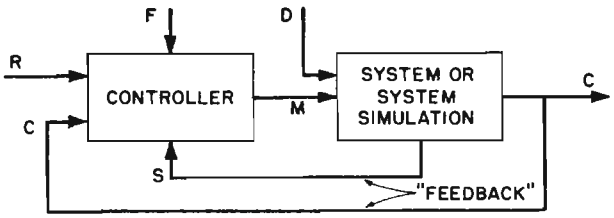
rural area. The data for the simulation came from approximately 100,000 public opinion interviews over the period 1952-1958. This data reflected opinions on 52 political issues and also indicated the number of each voter type residing in each state. Applying what sociologists term "cross-pressure theory", the simulation model operated on this data to predict election results if different issues were stressed during the campaign. This model is an example of what has been defined as "static" because it predicts voter attitude at some single point in time rather than tracing out the path of voter attitude over time. The authors report a high correlation (.82) between a simulation model stressing the religious (Catholic president) issue and actual election results and claim on the basis of empirical evidence that it is reasonable to assume that the religious issue was, in fact, stressed during the campaign.

The second simulation study mentioned above, that of Abelson and Bernstein (1), is an example of a micro-dynamic simulation model. The study concerns itself with the time path of the attitudes of 500 individuals during a 12 week local referendum campaign in which the issue is whether or not the community should adopt water fluoridation. In addition to the demographic data used by the Pool and Abelson model, the following data was also available for each of the 500 individuals represented in the simulation: frequency of exposure to several news channels; attitudes toward well known persons and institutions in the community; knowledge and acceptance of standard assertions pro or con on the issue; interest in the issue; intitial position on the issue; voting history in local elections; predisposing experiences and attitudes toward the campaign arguments; frequency of conversation about local politics; and the demographic characteristics of conversation partners. With the above data it was possible to consider both the effects of mass media and personal influence upon attitude change. Each simulated week of the campaign each of the 500 individuals in the computer population is probablistically exposed to assertions on the issue as presented by local communication sources and then each engages in conversations in which partners present their own assertions. By applying in excess of 40 basic propositions concerning human behavior the computer generates, for each individual of the 500, the time path of attitudes toward the assertions, interest in the issue, and finally attitude toward the issue itself. The paper describes initial tests of the simulation using data obtained from a simplified "mock" referendum. No attempt was made to achieve a precise representation of an actual sample—"since data penetrating to the level of detail needed for the computer model do not yet exist."

E. Limitations of The Simulation Method

Perhaps the most obvious limitation of simulation lies in that a simulation is always an approximation of reality. The sheer complexity of any system, social or physical, forces the introduction of simplifying assumptions into the simulation. These simplifications are necessary because of constraints imposed by existing theory, computer technology, time and money. The field of social simulation is too young to adequately assess the long run impact of these constraints.

A second limitation of the simulation method relates to difficulties involved in validating a simulation model. This problem is particularly acute in the case of what has been termed "dynamic" simulations. Such models, in simulating time paths of system variables, generate vast amounts of data. It is often difficult to acquire the corresponding real world data for purposes of validation. This problem was encountered by Abelson and Bernstein (1) as indicated by the last sentence of (D) above. A second problem associated with validation of social simulations arises because of the stochastic nature of these systems. Due to the chance or random factors which influence the behavior of such systems, ("D" in Figure 1) even an ideal simulation can not be expected to behave exactly like the real world system. For this reason statistical tests of validity must be employed. In the case of complex dynamic simulations appropriate statistical tests have not as yet been determined.



C = SYSTEM VARIABLES TO BE CONTROLLED
R = DESIRED VALUE OF CONTROLLED VARIABLES
M = CONTROLLING VARIABLES
D = DISTURBANCES INFLUENCING SYSTEM
F = FORECASTS OF C, D, AND R
S = INFORMATION DESCRIBING SYSTEM STRUCTURE

THE CYBERNETIC PROCESS

FIGURE 1

Due to these difficulties presently associated with formal validation procedures it is not uncommon to apply a pragmatic approach to the problem. The results of simulation runs can be evaluated by unbiased persons who are well acquainted with the situation being modeled. In the case of business firm simulations, management personnel are in an excellent position to perform such an evaluation. A model which passes this first credibility test is then used with guarded caution as an instrument of policy making to further test its usefulness.

III A Macro-dynamic Simulation Model of the Attitude Propagation Process

This section describes in some detail a third basic type of simulation model of the four defined. The model represents in macrodynamic terms certain aspects of the process whereby attitudes are propagated within a population of human beings. It was initially motivated by an interest in the application of simulation methods to the propagation of the Christian faith. The model does not represent a particular real world situation and at a number of points omits factors which may be relevant to particular situations of practical interest. This was done to focus attention on a particular causal or "feedback" (14) mechanism which appears to be a common denominator in processes of this nature and to provide a relatively simple framework within which the methodology employed could be studied.

In what follows, the methodology of the study will be described followed by a non-mathematical description of the model.[5] Tests of the model will be described which will illustrate the characteristics of the model and applications of the simulation method.

A. The Macrodynamic Approach

As discussed, a macroscopic model, instead of simulating each microscopic unit in a system, considers the system to be composed of aggregates of microscopic units. A macrodynamic model then approximately represents, by the interactions of groups or aggregations, the time path of real system variables. Formally stated the macrodynamic approach to simulation proceeds as follows:

1) Definition of aggregates or "sectors" into which system microunits can be rationally placed. The conditions for aggregation being that system microunits:
   a) Be subject to similar external influences.
   b) Exert similar influences upon their environment.
2) Simulation of the aggregate (sector) behavior of microunits.
3) Simulation of the interactions among sectors as approximating the interactions among microunits.

An example will serve to clarify the method. In a recent economic study of the U.S. Plywood industry (10) it was learned that certain firms of the industry (the "microunits") were subject to the same "external influences", market forces and national construction activity in this case, and due to similar organizational structure and technology "exerted similar influences upon their environment" in terms of sales policies, ordering policies, price policies, etc. Such firms which formed more or less homogeneous groups were aggregated into sectors. The entire industry of more than a thousand firms was approximately represented by seven sectors which were simulated along with the interactions that take place among sectors. As a dynamic simulation the model generated time paths of industry variables such as price, aggregate production, orders and inventory levels.

This macrodynamic approach to the study of large scale economic systems is quite common (4, 6, 7, 8, 10) and shows considerable promise in that field. The usefulness of this method when applied to sociological processes has not been thoroughly researched but appears to be worthy of further study.

B. Model Description

The attitude propagation model, as a macroscopic model, assumes that the population under consideration can be divided into the four sub-populations or sectors of Figure 2. The attitude propagation process is then simulated by simulating the four sub-populations and the interactions that occur among them. The simulation model assumes a general population of mature individuals capable of adopting or rejecting the attitude in question (call this attitude "A"). This population is actually the sum of the four sub-populations shown in Figure 2. As is approximately the case in contemporary society, the general population grows exponentially with time in the model.

The four sub-populations in Figure 2 will now be described. As a result of a "birth" process people enter one of the two sub-populations labeled "Potential Believers" or "Non-Believers" in the figure. This "birth" process should be thought of as the process whereby individuals reach a level of maturity necessary to rationally adopt or reject "A". The "Potential Believer" sub-population is an aggregation of all persons who, for cultural and other reasons, are prone to adopt attitude "A" and will adopt it given sufficient exposure. The "Non-Believer" sub-population is conversely an aggregation of individuals who won't adopt "A" under any circumstances. As shown in the figure the only means of exit from the latter named sub-population is death; however, exit from the Potential Believer sub-population may take place by either death or a conversion process which will be discussed later. Converts may go in either of two directions. They may enter a sub-population designated "Non-communicative Believers" or they may enter a maturation process which also will be discussed later. Persons who become "Non-communicative Believers" have adopted "A" but play no part in the process of communicating "A" to the general population. On the other hand, individuals who emerge from the maturation process become part of the "Communicative Believer" sub-population shown in the figure. "Communicative Believers" are active in communicating "A" to the general population and play a role in the conversion process as indicated by the flow of causation in Figure 2. As shown in the figure, death is assumed to be the only means of exit from the latter two sub-populations.

For each sub-population the simulation keeps track of persons entering and leaving and continuously computes the number in each sub-population. This information is used to compute the birth rate, death rate and conversion rate.

