Changing Images of Man

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THE CENTER FOR THE STUDY OF
SOCIAL POLICY/SRI INTERNATIONAL:
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PERGAMON PRESS

OXFORD · NEW YORK · TORONTO · SYDNEY · PARIS · FRANKFURT

U.K.	Pergamon Press Ltd., Headington Hill Hall, Oxford OX3 0BW, England
U.S.A.	Pergamon Press Inc., Maxwell House, Fairview Park, Elmsford, New York 10523, U.S.A.
CANADA	Pergamon Press Canada Ltd., Suite 104, 150 Consumers Road, Willowdale, Ontario M2J 1P9, Canada
AUSTRALIA	Pergamon Press (Aust.) Pty. Ltd., P.O. Box 544, Potts Point, N.S.W. 2011, Australia
FRANCE	Pergamon Press SARL, 24 rue des Ecoles, 75240 Paris, Cedex 05, France
FEDERAL REPUBLIC OF GERMANY	Pergamon Press GmbH, 6242 Kronberg-Taunus, Hammerweg 6, Federal Republic of Germany

First edition 1982

British Library Cataloguing in Publication Data
Changing images of man. – (Systems science and world order library). – (Pergamon international library).
1. Civilization, Modern – 1950–
2. Civilization, Occidental
I. Markley, O W II. Series
309.1'181'2 CB245 80-49943

ISBN 0-08-024314-2 Hard cover
ISBN 0-08-024313-4 Flexicover

Printed in Great Britain by A. Wheaton & Co. Ltd., Exeter

I do not wish to seem overdramatic but I can only conclude from the information that is available to me as Secretary-General that the Members of the United Nations have perhaps ten years left in which to subordinate their ancient quarrels and launch a global partnership to curb the arms race, to improve the human environment, to defuse the population explosion, and to supply the required momentum to development efforts. If such a global partnership is not forged within the next decade, then I very much fear that the problems I have mentioned will have reached such staggering proportions that they will be beyond our capacity to control.

U Thant (1969)

Awareness of ideal values is the first step in the conscious creation of images of the future and therefore the creation of culture, for a value is by definition that which guides toward a "valued" future ..... Any student of the rise and fall of cultures cannot fail to be impressed by the role in this historical succession by the image of the future. The rise and fall of images of the future precedes or accompanies the rise and fall of cultures .... In the end, the future may well be decided by the image which carries the greatest spiritual power.

Fred Polak (1973)

Much advance, both in biological evolution and in psychosocial evolution, including advance in science, is of course obtained by adding minute particulars, but at intervals something like crystalization from a supersaturated solution occurs, as when science arrives at an entirely new concept, which then unifies an enormous amount of factual data and ideas, as with Newton or Darwin. Major advances occur in a series of large steps, from one form of organization to another. In our psychosocial evolution I believe we are now in a position to make a new major advance.

Sir Julian Huxley (1968)

Acknowledgements

This study was administered by the Urban and Social Systems Division of Stanford Research Institute, Harvey L. Dixon, Executive Director. Willis W. Harman, Director of the Center for the Study of Social Policy, provided overall guidance and O. W. Markley was Project Director.

An Advisory Panel to the project, which contributed especially helpful formative suggestions and constructive critiques, consisted of René Dubos, Henry Margenau, Margaret Mead, and Geoffrey Vickers. Similarly helpful advice was given by Kent Collins and Winston Franklin of the Charles F. Kettering Foundation.

The core research staff for the study were Duane Elgin, Willis Harman, Arthur Hastings, O. W. Markley, Dorothy McKinney, and Brendan O'Regan. Major contributions were made by Joseph Campbell and Floyd Matson, and less extensive ones by Magoroh Maruyama, Donald Michael, Leslie Schneider, Barbara Pillsbury, and John Platt. The report was edited by Susan Taylor and Shirley Manning. Numerous key insights, acknowledged in the text, came from investigators at other centers. Although the project was essentially a team effort with various individuals contributing to all chapters of the report, specific chapters were principally written as follows: Chapter 2—O. W. Markley, based on contributions from Joseph Campbell, Arthur Hastings and Floyd Matson; Chapter 3—Duane Elgin; Chapter 4—Brendan O'Regan; Chapter 5—O. W. Markley and Willis Harman; Chapter 6—O. W. Markley; Chapter 7—Duane Elgin; Chapter 8—Willis Harman.

Acknowledgment is gratefully given to the late John McHale (1970) for calling attention early on to the importance of the "image of man" as an area requiring study. His insights, combined with those our staff developed during an earlier study ("Contemporary Societal Problems," also funded by the Charles F. Kettering Foundation), led to the present study being undertaken.

A draft of this report was reviewed by selected experts to whom we are very grateful. They are listed on page xv. Final editorial responsibility, however, rests with the SRI staff; therefore no approval of the report by either the Advisory Panel or the other reviewers is implied beyond their statements which are contained herein.

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* Institutional affiliations of Reviewers are as of 1973, many of which have now changed.
† Member of the Advisory Panel.
Selected comments of Reviewers are included as footnotes and appendices to the text which follows.

Introduction to the Pergamon Edition

Changing Images of Man is an unusual work, one that enthuses some, displeases others, and leaves few neutral.

It was undertaken for a specific purpose: to chart, insofar as possible, what changes in the conceptual premises underlying Western society would lead to a desirable future. Obviously a research objective containing many value-laden assumptions!

Thus it is perhaps not surprising that a number of questions about the background of this study have been asked by students in classes at the dozen or so colleges and universities that have used *Changing Images of Man* as a text.

The most common questions concern the study's origins. Why was it undertaken? Who supported it? What kinds of researchers wrote it? Additionally, most have wanted to know how it is viewed now, some 7 years later, by the researchers who wrote it. And what it may have led to by way of social change.

The purpose of this introduction to the Pergamon edition is to answer some of these questions.

In 1968 the U.S. Office of Education launched two research centers in an ambitious undertaking to "investigate alternative future possibilities for the society and their implications for educational policy." One of these Educational Policy Research Centers, or EPRCs as they were called, was established at Syracuse University, the other at SRI International (then known as the Stanford Research Institute). The SRI center, after assessing available methodologies, chose to develop a totally new approach. First, we attempted to identify and assess the plausibility of a truly vast number of future possibilities for society. We next followed a method of analysis that determined which sequences of possible futures (that is, which "alternate future histories") appeared to be most plausible in light of human history and to most usefully serve the needs of policy research and development. Lastly, we derived a variety of policy implications, some of which dealt with how best to continue this type of inquiry (Harman, Markley, and Rhyne, 1973; Rhyne, 1974).

From this exercise a surprising—and very sobering—conclusion emerged. Of some fifty highly plausible future histories, only a handful were by usual standards at all desirable (Harman, 1969). The reasons why this was so are now, a decade later, familar to serious students of

the future. (They involve the interconnected issues and problems of population growth, resource depletion, pollution, and so forth, variously termed "the world macro-problem," "le problématique," or "the crises of crises.") Other investigators soon came to similar conclusions using different methodological approaches (see, for example, Meadows *et al.*, 1972; or Salk, 1973).

In the research on the "world macro-problem" that followed, a second sobering conclusion emerged: that an essential requirement for realizing any of the more desirable alternative future paths would likely require fundamental changes in the way our industrial culture is organized. Laws, attitudes, ethics—even the very way we conceptualize the nature of humankind—may require reform if they are to "fit with" and appropriately guide the complex interrelated political and social systems that have come to dominate modern life (Markley, Curry and Rink, 1971). As the inimitable Pogo said in the comics, "We have met the enemy and he is us!"

Finding it difficult to apply the implications of findings such as these, the Office of Education in 1972 shifted the mission of the EPRCs toward inquiry into educational-policy problems having more immediate concern to them, such as on education for the disadvantaged, competency-based teacher education and so forth. In order to continue the long-range implications of the line of inquiry we had begun, we created a second research activity at SRI—the Center for the Study of Social Policy.

In choosing the research agenda of the new center, we reasoned that the job of alerting society to the world macro-problem ahead was well underway. The policy-research task that now (in 1972) seemed most in need of doing (although perhaps least susceptible to conventional research methods) was the development of a plausible vision of the future in which democratic methods survive, major problems are managed successfully if not resolved, and the unfolding of the human potential continues to expand. In other words, the postulation of a "desirable future" including feasible paths to its realization—the world macro-problem notwithstanding.

About this same time the Charles F. Kettering Foundation was looking for "high leverage" ideas—possibly risky approaches to social policy research and development in which a relatively small amount of support might, if successful, lead to a beneficial effect on society that is relatively large. In discussion with Winston O. Franklin and Kent Collins at Kettering about the implications of a study they had earlier commissioned us to do on contemporary societal problems, we considered a variety of ways in which further research on desirable future paths involving transformation of fundamental cultural characteristics

might be usefully done. Although it was tempting, we decided that it would be premature to immediately attempt analysis and description of the "transformed future" we had by this time come to believe was urgently needing to be envisioned. Rather it seemed a more appropriate task to assess insofar as feasible, the conceptual foundations of thinking and doing that might support a benign transition to such a future, choosing as our research focus to concentrate on "images of nature of man in relationship with the universe;" how past images have led to our present industrialized society with its crisis-level problems; and what types of images appear to be needed as we move into a post-industrial future. The rest of the rationale underlying the study is set forth in the "Introduction to the SRI Report" that follows.

The research study leading to this book was done by a multidisciplinary team, most of whom had not worked together before, in about 8 months. The researchers came from a variety of backgrounds ranging from the humanities and social sciences to engineering and physics. Most had proficiency in at least two specialized disciplines as well as having a generalist orientation—a definite advantage in an interdisciplinary inquiry such as this—and all brought with them a deep appreciation for the profound ways in which myths and images affect the perceptions and actions of humankind in the universe where we now find ourselves.

From the outset, all of us involved in the project realized that the subject of our inquiry—the societal consequences of changing images of humankind—was a sensitive one; further, that no study of this type would seem adequate, certainly not one done in the short time we had available, and that it would not be possible to cover all the topics and points of view that we would like. Nevertheless, we agreed that due to the subject-matter involved, we should follow where the inquiry led, even if it meant getting into areas that are unconventional, allowing feedback from our advisory panel and from other reviewers to serve as a check on our results.

As to how its authors now view *Changing Images of Man* and as to what the study has led, several generalizations will have to suffice. Although the authors are still in fundamental agreement with what we wrote almost a decade ago, there are several ways in that in retrospect we would like to have done it differently. One change would be to present our analysis and findings in a more objective way. Although we continue to believe that inquiries of this sort should avoid the appearance of "value neutrality," much of the study has a certain tone of preaching that although representative of the earnestness in which the research was undertaken, we now find less than desirable in a research report. Another change would have been to explore more

deeply the enormous significance that emerging changes in psychosexual norms and premises have for the future society.

It is difficult—perhaps even inappropriate—to assess the direct impact that the research report *Changing Images of Man* may have had on society. One reason is that the study was not published promptly, hence it did not enter the standard bibliographic reference systems that can be used for such assessments. (Interestingly, until Ervin Laszlo and Pergamon Press initiated their *Explorations of World Order* Series, the study was judged unsuitable for commercial publication because it did not fall into any of the marketing categories that publishers conventionally use.) A second, and more significant, obstacle to assessing the impact of the book stems from an increasing recognition since it was first released—that the emerging transformation of society seems to be proceeding by way of a diffuse network of interrelated influences, no one of which seeks to be a "central project" (see, for example, the article "The Basic Paradigm of a Future Socio-cultural System" by Virginia Hine included here as Appendix F). Certainly many of the ideas contained in *Changing Images of Man* are being debated and extended in a variety of settings throughout the society. Two recent books, *New Age Politics* (Satin, 1978) and the *Aquarian Conspiracy* (Ferguson, 1980), describe much of this activity from a proponent's point of view.

With very few changes, the Pergamon edition is essentially the same as *Changing Images of Man,* Research Report No. 4, issued May 1974 by the Center for the Study of Social Policy, SRI International. For those who want to compare the Pergamon edition with the SRI report, specific changes (other than minor editing) are (1) the reordering of materials in Chapter 1, adding back in a section on the role of myth in society by Joseph Campbell that was contained in the original draft but not in the final version of the report; (2) the modification of Chapter 2, page 23 to reflect Sir Geoffrey Vickers' comments regarding the Christian Image of Mankind as a brotherhood, members one of another; (3) the addition of a short section in Chapter 2, page 30 in response to Carl Rogers' urging that the contribution of humanistic psychology be acknowledged as having positive characteristics needed by the future image of mankind, and finally (4) the addition of a cartoon at the end of each chapter.

The glossary and the index are also additions of the Pergamon report.

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Introduction to the SRI Report

How does one study *a priori* conceptions which, by definition, are fundamental to and lie beyond the rules of inquiry of any particular discipline? There is a principle that is made explicit in Gestalt psychology which states that "without contrast, there can be no perception; without perceived similarity, there can be no common meaning."

In this study we attempt to discern fundamental and usually unrecognized influences on our societal problems, on our social policies, and on our hopes for the future. Since our aim is to break out of set patterns of thinking (and hence recognize useful *new* ways of thinking and imaging), we have not attempted to follow the research methods associated with any particular academic or applied methodology. Rather we have tried to follow the course of inquiry wherever it would lead—within definite limitation of time, resources, and the nature of conclusions which were required of the study—contrasting different conceptions held at different times in different places, recognizing patterns and similarities between divergent modes of thought, and seeking creative syntheses wherever possible.

The approach used in this study is perhaps best described by the anthropologist Levi-Strauss's term "bricolage:"

> This is a work for which we have no proper English equivalent. The "bricoleur" is a do-it-yourself man, who draws on a stock of miscellaneous materials and whatever tools come to hand to do his odd jobs. He is not the meticulous craftsman who insists on the precise tool for the precise job.
>
> (Dorothy Emmet, 1969, p. 47)

In Levi-Strauss' conception, bricolage thinking conveys a message, but the message is not so much the conclusion of a story (though a story, as with myths, is generally being told); rather bricolage thinking is primarily to exhibit relationships which are important to recognize, although it is necessary to make recourse to the level of metaphor in order to do so.*

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* "I find the bricolage approach very useful . . . necessary to get out of the mode-lock our thinking usually falls within. However it seems to me that your report is more analogical than metaphorical, seeking (and finding) useful isomorphic relationships between diverse areas of knowledge which somehow need to be brought together—although, as you suggest, the task in its initial stages cannot be very precise."—Luther Gerlach

Images and fundamental conceptions of human nature and potentialities can have enormous power in shaping the values and actions in a society. We have attempted in this study to:

1. Illuminate ways our present society, its citizens, and institutions have been shaped by the underlying myths and images of the past and present.
2. Explore the deficiencies of currently held images of humankind and to identify needed characteristics of future images.
3. Identify high-leverage activities that could facilitate the emergence of new images and new policy approaches to the resolution of key problems in society.

In seeking to fulfill the above three objectives within the practical constraints of the study, we chose to focus on the challenges and opportunities facing Western man, and particularly American man. While we tried to view the American situation in a planetary context, it was not possible to deal adequately with the very different situations facing different peoples of the modern world. Also we had to omit a number of important and relevant topics. Most notable are modern art, literature, theology, and mass movements as activities which will continue to influence strongly the image human beings hold of themselves and their world.* We have instead chosen to focus on those aspects most involved in the rise and potential transformation of *industrialism* as the dominant way of life in modern Western culture. In particular we focus on the limitations of current economics and science, and on the potential that an integrative and evolutionary image of man might have to reunite what C. P. Snow termed "the two cultures" (the sciences and the humanities) in order to forge a more appropriate policy paradigm for our society.

In addition to the three main goals above, this project is also a somewhat informal experiment in "network development," the purpose of which is to demonstrate the relevance and interrelatedness of conclusions reached by workers in different areas of specialized research vis-à-vis these goals; and also to foster an increase in interdisciplinary communication between these workers, agency staffs which support such research, and other members of the public.

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* "The only thing I miss in the document is a recognition of the possible role of the arts, not simply as agents 'depicting a positive future,' but as openers of the way to delight and a sense of fulfillment, not in some future, but now. I don't recall that we ever talked about the arts except in terms of the *history* of art. Their role in the enrichment and harmonization of life, and the part that they might play, in this role in the enrichment and harmonization of life, and the part that they might play, in this role, in the structuring of any future civilization, is a topic, I think, that could be given consideration."—Joseph Campbell

In retrospect, we also overlooked the enormous implications that the modern feminist movement has for a new, and hopefully less sexist image of humankind.

Thus, as noted in the Acknowledgments, a discussion draft of this report was circulated to a wide variety of learned and expert persons for their critique *and* original contributions. Their briefer comments are presented in footnotes throughout the report, and several, more inclusive statements are presented in the appendices. In general, comments of praise from such reviewers are not presented in this report unless they happen to balance related, but less happy remarks.

ORGANIZATION OF THIS STUDY

In Chapter 1 we survey the role of images in contemporary society. Any image of humankind implies normative values and goals, which are turned by the society into operating rules for social policies. This "conversion" is illustrated throughout Chapter 2 which is a selective historical survey of images and societies that have particular relevance to the current and possible future images held by our society.