The simulation assumes that conversions take place as a result of "proclamations" of "A" by the Communicative Believer sub-population. The proclamation rate

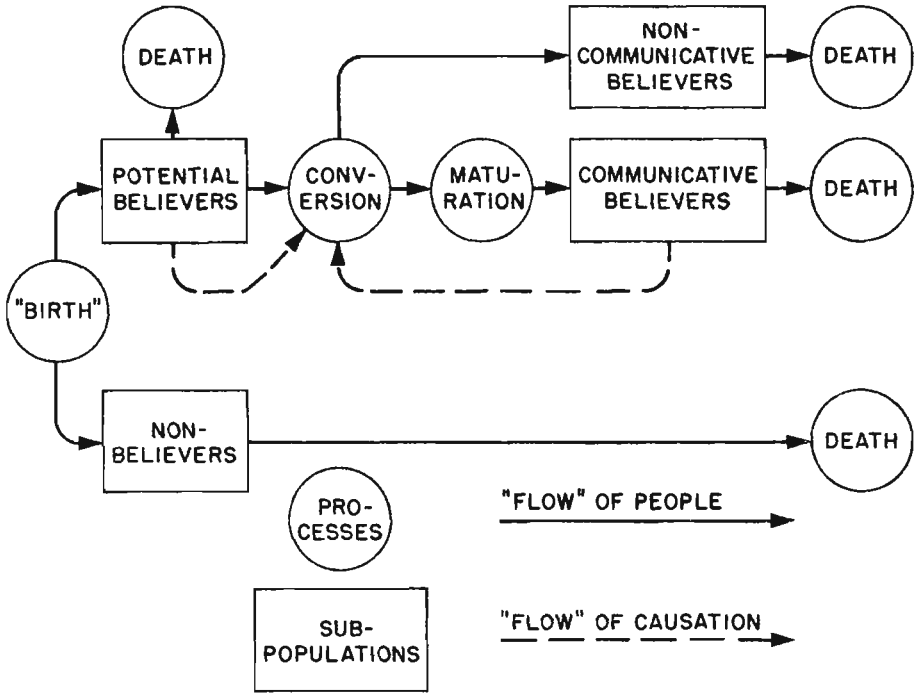
is taken as equal to the number of Communicative Believers times a parameter K8 which determines the average number of proclamations made per unit time by Communicative Believers. (This parameter can be changed from one simulation run to the next and will be seen to have a strong influence upon the behavior of the model). The model assumes that these proclamations are made to the general population at random and hence only a fraction reach Potential Believers. This fraction is seen to be the ratio of the number of potential believers to the number in the total population. The simulation further assumes that only a fraction of Potential Believers receiving proclamations are converted on a given exposure to "A". The above discussion relating to the determination of conversion rate is summarized by the following equation from the computer program for the simulation:

$$RCON(t) = (K8)(NPRC(t))(NRES(t)/NPOP(t))(PERC(t))$$

where:

RCON(t) = Conversion Rate—persons/week
K8 = Number of proclamations per communicative believer per week
NPRC(t) = Number of Communicative Believers
NRES(t) = Number of Potential Believers
NPOP(t) = Number in General Population (all sub-populations combined)
PERC(t) = Probability that a Potential Believer is converted on a given exposure to "A"
t = time

Since "negative" proclamations are not allowed in the model, RCON (t) is always positive and the conversion process is irreversible in simulation runs. The conversion process also includes a time delay which makes it possible to introduce into the simulation any lag that may exist between exposure to "A" and conversion. The simulation accounts for the fact that this delay varies from person to person (12).

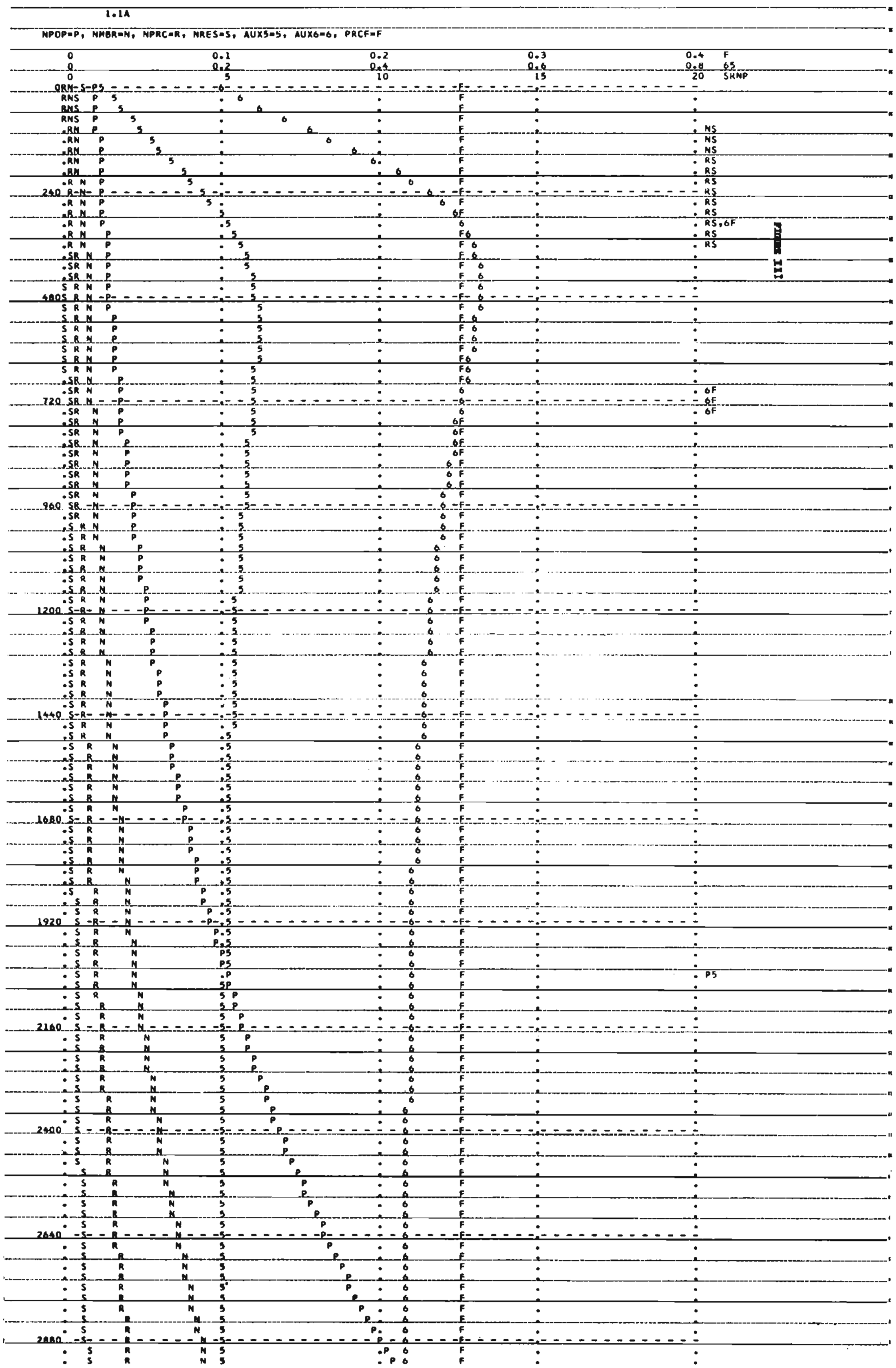


MODEL SUB-POPULATIONS AND PROCESSES
FIGURE II

As included in the simulation, the maturation process is a time lag similar to the conversion lag above. This lag simulates any time delay that may exist between the time of conversion and time the convert becomes active in communicating "A" to the general population. As will be seen from tests of the simulation model, changes in this lag have significant influences upon the behavior of the model variables.

Before describing tests of the simulation model, the basic causal mechanism of the model will be elaborated. As seen from the above discussion a change in the number of Communicative Believers results in a change in the proclamation rate which in turn affects the conversion rate and by means of the maturation process the number of Communicative Believers is reaffected. This is an example of a causal or "feedback" loop. Systems with such loops embedded have rather unique properties and have been studied by many investigators including Truxal (14). This particular causal or feedback loop is readily seen to be explosive ("regenerative" or "positive" in engineering parlance). That is, once started in a particular direction the sys-

FIGURE III



tem variables "snowball" until stopped by physical constraints. In the case at hand this circular causal mechanism tends to make the attitude in question either completely sweep through that part of population which is receptive or to completely die away. This mechanism is ameliorated in the model by other factors but still exerts its influence.

C. Model Tests

Tests of the simulation model will be described which illustrate the influences of changes in the proclamation frequency of Communicative Believers, as determined by the parameter K8 described above, and maturation delay, referred to as DELM in what follows. Before describing the results of particular simulation runs general features of the tests will be briefly discussed.

In all tests, the parameters determining birth rates and death rates are assigned values which result in a general or total population which increases with time as is the case in society today. The initial numbers of persons in each of the sub-populations of Figure (2) at the start of simulation runs were chosen to specify an initial state of model dis-equilibrium. Computer runs, then, specify the time path of model variables as they move toward equilibrium. Specifically initial values were assigned as indicated by Table I:

TABLE I: Initial Values for Model Tests

Sub-Population	*Simulation Program[6] Nomenclature*	*% of Total Population*
Potential Believers	NRES	50
Non-Believers	—	30
Non-Communicative Believers	—	15
Communicative Believers	NPRC	5
Total Population	NPOP	100

The results of a typical simulation run are shown in Figure 3. The scale along the bottom of the graph represents time in weeks with 2880 weeks or approximately 60 years of system behavior represented. The curves represent the time paths of the model variables indicated at the left of the figure along with the vertical scales applicable. For example the graph labeled "P", referring to the total population NPOP, has its initial value of one at time equal to zero weeks and grows to a value of 10 after 2880 weeks have elapsed. The graph labeled "5" refers to the ratio of the number of communicative believers to the number in the total population, NPOP. This variable starts from its initial value of .05 and as the attitude propagation process proceeds reaches a maximum of about .25 at time equal to 550 weeks and gradually settles to an equilibrium value of .2. The graph labeled "6" represents the ratio of the number of *all* believers (communicative and non-communicative) to the number in the total population, NPOP.