Chapter 3 then explores in detail the development of "economic man," an image that has prevailed throughout the industrial era but now must be questioned in terms of its inadequacies for a society passing beyond that era.

In Chapter 4, our particular concern is with the conceptual-empirical input from scientific research and its influence on our images of humankind. At various times in history, man's image of himself was shaped by mythology, philosophy, and religion. In our contemporary culture, science has added a dominant formative contribution to our conception of the nature of the human being—through biology and life sciences, physics, psychology, brain research, evolutionary theory, and the growing investigation of consciousness states and parapsychological phenomena.*

The heart of the study is to be found in Chapter 5—"Characteristics of an Adequate Image of Humankind." Whether these characteristics prove to be attractive or as adequate as we believe them to be and whether they (or others like them) emerge in our culture remains to be seen. At this time, we can only explore the feasibility (Chapter 6) of the integrative, evolutionary image of humankind that we postulate as an adequate image.

In Chapter 7, we explore some of the possible methods, stresses, and consequences of changing images as our society moves into the post-

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* René Dubos does not agree that the images of man have been profoundly influenced by science. See his comment in Appendix D.

industrial era. This chapter concludes that:

> We can either involve ourselves in the recreative self- and societal-discovery of an image of humankind appropriate for our future, with attendant societal and personal consequences, or we can choose not to make any choice, and, instead, adapt to whatever fate, and the choices of others, bring along.

Finally, in Chapter 8, we attempt to derive guidelines for action by foundations, corporations, government agencies, and voluntary associations. These guidelines are predicated on the desirability of the transformation defined in preceding portions of the report, which involves both the dominant image of man in the society, and major social institutions.

Appendices present longer comments from reviewers and more specific project suggestions.

CHAPTER 1

Images of Man in a Changing Society

> Man is a symbol-forming organism. He has constant need of a meaningful inner formulation of self and world in which his own actions, and even his impulses, have some kind of "fit" with the "outside" as he perceives it.
>
> Robert Jay Lifton, in *The Development and Acquisition of Values* (1968)

> Symbolic thinking is not the exclusive privilege of the child, of the poet or of the unbalanced mind; it is consubstantial with human existence, it comes before language and discursive reason. The symbol reveals certain aspects of reality—the deepest aspects—which defy any other means of knowledge. Images, symbols, and myths are not irresponsible creations of the psyche; they respond to a need and fulfill a function, that of bringing to light the most hidden modalities of being. Consequently, the study of them enables us to reach a better understanding of man.
>
> Mircea Eliade, in *Myths and Symbols* (1952)

IMAGES AND SOCIAL POLICY

In this study we attempt to identify and assess the "images of man" that are fundamental organizing principles of (1) our society and/or (2) of key civilizations that have contributed to it. All public and private policy decisions necessarily embody some view (or compromise of views) about the nature of man, society, and universe. The kinds of educational systems and goals a society sets up, the ways in which it approaches the problems of material distribution (poverty and wealth), how it treats the welfare of its citizens, the priorities it gives to various human needs—all these aspects and many more are affected by the image of humankind that dominates the society. Precisely *how* we cannot say with detailed accuracy—which is why metaphors, myths, allegories, theories (all of which attempt to express an image) are useful. But in a very real way, all policy issues *are* issues relating to fundamental assumptions about the nature of man and his concerns:*

* "All policy issues are also issues relating to fundamental assumptions about the nature of man's institutions and how they interact with man."—Michael Marien

- If we see ourselves as separate from or superior to nature, then an exploitation ethic can be fostered more easily.
- If we see ourselves as a part of or one with nature, then an ecological ethic can be fostered more easily.
- If we view human beings (e.g. in medicine, employment, architecture) as animated machines of physical parts, then non-physical aspects of our existence are likely to be ignored.
- If we view humans as solely spiritual rather than physical beings, then material aspects of our existence are likely to be ignored, e.g. in public health, employment opportunities, housing.
- If human nature is seen as complete and fixed, then our task is to adapt ourselves and our institutions to enhance that development.

A WORKING DEFINITION OF "IMAGE OF MAN"*

We use "image of man" (or of humankind-in-the-universe) to refer to *the set of assumptions held about the human being's origin, nature, abilities and characteristics, relationships with others, and place in the universe.* A coherent image might be held by any individual or group, a political system, a church, or a civilization. It would consist of beliefs as to whether we are basically good or evil, whether our will is free or is determined by external forces, whether we are cooperative or competitive, whether we are essentially equal, and so on. It includes both what man (woman) "is" and what he (she) "ought to be."† Most societies have a reasonably coherent image of what it means to be "human," defining, for example, the ideal social nature of a person. But different societies may assume exactly opposite social characteristics. Hopi culture, for instance, sees people as ideally cooperative while "mainstream" American culture usually sees competitive

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* "By using 'man, mankind, men, he, and his' all through, you unconsciously convey the old image of the noble masterful male once more out to rescue the human race .... Here is the vocabulary you must use if the new image of man is not to be sexist as the old: 'humankind, humanity, human being, humans, persons, individuals', etc. For this century, at least, until our thought habits have been reformed, the use of 'man' as an inclusive term is out .... You can't stick in a sentence on women's lib and adequately transform the concept 'human' thereby."—Elise Boulding

In the present version of this report, we have followed Dr. Boulding's advice with which we fully agree, whenever the structure of the phrase and thought allow it, only adding "we" or "our" to her suggested vocabulary, and putting the phrase "image of man" in quotes where its use seemed not feasible to avoid.

† What we mean by "image of man" or by the preferable but more awkward phrase "image of humankind in the universe" is something that by definition lies at the boundary between the conscious, and unconscious part of our minds. Because such imagery exists at a preverbal level of consciousness, it is hard to define satisfactorily. Readers who still feel uncertain or confused what we mean by those (and related) phrases after reading this section may want to read the glossary and page 69 (starting with paragraph 3) before continuing.

achievement as the ideal. If the successful or ideal adult is assumed to be competitive, then children as they grow up are encouraged to be competitive, games are based on competition, success in competition is rewarded, and competition becomes a dominant motive, thus validating the assumption contained in the image. The same is true, in a similar manner, if a society's image defines the ideal person as cooperative, as independent, or as having any other of the many possible social attitudes.

An "image of (the nature of) man" is thus a Gestalt perception of humankind, both individual and collective, in relation to the self, others, society, and the cosmos. It may contain many levels and face contradictions and paradoxes—as does the living human being—and still be experienced as an organic whole.

However, any image is necessarily selective, not only as to what *categories* of human attributes are included, but also as to the *facts* which are asserted to be true of them. Some images are narrow, ignoring many possibilities; others are more comprehensive, embracing more of the person's potential being. Each, however, selects which attributes and qualities are to be considered real and which are to be developed, admired, accepted, despised or otherwise attended to.

These images are held at varying degrees of an awareness by persons and by societies. For some (e.g. the "True Believers" described by Eric Hoffer, 1951), images are likely to be in the forefront of awareness, seen as reality and used consciously in perceiving the world and in making decisions. For most, however, assumptions about the nature of human beings are held beneath the conscious level of awareness. Only when these hidden assumptions are recognized and brought into awareness is an "image of man" discovered and/or constructed. Then the image can be examined carefully and with perspective, to be retained, discarded, or changed.

Furthermore, no one knows the total potentiality of humankind. Our awareness of human "nature" is selective, shaped by our symbolic and presymbolic images. From the total possibilities—nature, abilities, and characteristics that make up the human potential—our images of humankind reflect those aspects we are "in touch" with, or that are defined as real by the knowledge, social norms, cultural assumptions, and myths.

THE RELEVANCE OF IMAGES TO MODERN SOCIETY

The power of an image to bring about change is not easily demonstrated for two reasons: first, because of the intangibility of images themselves and, second, because the prevailing views in science have

not yet readily accepted the evidence suggesting the power of images. However, there are numerous indications that a person's or a society's images can strongly affect perceptions, and therefore actions (see Table 1).

While it is obviously important that our underlying images and beliefs be good maps of the reality in which we live, we probably do well not to pay them overmuch attention as long as the continuing welfare of society and its citizens seems secure. Many of our present images appear to have become dangerously obsolescent, however.

An image may be appropriate for one phase in the development of a

Table 1

INDICATIONS THAT PERCEPTIONS AND BEHAVIOR ARE INFLUENCED BY IMAGES

- Clinical data from psychotherapy indicating the life-shaping effect of an individual's self-image
- Anecdotal data relating to behavior changes induced by self-image change following plastic surgery
- Studies of effects of experimenter expectations in research with both animal and human subjects
- Studies of effects of teacher expectations on student performance
- Research on expectancy set, experimenter beliefs, and placebo effect in studies of hypnotic phenomena, psychotropic drugs, sensory deprivation, etc.
- Anthropological studies indicating that perceptions of self, others, and the environment are highly influenced by cultural images and expectations
- Research on visual perception indicating the extent to which what is perceived depends on past orderings of perceptions (e.g. the Ames demonstrations), on felt needs, on expectations, and on the influence of important others (e.g. the Asch experiments)
- Studies of authoritarianism and prejudice, indicating the extent to which other persons are seen in terms of stereotypes
- Examples from the history of science indicating how new conceptualizations have resulted in new ways of perceiving the world
- Research on the role of self-expectations in limiting academic achievement of underperforming children
- Hypnosis research demonstrating the influence of suggestion-induced images and expectations
- Athletic coaching practices utilizing deliberate alteration of expectations and self-image
- Expectation–performance relationships in studies of conquered peoples, prison-camp populations, etc.
- Anecdotal data from executive development courses based on the alteration of self-image and self-expectations through autosuggestion
- The sociological theorem of W. I. Thomas: "If men define situations as real, they are real in their consequences."
- Research of the Nancy school of psychology (Émile Coué, C. Baudouin, C. H. Brooks *et al.*) on the power of imagining
- Esoteric religious teachings, East and West, on the power of belief, images, and prayer, e.g. Matthew 17:20: "For truly, I say to you, if you have faith as a grain of mustard seed, you will say to this mountain, 'Move hence to another place,' and it will move."

society, but once that stage is accomplished, the use of the image as a continuing guide to action will likely create more problems than it solves. (Figure 1 illustrates, in a highly simplified way that will be further developed in Chapter 3, the interaction between "changing images of man" and a changing society.) While earlier societies' most difficult problems arose from natural disasters such as pestilence, famine, and floods (due to an inability to manipulate the human's environment and ourselves in unprecedented ways, and from our failure to ensure wise exercising of these "Faustian" powers—as Spengler termed the term).

Science, technology, and economics have made possible really significant strides toward achieving such basic human goals as physical

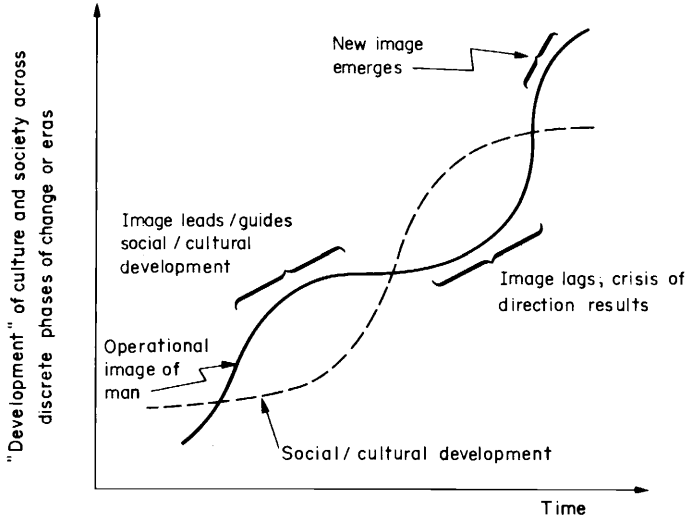


Fig. 1. Hypothesized time/phase relationship between images and social/cultural development.

When images "lead" social development they are anticipatory, and provide direction for social change. When images are in this relation to society they exert what Polak (1973) has termed a "magnetic pull" toward the future. By their attractiveness and meaning they reinforce each movement which takes the society toward them, and thus they influence the social decisions which will bring them to realization.

As society moves toward achievement of the goals inherent in the image, the congruence increases between the image and the development of man and society: the promise of the image is explored, needs are satisfied. Then, as with paradigms and myths, there may come a period in which the evolution of the society goes beyond the adequacies of the image. Policies based on the dominant image then become consequently faulty, even counterproductive, precipitating a period of frustration, cultural disruption, or social crisis and the stage is set for basic changes in either the image of man or the organization of society.

safety and security, material comfort, and better health. But as Table 2 illustrates, many of these successes have brought with them problems of being "too successful"—problems that themselves seem insoluble within the set of societal value premises that led to their emergence.* Improved health, for example, has caused population increases which exacerbate problems of social organization, food distribution, and resource depletion. Our highly developed system of technology leads to a higher vulnerability to breakdowns. Indeed, the range and interconnected impact of societal problems that are now emerging pose a serious threat to our civilization.

Table 2

SELECTED SUCCESSES AND ASSOCIATED PROBLEMS OF THE TECHNOLOGICAL/INDUSTRIAL ERA

Successes	Problems resulting from being "too successful"
Reducing infant and adult mortality rates	Regional overpopulation; problems of the aged
Highly developed science and technology	Hazard of mass destruction through nuclear and biological weapons; vulnerability of specialization; threats to privacy and freedoms (e.g. surveillance technology, bioengineering)
Machine replacement of manual and routine labor	Exacerbated unemployment
Advances in communication and transportation	Increasing air, noise, and land pollution; "information overload;" vulnerability of a complex society to breakdown; disruption of human biological rhythms
Efficient production systems	Dehumanization of ordinary work
Affluence, material growth	Increased per capita consumption of energy and goods, leading to pollution and depletion of the earth's resources
Satisfaction of basic needs	Worldwide revolutions of "rising expectations;" rebellion against non meaningful work
Expanded power of human choice	Unanticipated consequence of technological applications; management breakdown as regards control of these
Expanded wealth of developed nations; pockets of affluence	Increasing gap between "have" and "have-not" nations; frustration of the revolutions of rising expectations; exploitation; pockets of poverty

* "I strongly disagree with the last four societal premises in this greatly over-simplified table. We are moving from an era of *perceived* affluence to an era of scarcity. When the quality of goods is considered, in addition to the costs that we do not include in our GNP calculations, we are not as affluent as we think. Moreover, basic needs have not been satisfied for some, and this problem may worsen very soon. The expanded power of human choice is problematic, as is the expanded wealth of developed nations—it simply depends on definition."—Michael Marien

Additionally, it appears that although some of our images and needs have come to be served most adequately by what we now term the industrial state, others have fared more poorly. From studies of mythology and past civilizations done by Joseph Campbell, at least five functions stand out as needing to somehow be fulfilled by images, rituals, and institutions of a society. They are the mystical, the cosmological, the sociological, the pedagogical or psychological, and the editorial functions.

The *mystical* function inspires in the individual a sense of the mystery, the profound meaning of the universe and of his own existence in it. What are the origins and the density of humankind? How is existence maintained and why? These are questions whose answers—however adequate they may or may not be—as *experientially* realized by an individual serve the mystical function.

The *cosmological* function is to form and present images of the universe and world in accord with local knowledge and experience. The structure of the universe is described and the forces of nature identified, such that humans may more adequately picture what their world is like.

The *sociological* function is to validate, support, and enforce the local social order, representing it as in accord with the sensed nature of the universe. For example, myths, rituals, and social structure from hunting cultures emphasize men as the bearers of power whereas those from planter cultures usually emphasize women as bearers of life. Medieval European culture emphasized the central importance of the Church, and our own, the legitimacy of the modified free-market economy and pluralistic body-politic.

The *pedagogical* or *psychological* function is that of guiding each member of the culture through the stages of life, teaching ways of understanding oneself and others, and presenting desirable responses to life's challenges and trials. Rites of passage, councils of elders, psychotherapy, and education all serve this function.

In its *editorial* function, the myths and images of a culture define some aspects of reality as important and credible, hence to be attended to, while other aspects are seen as unimportant or incredible, hence to be ignored and culturally not seen. For example, the anthropologist Malinowski reported that the Trobriand Islanders believe that a child inherits his physical characteristics only from his father. Hence, the Trobriands simply do not observe or notice any resemblance between the child and his mother, although to Malinowski, such similarities were quite evident.

Two additional functions—the *political* and the *magical*—are also noteworth. The *political*, as distinct from the strictly sociological, function appears wherever a myth or institution of society is deliberately employed to represent the claim to privilege and authority of some

special person, race, social class, nation or civilization; and the *magical*, wherever prayers, rituals or other "extraordinary" techniques are used for special benefit, such as for rain, good crops, war-winning.