Computer run 1.1A of Figure (3) was used as a "standard run" for assessing the impact of changes in proclamation rate (K8) and maturation delay (DELM). The results of a number of computer runs incorporating such changes are given in Table II along with those of standard run 1.1A. The nomenclature of the table is as follows:

K8 = Parameter which determines the average number of proclamations per week per communicative believer
DELM = Average maturation delay—weeks
MAX 5 = Maximum value attained by the ratio of the number of communicative believers to the number in the total population (NPRC/NPOP)
TMAX 5 = Time at which this maximum occurs
MAX 6 = Maximum value attained by the ratio of the number of *all* believers to the number in the total population (NMBR/NPOP)
EQ 5 = Equilibrium value attained by the ratio NPRC/NPOP
EQ 6 = Equilibrium value attained by the ratio NMBR/NPOP

Run 1.1E in Table II indicates the influence upon the model of a decrease by a factor of two in proclamation frequency as determined by K8. This change results in a marked reduction in the number of believers after the process has reached equilibrium (EQ5 and EQ6) and a significant increase in the time required for the process to reach equilibrium (TMAX 5, TMAX 6). Run 1.1F indicates that the converse is true when K8 is increased by a factor of two. Runs 1.1 G and H illustrate respectively the influence of increasing and decreasing the maturation lag by a factor of two. While not as significant as changes in proclamation rate, changes in maturation lag do have a noticeable effect upon the behavior of the model.

The main conclusion to be drawn from these tests is that, under the assumptions of the model; the proclamation rate of Communicative Believers and to a lesser extent the maturation delay are significant in determining the effectiveness of the attitude propagation process described. These results should not be applied to a particular real world situation without carefully examining the special conditions which actually prevail. Many additional factors such as those included in the models of Pool and Abelson (13) and Abelson and Bernstein (1) should also be considered in any attempts to model a real world situation.

IV Concluding Remarks

On the basis of the foregoing, some opinions will be hazarded with respect to the social impact of the techniques described. Firstly, it seems clear that automated cybernation of complex social processes would be, from a technological standpoint, a long time in coming. In the realm of control of complex physical and chemical processes, automated control has proved to be a formidable undertaking and progress has been slower than originally anticipated. There is the possibility however

TABLE II

Run	K8	(WKS) DELM	MAX 5	(WKS) TMAX 5	MAX 6	(WKS) TMAX 6	EQ 5	EQ 6	Remarks
1.1A	.25	100	.245	552	.527	456	.2	.432	"Standard" Run
1.1E	.125	100	.182	1056	.404	888	.168	.363	Decrease in Proclamation Frequency
1.1F	.5	100	.316	336	.604	240	.216	.467	Increase in Proclamation Frequency
1.1G	.25	200	.243	648	.521	480	.184	.427	Increase in Maturation Delay
1.1H	.25	50	.245	504	.532	432	.209	.435	Decrease in Maturation Delay

that developments in the physical realm will speed social applications.

Of more immediate interest, it appears that simulation, by providing the social scientist with a laboratory for controlled experiments, is truly a breakthrough for the social sciences from which greater understanding of social phenomena will result. It appears that effective research in this new area must be interdisciplinary in nature with social science blended with computer science and systems science in an organized approach to problems. Since individuals who are expert in all these areas are quite rare today, it would appear that in many cases a team approach is necessary for work in this field.

Lastly, it appears that these methods hold promise for increased understanding of the interaction of the Christian faith with the remainder of society and that this possibility should be thoroughly explored by Christian scholars.

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1. The word simulation is here taken to mean computer simulation.
2. "Cybernetics" is here taken to mean the general science of control divorced from a particular discipline. Early usage of the word implied interaction of human beings with machines.
3. In this case "R" should be viewed as the actual behavior of the real world and "C" the behavior of the simulation under the same exogenous conditions. The "controller" in Figure (1) is a human being who generates a set of model structure changes "M" such that "C" is acceptably close to "R". While "F" and "D" in Figure (1) do not apply in the case of the theory building process, information "S" concerning model structure is necessary for the investigator to constructively generate structural changes in the theory.
4. This is the "480" of Eugene Burdick's current political novel.
5. A complete mathematical description of the model appears elsewhere (11).
6. The center column contains the notation used in the simulation program to designate certain populations. This notation will appear in subsequent discussion of computer runs.

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FROM THE CONTRIBUTING EDITORS

CHEMISTRY

RUSSELL MAATMAN

In the last decade or decade and a half there has been a radical change in chemistry teaching in this country. The change has been a sharp turn towards increasing the amount of theoretical chemistry taught at both the high school and college levels.

In high school, there has been the adoption in many schools of one of the well-publicized, theory-oriented programs, either the CHEM Study program or the CBA program. Other schools are using texts which have followed the same trend. In college, the texts of twenty years ago have no resemblance to the present ones, and here also the direction of change has been towards a greater emphasis on theory. Furthermore, in a course which has always been primarily theoretical–the physical chemistry course–the *kind* of theory is much more sophisticated than it once was. For example, in a much-used 1966 physical chemistry textbook (and it is assumed that the textbook contents are fair measures of what is taught), 48% of the contents is devoted to quantum chemistry, structure, irreversible processes, and nuclear chemistry. These subjects are clearly more difficult, and perhaps more exotic, than the other subjects covered. By contrast, in a predecessor of this book writen in 1955 by the same authors, 26% is devoted to these more difficult subjects. One more aspect of the change is significant: fifteen years ago physical chemistry was usually *the* senior chemistry course, the capstone course in the student's chemistry program. Today the longer, more difficult course is very often taught at the junior, sometimes even the sophomore, level. There are other, more advanced courses–again with emphasis on theory–for the senior student.

Thus, today's student of high school chemistry is learning the valence bond approach and the meanings of activation energies and oxidation potentials, where a similar student only a few years ago learned the Frasch process, processes to manufacture sulfuric acid, and very many reactions of the elements and their compounds, "descriptive chemistry". At the freshman college level the emphasis is on thermodynamics, equil-

ibria, and structure, instead of the earlier emphasis on descriptive chemistry. Today an elementary organic chemistry course seems not to be worth the name if carbonium ions, nuclear magnetic reasonance, infrared spectrophotometry, etc., do not comprise a major part of the course.

In this sputnik age science education has become more popular. Even so, I suggest that the profound changes cited have not come about primarily because we have been given the go-ahead signal by the public in the matter of intensifying science education. Perhaps something else has occurred: more and more scientists are becoming *actively* aware of the inter-related structure of creation, and this understanding is beginning to affect what we teach.

We always knew in principle that mathematics does not depend upon physics; rather, physics in a very beautiful way depends upon mathematics. We also knew in principle that chemistry depends upon physics, and biology upon chemistry. These recent years which have seen the growth of interest in science are just the years in which the interdependence of physics, chemistry, and biology, in order of increasing complexity, has been developed. An analysis of the situation would very likely show that the turn towards theory in chemistry has really been a turn towards bridging the gap between chemistry and physics. Chemistry has seemed to become more mathematical because mathematics is the basis of physics. Is it not also true that as biology has turned more and more to molecular biology, that there has been a bridging between the less complex science of chemistry with biology? In educational circles it has in recent years been seriously suggested that the conventional science sequence in high school should be reversed: sophomores, juniors and seniors should be given physics, chemistry, and biology in that order, since each of the last two depend upon the one which precedes it. A turn towards theory in one of the sciences appears to be the tendency to explain the phenomena of a science in terms of the next-less-complex science in the hierarchy of complexities.

The structure of creation is the structure God has ordained. If we perceive some of this structure, we know more of the work of God than if we do not perceive the structure. When we discover and develop the concept of the inter-relatedness of the sciences, we testify that our Creator-God is a God of harmony, a God who made an unbelievably beautiful universe. The natural man will of course use the unifying principles of science—whether it is the principles of quantum mechanics between physics and chemistry or the principles of molecular biology between chemistry and biology—to vanquish the god of whom he speaks, the god of the ever-diminishing region of the unknown. Thus we will not learn from the world the basic reason the gaps between the disciplines are being bridged.

It would be something to rejoice about if it could be said that Christians, especially those in Christian colleges, have led the way in bringing to students the idea that science is a structured whole, and the idea that appreciating the very beauty of it all is one way in which we can admire the work of our God. Probably we would have difficulty in showing that Christian high schools and colleges have even kept pace in making the change from the old to the new understanding. It is even less likely that they have both kept pace and that they have taught the deeper philosophical meaning of it all.

Perhaps our Christian scientific community is developing, so that we can be more clear than we have been in explaining to others, especially our students, that science and the creation of which science speaks are not neutral or non-religious. We scientists who are Christians *surely* ought to be among those who despise the false dichotomy between nature and grace. As we become aware of the subtle structure in creation, the facts we teach will not be isolated facts, as they appeared to be in the older, fact-cluttered textbooks. Our students will then see the picture instead of the paint.

BIOLOGY

IRVING W. KNOBLOCH

One of the big stories of 1966 was the total synthesis of an insulin molecule by Chinese biochemists. This has been a long-sought goal.—Putnam and Milstein identified the Bence-Jones protein in patients suffering from a cancer called myeloma.—Bassham and Jensen, although not the first to induce photosynthesis outside the living cell, were able to reproduce the process at a rate not too different from the rate occurring within the cell. As is well known, artificial food-making is one of the answers to the nutrition angle of the population problem.—To the atmosphere in the primitive world must now be added hydrogen cyanide according to Clifford Mathews. He suggested that this gas is as important as methane and ammonia in the formation of life.

Although the eggs of some game birds are laid days apart, they all hatch about the same time. Margaret Vince discovered a faint clicking sound in prehatched eggs which seems to speed up the slower or late forming embryos. Of course, this only makes us wonder how a *sound* could perform this morphogenetic stimulation.—Pearlfish have been introduced into rice paddies of California to help wipe out the DDT-resistant mosquito larvae existant there.

Phytochrome is a molecule in plant cells which regulates germination, growth and flowering in response to day length, using rays in the red and far red end of the spectrum. Dr. S. Hendricks has identified one part of phytochrome, a part called chromophore.

Dr. Fritz Went, one of the American Deans of plant physiology, stated during the year that pine trees and sage bushes, among others, secrete about 10 times more pollutants into the air, in the form of terpenes and esters than man and machine combined. This *may* be true but the strange thing is that pollutants from plants never seem to have posed a problem. In my opinion, we had better concentrate on the man-made pollution for a while at least. In this connection, the following quotations are appropriate.

"The dangers to our civilization are inherent in our handling of a number of questions, the most serious of which is the rapid multiplication of man amid the galloping depletion and deterioration of his natural resources." A. J. Sharp, Plant Science Bulletin 12 (4): 1966.
"With the population explosion, the carcinoma of planless urbanism, + the now geological deposits of sewage and garbage, surely no creature other than man has ever managed to foul his nest in such order." Lynn White, Jr., Science 155: 1203-1207, 1967.

Primates, possibly related to Tarsiers, have been found in the Cretaceous beds of Montana. These animals lived contemporaneous with certain of the *dinosaurs*, a fact which is new to all and disconcerting to a few. Dr. Leakey continued his work in the Olduvai Gorge in east Africa and discovered bones which place man at about 1,750,000 years ago. Although the creation accounts in Genesis 1 and 2 are certainly figurative in parts, yet the direct creation of certain types, at least, has never been ruled out. It always seemed to me that the finding (an almost impossible event) of human remains in the Cambrian or before, would add a great deal to the creditability of special creation.

Dr. Patterson, from Harvard, working in Kenya found a bone which he estimates, by radioactive decay, to be 2,500,000 yrs. old. Thus we now have a Kanapoi hominid in our ancestry (?). This was reported in *Time* in January 1967. In February, in the same magazine, Dr. Leakey again hit the headlines when he reported finding remains of *Kenyapithecus africanus* which roamed the earth roughly 20 million years ago. Not too surprising, this hominid lived concurrently with apes, and so, in this sense is not a missing link.

Many other advances were made in 1966 and early 1967 but the above mentioned stand out in my mind.

"CHRISTIAN" PSYCHOLOGIST?

by LARS I. GRANBERG, *President, Northwestern College of the Reformed Church in America, Orange City, Iowa*

Among theologically conservative Christians seeking help, test number one for counselors, psycho-therapists, psychiatrists and those in other mental health professions is usually phrased, "Is he a *Christian* psychologist (psychiatrist)?"

What is meant by this question? Several exegeses seem legitimate: 1) Does this man profess personal Christian faith and identify himself with the Christian community? 2) Does this man regard his professional activity as a special form of personal evangelism? 3) Has this man "baptized" one of the current theories of personality—or perhaps "resurrected" an older one? 4) Has this person made significant progress toward effecting an intellectually valid, working synthesis between the data and middle axioms of psychology and biblical postulates concerning man and nature?

The first seems in varying measure to assume about a "Christian" psychologist that he will not destroy my faith. Sometimes it seems to mean, "He will take seriously my spiritual commitment. He will understand the motives, values and thought patterns of the Christian." But sometimes this means, "He will not call upon me to examine how I use the Christian faith. He will allow me to persist in the personal immaturities and reality-avoidances which I've managed to make sacrosanct by a heavy coating of pious words."

The second question is rooted in a reductionist theology that assumes the conversion experience to be the agency of total healing. It reduces all human problems to spiritual problems. Undoubtedly a person's life view affects profoundly how he reacts to stress, rooted in physical illness, emotional disturbance or personal relations; and the reaction may itself become a serious disorder. There is a kind of counselor or psychologist however, who inspires confidence in many ministers because his therapeutic efforts consist so largely of personal evangelism—sometimes accompanied by denunciation of psychology and psychiatry. We are glad for the Christian devotion of such counselors, but find it difficult to condsider them professionally serious. The vadid element in this approach seems to be a psychologically sensitized awareness of the personal dimensions of the Gospel. This aspect too often has been obscured by a depersonalizing tendency to expound Biblical teaching as though it consisted mainly of theological abstractions which must be properly systematized. (This is not a slap at systematic theology. Rather it is a contention, based on extensive observation, that when one makes the intellectualizing of biblical teaching the chief end of Bible study he tends to lose sight of the fact that the Bible is a person-centered book concerned with intensely personal issues for which it extends solutions of a personal nature.)

Probably most devoted Christians who deserve to be given serious regard as professionals in one of the mental health professions would best be described by question three. Certainly this has been true of most writers on psychological topics whose work has appeared in this journal. This is a natural outgrowth of the usual pattern of professional training; aggravated, of course, by the inadequate foundation in the liberal arts upon which graduate training forms the superstructure so often in the United States. This means that a graduate student in social work, psychology or psychiatry usually is far less sophisticated philosophically and theologically than he is in his professional field. Moreover, he is bound to have learned well the strengths of the dominant theoretical emphasis at his graduate school and the weaknesses of other theoretical stances. What appears to the critical observer to be a rather facile baptism of, for example, B. F. Skinner, Clark Hull, Sigmund Freud, Carl Rogers, Viktor Frankl or O. H. Mowrer, is more likely a product of the fact that the dominant theory met in one's graduate program provides the most severe challenge to one's Christion view of man and nature. Having met these challenges from a Christian perspective to one's own satisfaction, it is human to regard one's limited but hard won synthesis either as *the Christian synthesis* or to assume that when the Christian synthesis is effected it will have to be along the lines of one's own. Many Christians in

this category base their synthesis on psychoanalysis. Lately existenialist theories have gained in respectability among us. Always a few of our hard-nosed colleagues, for whom "science" means a sophisticated behaviorism, have been drawn toward a form of positivism.

I have implied two things: first, that we have a growing number of Christians who are psychologists (psychiatrists, social workers, counselors); second, that *the term "Christian Psychologist" properly belongs to the person who is described by question four.* If he is also a practitioner, he would need to progress beyond an intellectual synthesis between the data and middle axioms of psychology and biblical teachings on man and nature in that he would be required not only to grasp the implications of this synthesis for a specific human situation but also how to become that kind of person through whom can be channeled the healing potentials in this synthesis for the specific human situation at hand.

TRUTH THROUGH EXCOMMUNICATION?

by LARS I. GRANBERG, *President, Northwestern College of the Reformed Church in America, Orange City, Iowa*

Some months ago in a letter to the editor, a biblical scholar denounced an article that appeared in this journal written by a member of a mental health profession. The focus of his vigorous protest was the strong psychoanalytic flavor of the article. To demolish the article, the writer charged that no Christian could be Freudian in orientation.

Let it be clear that I am not psychoanalytically oriented! In my lectures on personality theory I am hard on what seems to me to be serious weaknesses in Freud's thinking. But I was appalled by this *ex cathedra* excommunication which stated, in effect, if one is a Christian he must abjure all Freudian thinking; if one thinks in a Freudian pattern he can in no way be a Christian unless he repents and repudiates this thought pattern. My first impulse was to ignore this as an intemperate pronouncement made by a good scholar outside his field of special competency. Further thought called to mind that over the years I had heard this in one form or another from other evangelical Christians. Moreover, it troubles me that in a journal established to serve as the voice of evangelical Christians in the sciences we should meet this demolition-by-excommunication response to a fellow Christian's effort to set forth what he regards as a Christian treatment of an issue within his professional discipline.