How well do our current "myths" fulfill these functions which stand out in importance from the perspective of history? Mythology, at least among most "educated" people, is now relegated to the status of mere superstition, as is anything that sounds "mystical." The mystical function of inspiring in the individual a sense of the profound meaning of the universe has been neglected almost entirely, as synagogues and churches, the traditional servants of this role, have become increasingly concerned with social justice. Science now performs the cosmological function, but its successes in this regard have become so complex that the average person has little comprehension of *how* scientific knowledge defines the world, other than by consuming the products that science and technology have made possible. Bureaucrats and other civil servants, who make no claim to understanding or even seeking any larger picture of reality, now carry out the sociological function of enforcing the local social order. The pedagogical function of guiding each individual through life's stages has been—except for those who can affort psychotherapy—taken over by an institution of education which (at least until very recently) deals almost solely with preparation for work in an industrialized society. The editorial function in Western Culture was dominated first by the Church (which emphasized a very specific image of man and associated ideology) and more recently by science (which emphasizes another limited image). It appears now in the process of being taken over by the funding agencies (government legislatures and departments of program planning, foundations, and so forth) who also represent special interests in the selection of which aspects of reality should be collectively ignored and which attended to.

Furthermore, there is no indication that our society, operating under its currently dominant guiding images and values premises, will not continue to create vexing problems at an increasing rate. Researchers at the Hudson Institute have identified what they call "The Basic Long-term Multifold Trend of Western Culture" that represents a cluster of social forces similar to those causing the "successes" noted in Table 2. The Multifold Trend includes developments such as:

1. Increasing sensate (empirical, this-wordly, secular, humanistic, pragmatic, manipulative, explicitly rational, utilitarian, contractual, empicurean, hedonistic, etc.) cultures.
2. Bourgeois, bureaucratic, and meritocratic elites.
3. Centralization and concentration of economic and political power.
4. Accumulation of scientific and technical knowledge.
5. Institutionalization of technological change, especially research, development, innovation, and diffusion.

6. Increasing military capability.
7. Westernization, modernization, and industrialization.
8. Increasing affluence and (recently) leisure.
9. Population growth.
10. Urbanization, recently suburbanization and "urban sprawl"—soon the growth of megalopolises.
11. Decreasing importance of primary and (recently) secondary and tertiary occupations; increasing importance of tertiary and (recently) quaternary occupations.
12. Increasing literacy and education and (recently) "knowledge industry" and increasing role of intellectuals.
13. Innovative and manipulative social engineering—i.e. rationality increasingly applied to social, political, cultural, and economic worlds as well as to shaping and exploiting the material world—increasing problems of ritualistic, incomplete, or pseudo rationality.
14. Increasingly universality of the multifold trend.
15. Increasing tempo of change in all the above. (Kahn and Bruce-Briggs, 1972)

The impact and likely consequences (for better *and* for worse) of continuing with this societal trajectory can be inferred from a study of Fig. 2 through 5. If such projections of the future prove correct, we can expect the problems associated with the multifold trend will become more serious, more universal, and occur much more rapidly than will growth of the trend itself.*

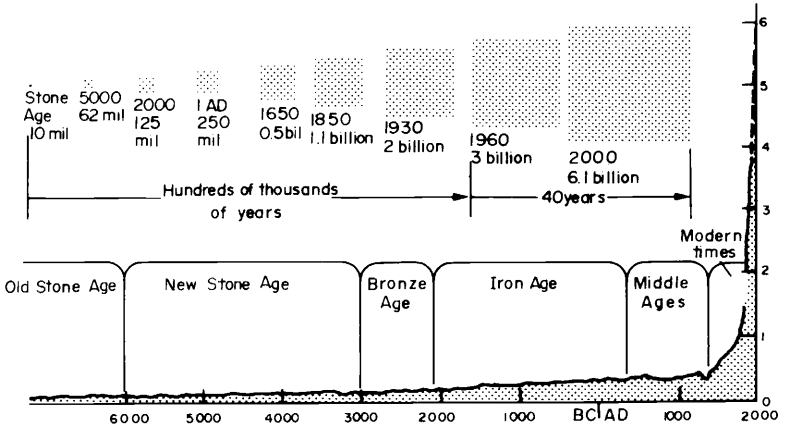


Fig. 2. The growth of human numbers. (Source: McHale, 1972.)

* "It should be noted that those (1972) figures reflect trends that preceded the OPEC oil blockade, energy price increases, and the host of trend-changing events that have since occurred. These figures are included in this 1980 edition, both for historical reasons (since they led to studies like this one) and since they still illustrate the policy implications of the traditional images and premises of Western Culture."—O. W. Markley

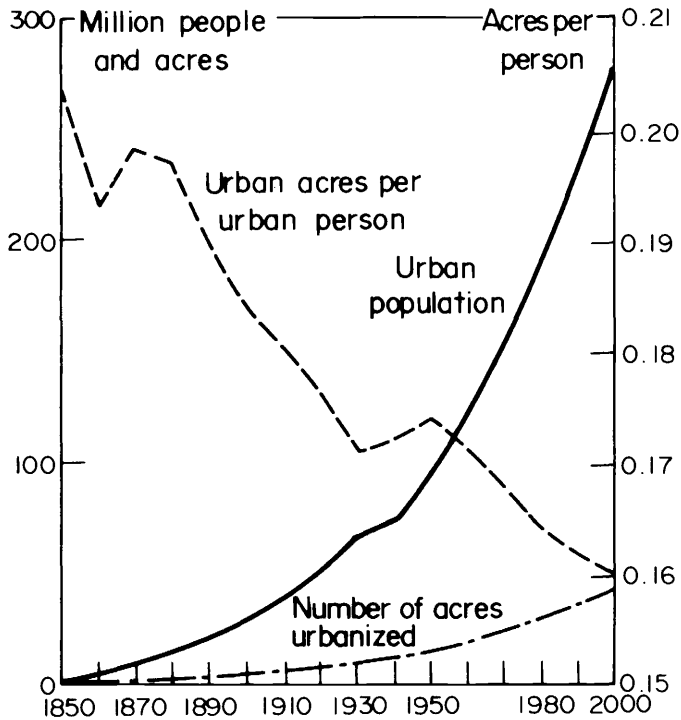


Fig. 3. Urbanization in the United States. (Source: McHale, 1972.)

But the multifold trend (essentially, rampant industrialization and consumption), with all its associated problems, need *not* prove to be the dominant characteristic of our future society. As Fig. 2 through 5 imply, for most of human history the growth of man's population was slow and its impact on Earth ecology relatively small. Humans lived close to the soil in widely dispersed communities, such that the actions of one community had relatively little impact on most others not near by. But now society grows ever more complex, specialized and interconnected, and the production and distribution of essential goods and services is increasingly dependent on the continued integrity of human institutional systems. Human systems, however, depend on trust, agreement, and political law rather than on unchanging "natural" law, hence they are inherently less stable in times of rapid cultural change than are "natural" systems. They are particularly sensitive to breakdowns caused by war, terrorism and simplistic attempts at societal reform.