Usually global repudiation such as this is triggered by Freud's uncomplimentary comments on religion. He spoke of it as the gigantic obsessional neurosis of mankind. He declared that its roots are the wishful hedonism of the infant, especially the desire to escape or gloss over the stern realities of life; hence Freud tended to treat religious beliefs as he would other neurotic defenses. Freud also had ill-considered ideas about Moses, about the origin of monotheism, about religion and culture, and about the function of guilt in the human personality. Since these have been adequately dealth with by Jewish, Roman Catholic and Protestant apologists, we need not review them at this time.

To pounce on Freud's efforts to derive a comprehensive history of culture by extrapolating his clinical insights and therapeutic techniques using these as the basis for absolutely rejecting his work is a mistake. When assessing Freud's contribution we do well to bear in mind that his key insights emerged from the struggle to heal a psychic disorder, hysteria, common in the Western world of his day. If today we think that his insights into personality and his therapeutic procedures are limited rather than universal—better designed to help over-structured monuments to propriety than today's victims of an over-permissive "rearing" and a nihilistic outlook—let us not overlook multitudes, including many evangelical Christians, whose rearing is psychologically more akin to Freud's early patients than it is to the alienated products of overpermissiveness. Among others, Freud's emphasis on anxiety, the defense process, unconscious aspects of personality, the value of a non-judgmental relationship in encouraging a healing self-confrontation, are fundamental to psychotherapy and to the understanding of personality. The greatest tribute to Freud's work is that many of his best insights have been detached from his work and have become so axiomatic that a rising chorus of his critics are convinced they can do without him even as they tacitly assume many of his insights.

What I'm trying to say is that Freud's work is complex. It is not isomorphic. His views on anxiety and defense should not be set aside because we find his dismissal of religious belief for the mature man irritating and untrue. In Freud's condemnation of the religion of escapism and of infantile ease and pleasure he joins the Hebrew prophets and the Apostle Paul—to say nothing of our Lord. One regrets that Freud never learned to distinguish that form of religious faith used to support neurotic defenses and to perpetuate infantilism from the religious faith which provides a springboard to personal maturity. But to ignore him or dismiss him on this account readily encourages one to remain ignorant of the many subtle ways we Christians delude ourselves through self-justification and flight from responsibility.

Let it be conceded that the writer of the offending article may have demonstrated an epistemological naivete. If so, a considered critique which addressed itself to specific errors could have furthered our search for truth. The comment received merely closed the discussion. Perhaps the lasting contribution of the *ex cathedra* letter is to turn us once again to John Milton's *Areopogitica* to consider these words:

> Where there is much desire to learn, there of necessity will be much arguing, much writing, many opinions; for opinion in good men is but knowledge in the making . . . A little generous prudence, a little forebearance of one another, and some grain of charity might win all to join, and unite in one general and brotherly search after truth.

SCIENCE AND THE INFALLIBILITY OF THE BIBLE

GEORGE I. MAVRODES*

Does the Bible provide us with some information which is more reliable than any information which is provided by science? It is often held that the doctrine of Biblical infallibility implies that the answer to this question is "yes." Conservative theologians, however, often restrict the doctrine of infallibility to the autographs of the Biblical books. I argue in this paper that if this limitation is accepted then the answer to the initial question is "no." The reliability of the science of textual criticism places a limit upon the reliability of any information now derivable from the Bible. A corollary is that (if the limitation is accepted) no direct *conflict can arise between a Biblical doctrine and an alleged scientific result. Any conflict must take the form of the Bible* plus *some scientific result against another scientific result.*

Christians who are scientists, and Christians who are interested in scientific results, are often concerned with the relation between such results and the teaching of the Bible. References to the doctrine of Biblical *infallibility* are often introduced into discussions of these relations, and often a contrast is drawn between science and the Bible on just this basis. It is generally taken for granted that scientific results are established with varying degrees of probability or reliability, but that in no case do scientific procedures guarantee infallibility. No scientific result, then, attains the very highest possible degree of reliability. The doctrine of Biblical infallibility, however, is said to guarantee that, upon some subjects, the Bible provides us with a source of information which does attain the highest possible degree of reliability. Since the certainty of this information exceeds that of any possible scientifically achieved result the optimum procedure in case of conflict seems to be fixed. It is said that a person who accepts the doctrine and who also is convinced that some scientific result is incompatible with a Biblical teaching must retain the Biblical teaching and reject the scientific result as being somehow erroneous. Another way of putting this is to say that some questions are closed because we have the Biblical answers to them. Since they are closed *infallibly* no possible scientific evidence could be sufficient to re-open them. And persons who are inclined to re-open them under the pressure of some scientific results are therefore often suspected of having rejected the doctrine of Biblical infallibility. In this paper I want to examine and evaluate the cogency of this line of argument.

I will not, however, cover the whole field of the relations of science and the Bible, nor even all aspects of the doctrine of infallibility. It may be helpful here if I specify further some of the things I will *not* do.

(a) I will not discuss whether the Bible is infallible.

(b) I will not discuss any particular case of real or alleged conflict between science and the Bible.

(c) I will not discuss the problems of hermeneutics, either in general or in particular. Nothing that I say will depend upon the way in which we interpret any part of the Bible.

(d) I will not discuss all the possible ways in which a doctrine of Biblical infallibility might be formulated. I restrict myself here to a consideration of only one such formulation, but it is a very common and influential one.

We may begin by specifying the formulation of the doctrine of infallibility which is to be considered. It is one which asserts that the whole Bible is infallible (and hence without error) *in the original manuscripts.*[1] The phrase I have emphasized is of crucial importance.

Current copies of the Bible have been derived from the original manuscripts by a long process of copying, so that our present written texts are the distant descendants, as it were, of those original manuscripts. In addition, the versions of the Bible which are available to most of us also had to pass through a process of translation from the original Greek or Hebrew into our own language. It is often said that God has exercised a special providence over this process of the transmission and translation of this book from ancient times to the present. It is not, however, generally held that this providence is something of the same sort as the original inspiration which attended the first writing of each Biblical book. In particular, the providence of God is not said to have conferred infallibility upon this process. And in fact it is rather commonly recognized that transmission errors of various sorts have been introduced into the manuscripts which we now possess. The doctrine under consideration, then, does not ascribe infallibility to any currently available copy of the Bible, such as the Revised Standard Version or the Codex Vaticanus. It ascribes this infallibility to the original manuscripts only. This is the only version of the doctrine which I will examine here.[2] In order to keep this restriction before our minds I will refer to it as the doctrine of "A-infallibility."[3]

It is usually claimed, of course, that while our present versions of the Bible are not exact replicas of the original manuscripts, yet they are so close as to be almost identical. The differences between the original text and the ones upon which we now rely are so slight that for almost any practical purpose they can

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be ignored. This claim may well be true, and it is relevant to our discussion. But to see just what its relevance is we must first see what happens if we try to do without it.

Suppose that we now return to the line of argument which we wish to evaluate. When a conflict arises between some Biblical doctrine "D" and some scientific result "S," then this line of argument can be formalized as follows:[4]

P1 The Bible is A-infallible.
P2 Doctrine D is taught in the Bible.
P3 Proposition S has only scientific support.
P4 D and S are incompatible.[5]
C1 Therefore, S is false.

Now, there is a way of interpreting this argument so that it is valid. From P1 and P2 it follows that D is true. From this and P4, along with the logical rule that no two true statements are incompatible, the conclusion follows. P3, in fact, does not need to enter into the deduction. Whatever sort of support S has is irrelevant. If P1, P2, and P4 are true, then S is false. And a person who accepts the premises of this argument will be inconsistent unless he rejects S.

Despite its validity, however, this line of argument has a crucial weak point. And this weakness centers around P2 and its relation to P1. In order for the argument to be valid it is necessary for us to derive "D is true" from P1 and P2. But P1 ascribes infallibility only to the original manuscripts of the Bible. If the derivation is to be valid, therefore, the phrase "the Bible" in P2 must also be taken to refer to the original manuscripts. If it were understood as referring to some copy of the Bible which I might buy in a book store it would have no point of connection with P1, and hence the derivation would be invalid. For P1 refers to original manuscripts only, and not to current copies.

It is, of course, perfectly possible to construe P2 in the required way, i.e., to construe it as a claim about what was contained in the original text of some Biblical book. If it is read in this way, however, a serious question arises about how anyone could now know that a statement of the form of P2 was true. If we understood it as a claim about what was contained in presently available texts we could determine its truth by securing such a text and reading it for ourselves. But P2 is not about such a text but rather about one which is now unavailable. It is about what was written in the original manuscript.

Just at this point, of course, we will no doubt be told that the present text is a reliable indicator of the original text. We cannot now read the autographs, but by reading what we do have we can come as close as makes no matter to knowing just what was in these autographs. So there is a way of coming to know statements like P2 after all.

Now, so far as I know this claim about the correspondence between the autographs and the present versions may very well be true. Since it appears to be essential to the argument let us incorporate it explicitly into the set of premises. We can do so by removing P2 and replacing it with

P2* Doctrine D is taught in some currently available version of the Bible.