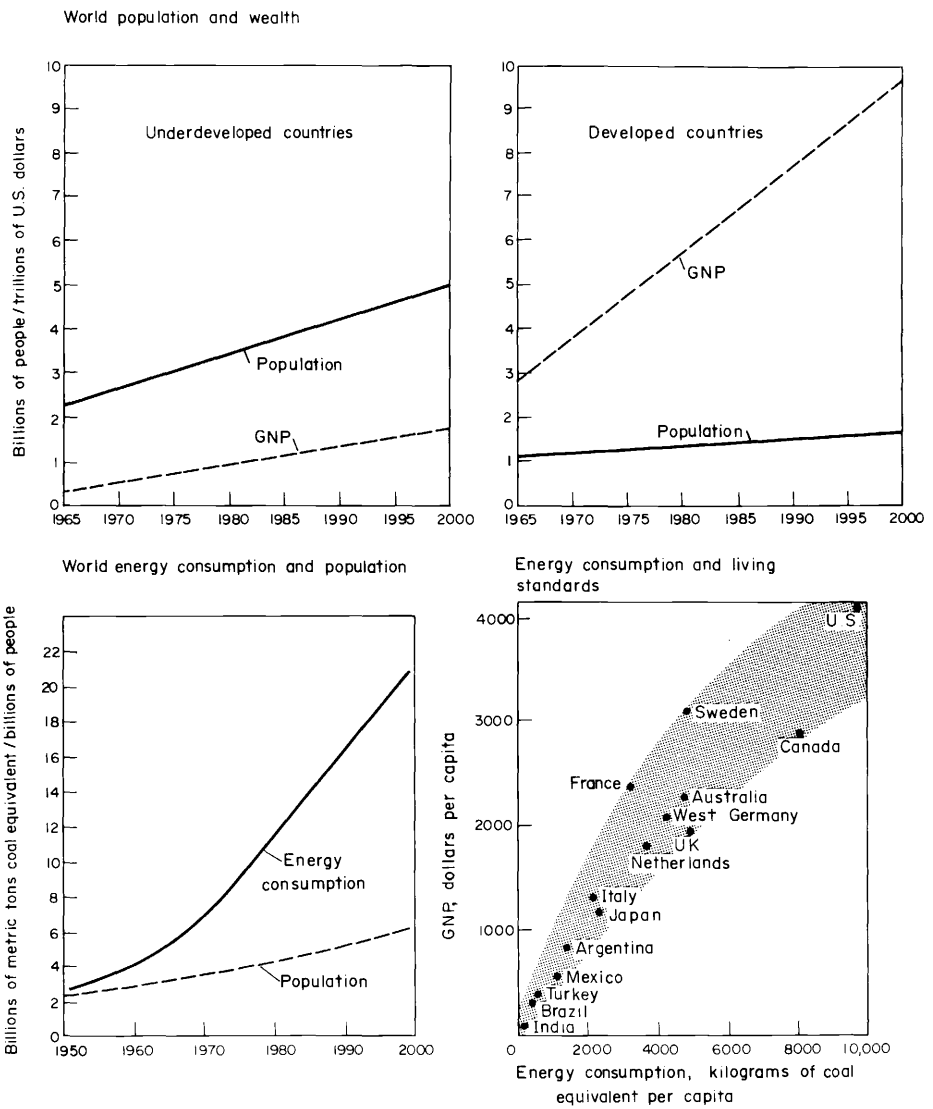


Fig. 4. Selected world population, wealth, and consumption trends. (Source: McHale, 1972.)

Salk (1973) has suggested a simple graphical way of comprehending these changes and the corresponding level of changes that need to take place during the decades to come. As portrayed on Fig. 6, the past and future history of mankind can be represented as comprising two phases. Salk calls the first phase, which includes all mankind's past

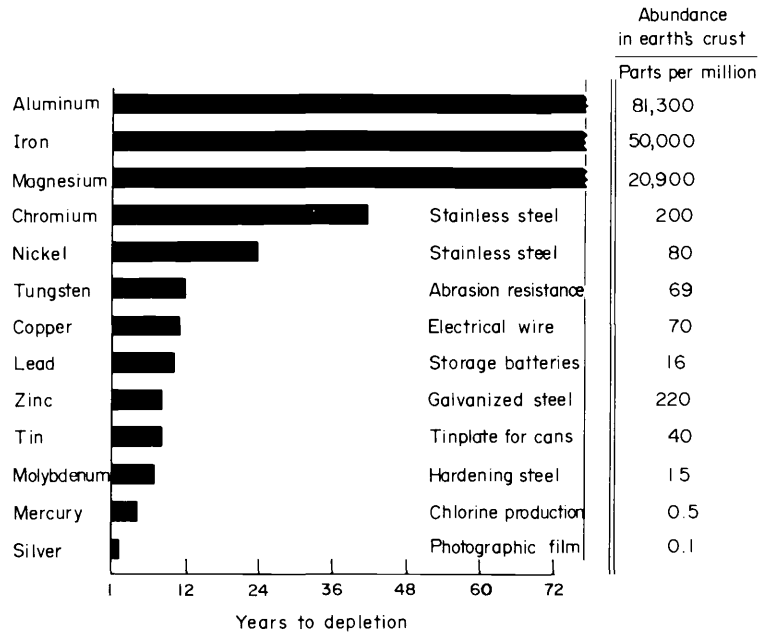


Fig. 5. Depletion of world reserves of commercial grade ores if world population had U.S. living standard. (Source: Gough and Eastland, 1969, based on data from U.S. Bureau of Mines.)

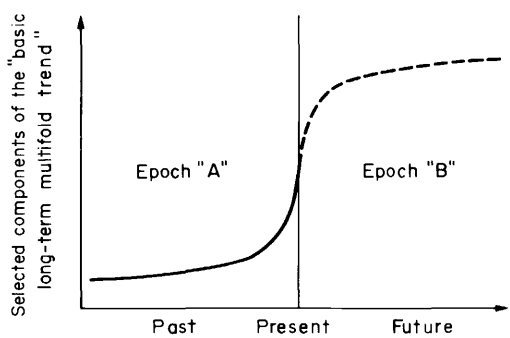


Fig. 6. Two contrasting epochs of human history (Jonas Salk).

history, Epoch A—an epoch in which (for the above reasons) the survival of the human species depended on essentially individual actions, on the survival of the fittest, and on successful competition with other life forms. He calls the second phase, which must characterize any desirable future, Epoch B—a future in which humankind limits the

growth of those activities that undermine the welfare of the ecology; hence where the survival of the species will depend more on the behavior of the whole species than of its individuals, on cooperation rather than competition, and emphasizing the survival, not of the physically fittest, but of the *wisest.*

While it is perhaps unrealistic to expect that the United States and other industrial nations would voluntarily limit their own consumption of physical resources and share their wealth more equitably with less affluent nations, it may be equally unrealistic to think that we will not be forced into making just that choice. With only 6 percent of the world's population, the United States currently uses about half of the world's resource output. And this standard of living that we enjoy is the growth goal of most developing nations—most of whose citizens are undernourished and undereducated.

As the late Prime Minister of Canada, Lester Pearson, observed,

> No planet can survive half slave, half free; half engulfed in misery, half careening along toward the supposed joys of an almost unlimited consumption..... Neither ecology nor our morality could survive such contrasts.....

While not all researchers agree that such an epochal transition is facing mankind, most agree that the developed nations of Earth now face a series of fundamental dilemmas. By more adequately understanding the nature of these dilemmas, how they have emerged, and how they might be resolved, it should be possible to see new possibilities for a better future. As a concise statement of why the role of images is crucial to such an understanding, four different types or "levels" of societal problems are delineated below (Markley *et al.*, 1971):

1. *Substantive* problems lie at an applied or operational level, and are usually identified as immediate targets for corrective attention or increased allocation of money or other resources.
2. *Process* (or Procedural) problems are those that impede the process of collectively setting priorities and strategies to solve the substantive problems.
3. *Normative* problems concern the appropriateness and effectiveness of a people's values, preferences, goals, and so forth, that are the basis of planning and priority setting.
4. *Conceptual* problems are difficulties that seem to be intrinsic to the way we think, the words we use—in short, to the particular vision or understanding of reality that is dominant in a culture—thus affecting our ways of perceiving and doing, and also affecting the formation of our normative values.

These four categories can be thought of as referring to four levels of (1) the state of society, (2) behavior, (3) motivations, and (4) basic values and perceptions (see Fig. 7).

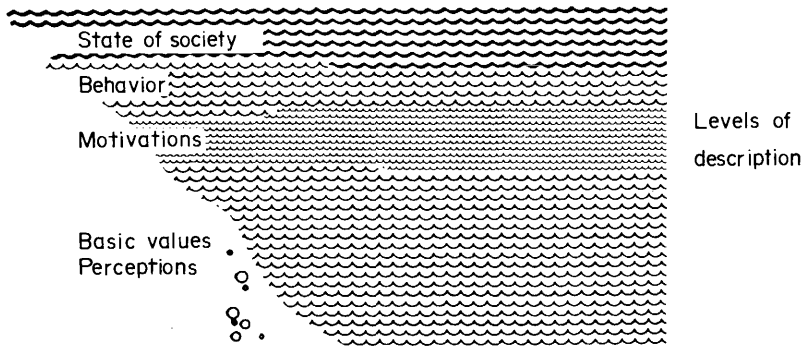


Fig. 7. Levels of description useful in analyzing social change.