We can then add a new premise

P5 That currently available version is an accurate indicator of the content of the original manuscripts of the Bible.

This seems to dissolve the difficulties. From P2* and P5 we can derive P2 (or something like it). And then the argument proceeds validly as before. P5, however, introduces a new problem of its own. Though it may well be true, it is not itself a Biblical doctrine nor a principle of logic. *It is, rather, a scientific result.* It is a conclusion to which many textual scholars have come by applying the methods of their science to the available materials. In saying this I do not mean to disparage it. I only mean to call attention to its nature. It is a human judgment, made upon the basis of available data and presumably in accordance with some principles which specify the way in which such data is to be evaluated. It is fundamentally the same sort of judgment as that made by a physicist, historian, or biologist, though of course both the data and the specific principles of evaluation are different.

When we realize this, however, we will also realize that we can construct another argument which parallels the one which we have been considering.

P1 The Bible is A-infallible.
P2* Doctrine D is taught in some currently available version of the Bible.
P4 D and S are incompatible.
P6 S is true. (This is the contradictory of the previous conclusion.)
C2 Therefore, that currently available version is not an accurate indicator of the content of the original manuscripts of the Bible. (This is the contradictory of P5.)

This argument, like the preceding, uses and depends upon the doctrine of A-infallibility. Each argument includes as a premise a proposition which has only scientific support (but these premises differ in the two arguments). The conclusion of each argument is the negation of some proposition which may have had scientific support (and again these propositions differ in the two arguments). And finally, this new argument is just as valid as the preceding one.

We cannot, therefore, choose between these arguments on the basis of logic. Nor can we choose on the basis of the doctrine of A-infallibility, for they both use this doctrine equally. We cannot choose between them on the basis of their use of scientfic results as premises, since again they make equal use of such results. And yet the arguments are incompatible. Since each one denies a premise used by the other we cannot consistently accept them both.

How then can we make a choice between them?

If we reject P1, P2*, or P4 we will have to reject both arguments, since these premises are common to both of them. If we are to reject one and retain the other, then, we must make a choice between the two remaining premises, P5 and P6. But it is essential to

realize that in doing so we are not choosing for or against the A-infallibility of the Bible. *For both P5 and P6 are purely scientific results*, having whatever measure of fallibility and uncertainty properly attaches to such results.

Another way of putting this point is as follows. If a man accepts the doctrine of A-infallibility *and if he believes that his copy of the Bible accurately reflects the Biblical autographs*, then he has a reason for rejecting a scientifically supported result which is incompatible with what he learns from his Bible. But equally, if he accepts A-infallibility and if he believes some scientifically established proposition, then he has good reason for rejecting the reliability of his copy of the Bible where it is in conflict with that scientfic result. In neither case is it simply the Bible against science. In both cases, rather, it is the autographs *plus one science* against another science. I suppose, therefore, that a person who holds and acts upon the doctrine of A-infallibility will make this choice in accordance with the degree to which he is convinced by these two sciences in any particular case. Whichever one of them has the weaker hold on his belief will lose, and so will the corresponding argument. In neither case is it necessary for him to doubt in any way the doctrine of A-infallibility.

It seems, then, that we are justified in drawing the following conclusions.

(1) It is a mistake to suppose that A-infallibility closes any question in the sense of making available an answer which is impervious to scientific attack. For A-infallibility provides us with no answers at all until it is combined with the results of textual science.

(2) It is a mistake to suppose that A-infallibility implies that we are provided with information which has a higher degree of reliability than any that is provided by science. This would be a mistake even if we limited ourselves to matters of pure theology. *Every* piece of information which we can now obtain in reliance upon the A-infallibility of the Bible depends upon a scientific judgment as to the extent to which our present texts reflect the content of the autographs. A-infallibility does not free us from dependence upon science in any realm at all. It has, rather, just the opposite result. To whatever extent we rely upon A-infallibility we must also rely to that same extent upon a difficult science.[6] If we accept the doctrine of A-infallibility, then, we must expose ourselves, in theology as well as in other matters, to whatever fallibility and uncertainty such a reliance upon science involves.

NOTES

1. Many recent and contemporary theologians explicitly restrict the doctrine of infallibility to the original manuscripts, or else they restrict the doctrine of Biblical inspiration (upon which that of infallibility is generally based) in the same way. See, for example, W. H. Griffith Thomas, "Inspiration," *Bibliotheca Sacra*, Vol. 118, No. 469 (Jan.-March, 1961), p. 43; James M. Gray, "The Inspiration of the Bible," in *The Fundamentals* (Bible Institute of Los Angeles, 1917) Vol. 2, p. 12; J. Gresham Machen, *The Christian Faith in the Modern World* (Wm. B. Eerdmans Publishing Co., 1947. Copyright 1936), pp. 38-39; Archibald Alexander Hodge, *Outlines of Theology* (Wm. B. Eerdmans Publishing Co., 1949. First published 1860), p. 66; Lewis Sperry Chafer, *Systematic Theology* (Dallas Seminary Press, 1947) Vol. I, p. 71; Loraine Boettner, *Studies in Theology* (Wm. B. Eerdmans Publishing Co., 1957), p. 14; Edward J. Young, *Thy Word is Truth* (Wm. B. Eerdmans Publishing Co., 1957), p. 55. Many modern "statements of faith" contain the same sort of restriction.
2. Other versions of the doctrine of infallibility might not, of course, have the same consequences as this one.
3. Where the "A" stands for "autographs."
4. Where "P" refers to premises, and "C" to a conclusion.
5. There are, of course, many cases in which an apparent incompatibility is not genuine. But I am assuming here that we are faced with a true case of incompatibility.
6. Indeed, most of us must reply upon second-hand reports of the results of that science.

LETTER TO THE EDITOR

Teilhard de Chardin

In the September, 1966, issue of the *Journal of the A.S.A.* was reproduced the speech in praise of Teilhard de Chardin given by Professor Robert J. O'Connell, S. J. at the 1965 convention of the A.S.A. The present writer was apparently the first and so far the only person to criticize it. Being invited to comment here, I would like to say the following.

Pierre Teilhard de Chardin was a Roman Catholic priest and a scientist. His fame is the result of his theological and philosophical views rather than from his scientific work. His theological beliefs were so heretical that the Catholic Church forbade him to publish during his lifetime and removed him from his teaching position. However, within ten years of his death Catholic spokesmen were praising him and making statements as, "Teilhard will become the Church's new philosophical system." An expert on the Second Vatican Council predicted that its outcome "will either reflect the Teilhard spirit or it will accomplish nothing of importance."

As a boy Teilhard collected nails and other pieces of metal to worship as idols. Despair overwhelmed him when he discovered that his idols rusted, and he searched for more durable idols. As an adult he confessed that his entire spiritual life seemed to him to be a development of this childhood belief.

The essence of his mature theology is that everything started as inanimate matter at a point which he calls Alpha and all things — all men, animals, and inanimate objects—are converging toward a point which

he calls Omega and which is equivalent to God.

Evolution is the heart of Teilhard's philosophy. He said, "Evolution is the central condition to which all theories, all systems must bow, and which they must satisfy if they are to be thinkable and true. Evolution is the light illuminating all facts, a curve that all lines must follow." In an essay he described Christ as a presence radiating evolution. He concluded, "It gives me great strength to know that the whole effort of evolution is reducible to the justification and development of the love of God."

Teilhard was fond of saying that "a synthesis of the Christian's 'God-up-above' and the Marxist 'God-up-ahead' is the only God whom we can worship today 'in spirit and in truth.'" The Communists have been preparing a translation of Teilhard's philosophy, which is to have a preface by the author of a book called *God is Dead*. Professor O'Connell told the A.S.A. members that "in Europe both Christians and Marxists find his thought the most hopeful thought this century offers between what once seemed their irreducibly opposing views." To the convened members of the A.S.A. Professor O'Connell hailed Teilhard as "the prophet of the 20th century."

It is amazing that an admirer of Teilhard would be invited to speak about him at an A.S.A. convention. It would seem that anyone who had signed the statement of faith of the A.S.A. and who had subscribed to the stated purpose of the organization would not tolerate a speech such as the one which was presented. But apparently *nobody* raised any question at all. The speech may very well have been followed by applause —it would be interesting to know if this was so.

If members of the A.S.A. were questioned about this, the reply most frequently given would no doubt be to the effect that this sort of thing is culturally broadening and it is desirable to learn more about such matters. This sounds good, but when it is presented favorably, some people are brainwashed instead of enlightened.

A person would react quickly if he heard something slanderous said about his family, but it has become fashionable to be "broadminded" about attacks upon Bible-centered Christian faith. This ought not so to be. Bible-believing Christians ought to know that we are engaged in a real warfare which is far from academic. In this warfare the "broadmindedness" is one-sided. The enemy is not broadminded. Let me cite just one example. In the December 5, 1958, issue of *Science* there is an article in which the author earnestly exhorts teachers to scrupulously avoid all telelogical implications in dealing with their classes. He goes so far as to say that the teacher should not say that hydrogen and oxygen combine to form water; he should say that they combine *and* (not *to*) form water, because the word *to* might convey an implication of purpose. This sounds like satire, but he is completely serious. He says that this is not quibbling. Students must not be given any opportunity to think in terms of purpose. He warns against the use of the term *natural law*, because some students might conclude that if there is such a thing as natural law there might be a Law Giver (God), and that would be very undesirable.

Teilhard is used by the enemies of the Christian faith; Teilhard is of no use to the Bible-believing Christian. Bible-believing Christians ought not to let themselves be caught in the pseudo-intellectual rush to board the Teilhard bandwagon. The eternal welfare of souls is at stake.

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BOOK REVIEWS

MARLIN KREIDER, *Editor*

CONTINUITIES IN CULTURAL EVOLUTION, By Margaret Mead. Yale University Press, New Haven, Conn., 1964. 471 pp. $2.95 paper. $8.50 cloth.

This book is a collection of dissimilar ideas strung together under the above title. Although, in general, the book shows little evidence of continuity, some individual chapters are very good. Others express old ideas in a new setting. The book could have been written with less verbiage and more content: with fewer Meadian impressions and more empirical data; and by less of her staff and more of herself.

Certain areas in the book are relevant to the ASA particularly her concept of cultural evolution which concerns man's potential and the manipulation of genes and man's future through scientific change. These areas will be covered in this review.

As the setting of this book, it must be kept in mind that earlier theorists considered people outside of western culture as living proofs of the "fall of man", degenerates, a result of an original sin. Others thought in terms of a Golden Age of man, a perfect society, then a fall. In either view non-western man was living in a state or stage of degeneracy. Many of the words which are in use today, in describing non-western peoples, are remnants and echoes of this past: savage, heathen, barbarian, primitive and even civilized! Man was classified in various steps or stages of evolution

depending upon what material he used as a cultural base – stone, bronze, iron, etc. This older concept of evolution was sufficiently "disproved" by Boas and his "non-evolutionary" view in 1913 and not heard of again until the 1940's when the students of White, Sahlin and Service,[1] revived the older evolutionary concept by removing the bitterness of monolineal evolution with general evolution. It is in this idea of general evolution where Mead's concept of continuities fits. This she describes in detail (Appendix A,) in an essay written jointly with Theodore Schwartz, in 1961 which she introduces as follows: "We were asked to discuss non-evolutionary typology. Considering the non-evolutionary, however, we decided that a typology of whole cultures is either evolutionary or trivial. What might constitute a non-evolutionary classification? It is possible to make classifications of cultures that would not have been considered evolutionary as long as evolution was taken as limited to unilinear or multilinear sequences of progressive stages. Very recently the concept of evolution has become more inclusive to the extent that most of the interests of cultural anthropologists are embraced by this concept. Biological evolutionists such as Huxley and Simpson have long conceived of evolution as encompassing not only general progress and multilinear regularities of sequence but also the divergence of species and other taxa that do not lead to higher grades and that do not parallel the course of other lineages."

The concept of general evolution (in culture), "deals with classes of representative forms arranged in levels according to the criterion of thermodynamic advances with a series of related structural criteria." (p. 328). In the reviewer's opinion this view is: 1) too deterministic, echoing the necessity of stages and steps in the older monolinear model, and 2) it represents a new form of technological monism, that is, the mechanics and measurement of change is material in nature, viz, the atom bomb and moon shots are the highest norms of cultural attainment! One notes that culture change and evolution are not synonomous any more than change and progress are synonomous. We have merely assumed and then learned that they were. How many of us believe it? Neo-evolution in culture does not seem to be new even in its most general form.

Mead goes to some length (chapt. 10) to discuss the problem of man's participation in the evolutionary process or genetic-psychological manipulation. Unfortunately her attitude is completely negative saying, for instance "... that it will be possible by the propagation of the test tube to create a dozen Churchills to fill the needs of a dozen politicians." (p. 237). Her point is well-taken when she states: "Neither from those who dream of gaining power by genetic manipulation, by the manipulation of behavioristic psychology, or by the use of a set of precisely operative drugs ... do we obtain an image of the future that is capable of inspiring the man of today to become an active and responsible participant in the world of tomorrow." (p. 240). It would have been more to her credit if she had included the positive aspects of gene "manipulation" in its use "for the genetic welfare of future generations."[2]

Mead is critical in her attitude of the physical scientists as their work relates to the future of mankind. It is a warning expressed in pessimism; a point of no return: "Having evolved the means of destroying all mankind and not having as yet the mechanism through which a sufficient section of mankind can be saved to insure genetic and cultural continuity, mankind exists today in a state of great precariousness." (p. 242). "Having come so far, can we make the next (cultural) invention in time?" With this note she closes her book. I would add only to this: "Not by might, nor by power, but by my Spirit sayeth the Lord."

1. Sahlin and Service, *Evolution and Culture*, Univ. of Michigan Press, 1960.
2. Anderson. E. "The Control of Man's Genetic Future". Paper read at the ASA meeting, North Park College, Chicago, Ill. August 22, 1966.

Reviewed by *George R. Horner, Head, Department of Anthropology, Sociology and Social Work. Eastern Nazarene College, Quincy, Massachusetts.*

FLAWS IN THE THEORY OF EVOLUTION. by Evan Shute. Craig Press, Nutley, New Jersey, 1961. 286 pp. $3.50 paper.

Dealing with topics including the origin of life, embryology, vestigial organs, blood groups, similarities and interrelationships among living things, distribution, classification, geology, and the origin of man, this book's main thrust appears to be that the evolutionists are beset with problems; therefore a creation position is the more logical. The author stresses that intricacy and interrelationships in nature are problematical for evolutionary interpretation and so they are evidence for creative design. Concluding the book is a creation poem by Vera Jameson, a classification of plants and animals, list of rock strata, glossary, reference list, index of proper names, and subject index. The classification and glossary may be helpful to some readers, but there are significant omissions and errors (e.g. Phylum Annelida and its classes are missing from the classification list, and in the glossary coelenterates wrongly are called sponges).

The author condemns evolutionists without representing them adequately. Such statements as, "This must have the up-to-date evolutionist very confused, I am sure" (p. 83), drastically weaken the authenticity of arguments presented; and this type of statement betrays a lack of understanding of the ways modern evolutionists do handle the data and their problems. A very striking example is the chapter on "Blood Groups" which is deplorably out of date, for the author quotes Dewar who pointed out certain "absurdities" in the data published by Nuttall some 60 years ago. For several decades serologists have known why there are apparent errors in some of Nuttall's results.

Research by men like Alan Boyden and his students have shown that organisms with similar anatomy consistently will show high degrees of serological correspondence.

Most evangelical Christian biologists will agree with Shute's conviction that nature clearly reveals only limited changes among organisms and that there is considerable evidence for creation. Many also welcome literature which lucidly exhibits the hypothetical quality of much in evolutionary doctrine. In dealing with these themes Dr. Shute has performed a valuable service, but the broad coverage of the work seems to have limited its depth in many areas. Dr. Shute, a surgeon, humbly and honestly admits his lack of competence, but in spite of this he wrote the book without enough reference to authorities (including Christians) in the various disciplines. The bibliography is deficient in pertinent literature by Christian men of science such as Klotz, Marsh, and Rusch. The serious student of evolution and those capable of distinguishing the good from the questionable in the book may not feel comfortable with it, and those incapable of such discrimination could be led into acceptance of erroneous facts and concepts. Hopefully on the other hand, the book not only may encourage some readers seriously to question and reevaluate current popular evolutionary ideas but may also reimpress them that nature is the Creator's handiwork.

Reviewed by *Wayne Frair,*
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A CHRISTIAN APPRECIATION OF PHYSICAL SCIENCE by Harry van der Laan. Published by The Association for Reformed Scientific Studies, Hamilton, Ontario, 1966. 63 pp. $1.25 paperback.

The book consists of three lectures delivered at the Study Conferences of the ARSS, Summer of 1966, which are part of an attempt to provide Biblical direction for students in a number of academic disciplines.

In the first lecture, "Background, Roots and Content," Dr. van der Laan states as his objective in his lectures: to search for the Way of Life in the sciences, to discuss contemporary appreciation and interpretation of science, and to challenge the materialistic world-and-life view. He starts by posing and answering three "ultimate" questions: (1) What is the Origin of all things? Jehovah God, through the power of His creative Word; (2) What provides cohesive interrelatedness of all aspects of human experience? The fact that all aspects of reality are bound together in a coherent, modally ordered structure which unfolds itself subject to the Law set by the Creator; (3) What gives meaning to each individual part and the totality of Creation? God's sovereign requirement that we love and serve Him and our fellow man with our whole heart, which is possible only in Christ Jesus the Savior. He then defines culture as part of the created world order, as man's response to his calling, the outcome of his responsible initiative. The "sphere universality" of the natural aspects of creation shows the unity of its order. The possibility of knowledge is founded in God's revelation that we were created, that we are called to disclose this creation, and that we are equipped by God to fulfill this task.