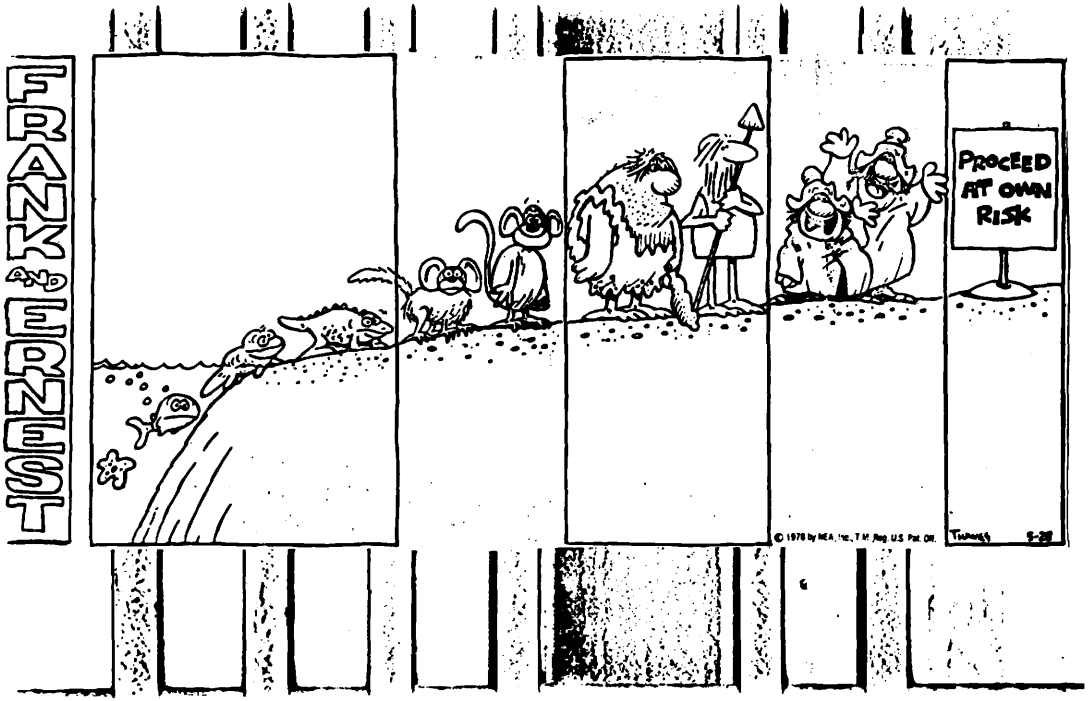
The importance of distinguishing the above four aspects is evidenced by the fact that most informed persons agree on what the crucial substantive problems of our time are: inflation, unemployment, pollutions, world hunger, threat of war, and so forth. Most of the visible disagreement—at least in the United States—occurs at the process level, in the assignment of priorities and in the choice of strategies: for example, in the supposed tradeoff between "environment and jobs," or in the choice whether to develop social policies that are future-oriented rather than those that are politically expedient, but short-sighted. But the third and fourth categories, normative and conceptual social problems, have been almost totally ignored to date.* With the extensive changes brought by the accelerating "manifold trend" discussed earlier, however, obsolescent values and inappropriate conceptions may be precisely that which keeps us from finding satisfactory resolutions to the gripping social problems that increasingly confront us.

Our image of ourself and our universe has become fragmented and we have lost the guiding "sense of the whole" that earlier civilizations seem to have had. At present our society goes from crisis to crisis, with piecemeal responses being made to ameliorate each, and with the measures taken to relieve one crisis invariably making another problem worse, so interwoven is our social system. There has been little effort,

* "During the eight years since the first release of this report in 1973, a small, but increasing amount of attention has been and continues to be focused on normative and conceptual concerns. For example, the National Endowment for the Humanities and the National Science Foundation have jointly sponsored a continuing extramural research program on 'Values in Science and Technology'; a major research institute, the Hastings Center has been established to examine questions involving social ethics; and a variety of books and reports are appearing that examine the possibility of conceptual and organizational transformation in various levels of society."—O. W. Markley

and less success, in searching out deeper strata of social forces—the basic images of our nature and our future, and the associated premises which underlie the behaviors that lead to societal problems. Might it be possible that a more adequate image of humankind could lead to a renewed sense of wholeness and to better behavior—both individual and collective?

By addressing ourselves to such questions we hope to help elevate the level of debate regarding the future of our nation and future of humankind generally, thereby creating new understandings through which societal problems that previously looked irresolvable may become increasingly tractable.



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CHAPTER 2

*Some Formative Images of Man-in-the-Universe**

As intercultural commerce, warfare, "forced conversion," and other modes of cultural diffusion have operated through the millennia of human history, an incredible variety of images on man have developed—some remaining relatively pure, most blending with others. We do not attempt an exhaustive survey of this diversity, but rather focus only on a select few of the relatively "purer" types of image that fulfill one or more of the following three criteria:

1. It shows how the image of humankind—in relation to other forces—can influence the way in which a culture develops.
2. The image has significantly shaped or affected the development of our culture in directions that need reexamination.
3. It offers unrealized potential for moderating the problems that are unique to our time.

This brief survey should therefore not be read as a complete history of human images. Certainly most of the images portrayed are necessarily oversimplified, but they may nevertheless provide useful insights for our time. These images are summarized in Table 3.

After the brief survey we note some underlying dimensions along which the various images of humankind can be compared. We then estimate what images seem currently dominant in the United States, and portray what the "center of gravity" or composite image of man in this country seems to be.

SELECTED HISTORICAL AND MODERN IMAGES OF MAN

Early Images of Man

It is significant that we have come to equate the rise of civilization in the Old World with the emergence of the first literate societies in which small elitist groups hold the keys to a kind of esoteric knowledge which

* A much more scholarly and complete survey of the images that have shaped Western civilization (especially of Judeo-Christian contributions) is contained in Fred Polak's classic treatise *Die Teokomst Is Verledon Tijd* (W. Haan, 1958). Translated from the Dutch into English by Elise Boulding as *The Image of the Future*, it is available both in a two-volume unabridged version (Oceana Publications, 1961) and an abridged volume (Elsevier, 1973). Both are currently out of print, but can often be borrowed through an inter-library loan.

Table 3

DOMINANT IMAGES OF HUMANKIND THROUGHOUT HISTORY

Source period	Approximate date	Dominant image	Cultures in which image is at present active	Significance for post-industrial era
Middle Paleolithic	250,000–40,000 B.C.	The hunter, focus of the male-dominated culture field of the "Great Hunt"	Few cultures in its pure form; most in its militaristic equivalent	Jeopardizes cross-cultural peace; may be necessary for police operations, however
Upper Paleolithic	30,000–15,000 B.C.	Including sense of spiritual affinity between beasts and man, of which totemism is an expression	Various American Indian cultures with traditions intact	Has relevance for a renewed sense of partnership with other life forms on the planet
Neolithic	After 9000 B.C.	The planter, the child of the Goddess; woman the giver of life	Hindu and certain other cultures	Has possible relevance for balancing male-emphasis of Western culture
Sumerian	3500 B.C.	The human civilized through submission to seasonal variations and ruling elites	Most cultures	Has relevance as historical analogy: shows "political function" of new images
Semite	2350 B.C.	The human as a mere creature fashioned of clay to serve the gods, or some god, as a slave; but superior to and having dominion over nature. Notion of "chosen people"	Orthodox Jewish, Christian, Islamic faiths	Stands in its present form as an obstacle to emergence of new ecological understandings
Zoroastrian	1200 B.C.	The human having free will, having to choose between good and evil, mythology of individual salvation	All Western cultures, in a secular form	Presents a basic polarity needing to be dialectically transcended/synthesized
Age of the Polis	500 B.C.	India: one deluded by *maya*; the Buddha representing the absolute fulfillment of the Indian image of	Hindu/Buddhist	Could contribute to a new "self-realization ethic" for our culture

		man as *yogi* released from the wheel of karma, death and rebirth. Intrinsic divinity of humankind realizable through own efforts		if incorporated into a larger synthesis
		China: Confucius and the paradigm of the "superior man" as politically and socially concerned *sage*	Oriental cultures	Could contribute to a new "ecological ethic" for our culture if incorporated into a larger synthesis
		Levant: as a *slave*, submissive to God in the image of a despot	Some forms of Islam, Christianity	Possible to see ecological requirements in this light
		Greece: Aeschylus and image of human as *tragic hero*	Most Western cultures to some degree	Could provide a guiding image for personal/societal transformation in time of crisis
		Greece: Mystery religions, the person becomes so attached to the material things of this world that he/she has lost touch with his/her own true nature which is not of these things, but of spirit—himself the very being and model of that Spirit of which each is but a particle	All cultures, but never very visible	Could contribute to de-emphasizing material overconsumption and ecological understanding
		Greece: science and objective knowledge as aesthetic rather than utilitarian activity; naturalistic emphasis in science, art, and philosophy	None in which dominant	Has relevance to counterbalancing the "technological ethic"
Early Christian (and Muslim)	100 A.D. 622 A.D.	Two contrary images/(1) following the Semite and Zoroastrian traditions, God's servant—obey or be dammed; (2) that of the Gnostics similar to the image of the Greek mystery religions, the person "saved" by self-knowledge	(1) Traditional (1) Judeo/Christian/Muslim cultures; (2) Most cultures as an underground view	(1) A dominant image that needs to be incorporated into a larger synthesis; (2) Could contribute to a new "self-realization ethic" for our culture if incorporated into a larger synthesis

Table 3 (*Cont.*)