In the second lecture, "Scientific Inquiry, its Philosophical Dependence and its Aims," the author shows the close relation between philosophy and science; the scope of philosophy is the total, coherent experience of the temporal world order. The Christian uses the Bible as his focal point from which to examine critically the interpretation of the fundamental results of science. He shows how Humanism depreciates "integral" knowledge of everyday life, and how it sets up a dualism between the scientifically informed elite and the masses whose experience is largely "bare of meaning." The Christian view is that our full experiential life is the foundation and necessary condition for the acquisition of scientific knowledge. Science is not the tool which gives meaning to everyday experience, but it may enrich that experience, and show new opportunities to the scientist. The aim of scientific inquiry is to gain knowledge of the structural laws of the created world, each of which governs an irreducible functionable mode in man's experiential spectrum.

The third lecture, "A Closer Look at Physics," deals with the mandate that Christians, too, must engage in physical science. They will not arrive at a separate science, but will conflict with the unbeliever in the interpretations of fundamental theories and in the formulation of basic working hypotheses. In science the antithesis shows up in subtle assumptions, bold extrapolations, unwarranted priorities, and comprehensive conclusions. There is no part of science that is not related to the scientist's faith, and interpretation of his work is unavoidable. Our knowledge is incomplete, fragmentary, and not free from error, but it is rooted in the creation order which guarantees the meaningful coherence of our integral experience, and thus also forms the foundation for our scholarly work. In experiments the psychic and analytic functions of man come to the fore, but they remain aspects of the total structure and are always directed by the heart, which must be committed to Christ the Lord.

This book, as a Christian, scholarly approach to the natural sciences, well deserves reading and studying, and may be used as a stepping stone to a more articulately Christian participation in the natural sciences and to a clearer definition of the Christian's work in these disciplines. We may well take up the author's challenge to the world-wide community of Christian scholars to work and build together in the confident expectation of the regime of Him who even now sustains the universe by His Word of power.

Reviewed by *Aaldert Mennega,*
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BEHIND THE DIM UNKNOWN. Edited by J. C. Monsma. Putnam's Sons, N. Y. 1966. 256 pp. $4.95.

Twenty-six scientists unite to demonstrate in separate chapters the greatness of the God of creation by presenting some of the unsolved problems in their respective fields of science. The fact that these problems have not yielded to to the concerted efforts of intelligent men suggests, they say, that a still greater intelligence than that of man must have designed and created a world so complex. Several of these authors are members of the ASA and represent diverse disciplines of science.

In addition to the stated goal of focusing on the greatness of God this book reveals that scientists are not necessarily athiestic; that in fact, there are some scientists of strong religious faith, which they hold as not inconsistent with good science – a fact that needs to be constantly restated to the world.

The authors stayed surprisingly well on the subject except in a few cases where they could not resist the temptation to carry the torch for the creationist viewpoint or for the literal interpretation of Genesis. Also in one or two cases the dangerous suggestion was made that there must have been an intelligent God at work in a certain phenomenon because there was no other explanation – as if God would no longer be responsible for it if a physical explanation were to be found. But, in general, clear, rational presentations of unsolved problems were made which were followed in most, if not all, cases by statements of personal belief that this God of intelligence is also the God of providence of the Holy Bible.

These conclusions of the authors as well as the statements of the editor in the introduction concerning divine control of eschatological events were derived basically from the claims of the Bible and not from any rational proof or evidence from science. While these claims are not necessarily inconsistent with science it does mean that at this point the book is not completely a scientific work as was claimed in the cover description. It would further appear that the goal of the editor has been enlarged from a presentation of the greatness of God as stated inside the book jacket to include an identification of this God as the God of providence of the Bible. In fact, the reviewer got the impression that the editor would have welcomed a distinct statement from the scientific world to the effect that science proves or suggests that this great intelligence is also the God of the Bible. This science cannot do.

While the reader is presented with evidence for the greatness of this God of intelligence he is not presented here with any of the self disclosures of God from the Bible or with any rational constructs that would link the God of the Bible and the God of intelligence, but he is asked to accept this relationship in one gulp. No evidence was presented to show that this God of intelligence is any more the God of the Bible than the God of Islam.

This book will do little to persuade one with a philosophical bent but it should be effective in reinforcing the faith of Christians or those with Christian backgrounds. These chapters are short, easy to read and enjoyable and should be profitable to young and old and to layman as well as to the scientist who may be interested in learning of problems in other fields of science.

Reviewed by *Marlin B. Kreider. Research Physiologist, U.S. Army Research Institute of Environmental Medicine, Natick, Mass.*

Books Suggested for Future Review

CONFLICTING IMAGES OF MAN. Edited by W. Nickolls, The Seabury Press, N. Y. 1966. $4.95. A symposium on what it means to be a human being in our times.

BIOLOGY AND PERSONALITY: A SYMPOSIUM. Edited by I. Ramsey. Blackwell. 1965. 30s. net. Deals with the molecular basis of personality, differences between animal and man, and the role of genetics and of surgery in changing personality.

BEHAVIOR AND EVOLUTION. Edited by A. Roe and G. G. Simpson. Yale Press. $10.00.

THE CONTROL OF HUMAN HEREDITY AND EVOLUTION. Edited by T. M. Sonneborn. Macmillan. 1965. $1.95 paperback.

RACE, EVOLUTION AND MANKIND by R. L. Lehrman. Basic Books, Inc. Pub. N. Y. 1966. $5.95. The author explains Charles Darwin's classification system with particular emphasis on the meaning and implications of evolution to races of men. He gives an explanation of the difference between a species and a race, of the racial structure of the human species and how it came to be what it is, of racial variation, of the process and mechanism of evolution, of the modern studies of population genetics, and of the effects of heredity on personality. He states that we are now creating the conditions for further evolutionary change through overeating, urbanization and the use of artificial lighting and heating.

FAITH AND THE PHYSICAL WORLD: A COMPREHENSIVE VIEW by D. L. Dye. Eerdman Pub. Co., Grand Rapids, Mich. 1966. 214 pp. $2.95 paperback. The view is expressed that faith and the facts of the physical world do not conflict. Written for students and intelligent laymen.

Science and the Citizen

Control of pollution has become a problem of such urgency, according to a committee of the National Academy of Sciences, that "large-scale experiments" are justified to deal with it. "Our whole economy," the Committee on pollution said, "is based on taking natural resources, converting them into things that are consumer products, selling them to the consumer and then forgetting about them." . . . Disposal is based on throwing things away, but "as the earth becomes more crowded there is no longer an 'away,'" because "one person's trash basket is another's living space." —*Scientific American* – as published in HIS, October, 1966.

THE AMERICAN SCIENTIFIC AFFILIATION was organized in 1941 to investigate the philosophy of findings of science as they are related to Christianity and the Bible and to disseminate the results of such studies.

FELLOWS have a doctoral degree or its equivalent in experience in a biological, physical, or social science and have been elected from among the members.

MEMBERS have at least a baccalaureate degree in science and are currently active in some field of science (broadly defined to include mathematics, philosophy of science, history, engineering, and medicine). Others with an interest in the objectives of the ASA may become ASSOCIATES.

THE FOLLOWING STATEMENT OF FAITH is accepted by members: The Holy Scriptures are the inspired Word of God, the only unerring guide of faith and conduct. Jesus Christ is the Son of God and through His atonement is the one and only Mediator between God and man.

PUBLICATIONS include the ASA *News* (sent to members four to six times each year); two symposia: *Modern Science and Christian Faith,* 1950, edited by F. Alton Everest, and *Evolution and Christian Thought Today,* 1960, edited by Russell L. Mixter; and three monographs: *Creation and Evolution, The Eye as an Optical Instrument,* and *Christian Theism and The Empirical Sciences.*

SECTIONS have been organized to hold meetings and provide an interchange of ideas at the regional level. Information may be obtained from the persons listed below or from the national office.

CENTRAL PENNSYLVANIA — Daniel R. Eastman, Lemont, Penna.

CHICAGO — Robert A. Vander Vennen, 11531 Neenah Avenue, Worth, Ill. 60482

INDIANA — Donald Porter, Taylor University, Upland, Ind.

NEW ENGLAND — J. M. Osepchuk, Deacon Haynes Hoad, Concord, Mass.

NEW YORK CITY AREA — Wells Spencer, 24 South Terrace, Short Hills, New Jersey 07078

NORTH CENTRAL — K. M. Van Vliet, Electrical Engineering, U. of Minnesota, Minneapolis, Minn. 55414

OREGON — Frederick T. Lindstrom, 2951 Hayes St., Corvallis, Oregon 97330

SAN FRANCISCO BAY — Kenneth Lincoln, 2016 Stockbridge, Redwood City, Calif.

SOUTHERN CALIFORNIA — C. Eugene Walker, Westmont College, 955 La Paz Rd., Santa Barbara, Calif. 93103

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