DOMINANT IMAGES OF HUMANKIND THROUGHOUT HISTORY

Source period	Approximate date	Dominant image	Cultures in which image is at present active	Significance for post-industrial era
Industrial Revolution/ Enlightenment	1500 A.D.	"Economic man"—individualistic, materialistic, rationalistic; objective knowledge, utilitarian/ economic values coming into dominance	Most modern industrial nations	Likely inappropriate for transition to post-industrial era
Modern Social Science	1900 A.D.	Human as "beast"—instinctual drives predominant, a "creature of evolution" whose survival depends on competitive adaptation and/or suppression of base instincts	Most modern industrial nations	An image needing to be incorporated into a larger synthesis
Modern Behavioral Science	1913 A.D.	Human as "mechanism"—to be understood in ways found successful by nineteenth-century physics	Primarily United States	Promoted as providing the most appropriate basis for man's next era, perhaps now itself needing to be incorporated into larger synthesis
Modern Transdisciplinary Science	1945 A.D.	Human as a "goal-directed, adaptive learning system"	Image has not yet reached "takeoff point"	Provides a possible conceptual basis for integrating most other images of man in an evolutionary frame of reference
Various times and places from circa 1500 B.C. to the present		Human as "Spirit"—the "philosophia perennis" view of man and the universe as essentially consciousness in manifest form	Most cultures, in various degrees of purity	Could contribute to needed synthesis of "opposing" images as it sees apparent opposites as differing aspects of the same underlying reality

gave them power over their fellow men. As far as we know, this first occurred in the Mesopotamian valley about 3500 B.C.

From their observations of repeated heavenly movements which were correlated with times of planting, reaping, etc., a professional priesthood discovered the arts of precise astronomical observation, mathematical reckoning, and writing. The priestly watchers of the skies had become aware of something most remarkable and exciting, completely unknown before, namely, the mathematical regularity, precisely measurable, of the passages of the moon, the sun, and the five visible planets. With that discovery came a completely new conception of the universe and of the human place within it. No longer were the determinants of the image of one's self in the world to be the animals which one hunted or the plants of a lush environment self-renewed through death, but an ever-increasing factual knowledge of the natural order of the universe. Moreover—and possibly because this new type of knowledge could not be extended to the entire community—there developed abruptly at this time a clear distinction between governing and governed classes.

Although the ideas and forms of a literate civilization probably took root in India and China as early as 2500 B.C. and 1500 B.C. respectively, their impact on these societies, and hence on the "image of man" in relation to the universe, took a very different form from the developments west of the Indus Valley. Perhaps as a result of their geographical isolation both from each other and the rest of the civilized world, they retained undamaged the old Bronze Age image of an impersonal principle or power immanent in a universe of forms ever disappearing and returning through measured cycles of infinite time. According to this image, nothing is to be gained, either for the universe or for man, through individual originality and effort. The individual, rather, is to play the role into which he has been born—as do the sun and the moon, the various plant and animal species, the waters, rocks and stars. Also, he should try to order his mind so as to identify its consciousness with the inhabiting principle of the whole. In India this aspiration came to be symbolized by the mystic seer, *Yogi*, who above all else practiced the discipline of renunciation from the "maya"—illusory entrapment—of worldly concern; in China, a different view developed with the Confucian symbol of the politically engaged wise *sage*, who seeks to act in accord with the Tao, both inwardly and outwardly.*

* "The unspoken assumption here seems to be that 'spiritual' is opposed to 'physical' and 'material'; and furthermore, to be 'spiritual' means a denial of the flesh, a flight from social activities and engagement in social affairs, practice of painful austerities, etc.... The really revered religious teachers and enlightened masters—Jesus, Buddha, etc.... were deeply involved in the affairs of the world... I think that the alleged opposition between 'spiritual' and 'material' is a false dichotomy—not the view held by those spiritual masters to whom you tacitly refer."—John White (*cont. on p. 22*)

Although both India and China are today well into differing modes of modernization, and have each at least partially overthrown their traditional images of humankind (China apparently more than India), these images hold potential relevance for the ethical needs of our present culture. Aspects of the image of the *sage* and Taoistic philosophy generally could greatly contribute to an "ecological ethic;" the *yogi* image and philosophy of Vendanta could equally contribute to a "self-realization ethic," as these are set forth in Chapter 5. Both would bring a welcome contrast to the exploitative tendencies of a civilization driven by the profit motive.

The Human as Separate from God and Nature—Early Near-Eastern Views

From the Near-East came two systems of thought—those of the Semites and the Zoroastrians—whose images of man-in-the-universe have significantly shaped this culture.

The first distinguishing characteristic of Semitic mythology, which arose after 3000 B.C., was its radical separation of Man from God, the first step of a "mythic dissociation" that has perhaps been completed only with the full flowering of objective science in modern times. The Semitic God was seen as a male Being "out there," an image that closes the inward way of mysticism, since what is to be found within oneself is not divinity (as in India and the Far East) but only one's "soul," which may or may not be found in a proper relationship to God. A proper relationship can be achieved only by obedience to God's commandments and membership in God's favored tribe. Not as a free individual, but only as a member of the High God's "chosen race" (or church, in later versions) is one effectively in God's care. In this view the human was seen as a servant, created to serve the One God by having dominion over all other forms of earthly creation.

If all humankind was the servant of the One God, so also, according to Semitic mythology, was one race the servant of the others. Genesis, chapter 9, recounts the story of Ham, the son of Noah and father of Canaan, who because he had seen his father's nakedness and left him uncovered was cursed by Noah:

> Cursed by Canaan—a servant of servants shall he be to his brothers. . . . Blessed be the Lord God of Shem, and Canaan shall be his servant. God shall enlarge Japheth, and he shall dwell in the tents of Shem—and Canaan shall be their servant. (Genesis 9: 25–27)

(*Cont. from p. 21*)
The contrast here is not between "spiritual" and "material" but rather between two "ideal types" which have been extensively explored in the past. In the last section of Chapter 4 and in Chapter 6 we try to show how these two may be usefully synthesized in our own cultural matrix.

Traditional interpretation of these scriptures sees the descendants of Ham as comprising of black peoples of African nations to the south of Egypt. Thus the racist image of peoples of color being the "proper" servants of other ironically arose from the mythology of the Jews—one of the most persecuted peoples of history.

Complementing the master/servant aspects of the Semitic image of humankind was the notion of "man as the brother of other men" by virtue of their common creation; as required and able, by this created nature to carry responsibility for each other.

This image of brotherhood was a key element in the later Christian image of persons as "members one of another"—a metaphysical reality that will later be elaborated as being an image needing to be revitalized rather than scrapped.

We know next to nothing of the life of Zarathustra (Greek form, Zoroaster) whose teachings of the great Lord of Truth and Light, Ahura Mazda, mark the beginning of a completely new direction in Occidental religion and the associated imagery of humankind. The novelty of his teaching lay in its treatment in purely ethical terms of the ultimate nature and destiny of both the world and humankind; it attributed *absolute* values to the contrary principles of Good and Evil, personified as two contending universal gods—Ahura Mazda, "first father of the Righteous Order," and Angra Mainyu, the Deceiver, Antagonist, and principle of the Lie. In this teaching, time was imagined not as an ever-cycling round (as in most of the conceptions before approximately 1200 B.C.), but as a linear trend to victory, which was to culminate in a season of prodigious wars and the appearance, finally, of a second Savior, Saoshyant, through whom the Lord of the Lie and all his works were to be annihilated. The dead were then to be resurrected and all would dwell forever in light and truth.

Another innovation of this doctrine, setting it apart especially from neighboring India, is the responsibility it placed on every individual to choose of his own *free will* whether and how to stand for the Truth and Light, in thought, word, and deed. Finally, the Zoroastrian view holds that engagement in the battle for salvation is the ultimate goal of "man," a view diametrically opposed to the Indian image of yogic self-release. Judged evil, the world could nevertheless be saved.

The Knower—Gnostic View

The influence of the Semitic and the Zoroastrian visions on both traditional and contemporary Jewish, Christian, and Islamic thought is obvious. It seems clear that both forms of apocalyptic messianism were incorporated, if not by Jesus himself, then at least by the Early Church.

But the Gnostics, whose beliefs appear to have been a synthesis of Babylonian, Indian, and Egyptian, as well as Semitic and Zoroastrian thought, took another view. Agreeing with the Semitic belief in one Eternal and Supreme Being, and the Zoroastrian view of the World and its unredeemed citizens as savable, the Gnostics took as central "saving" power of *gnosis*—extraordinary and experientially intimate knowledge of the mysteries of existence.

The import of this view, as contrasted with the view which ultimately came to be the "official" one, is portrayed by the Gospel according to Thomas:

> His disciples said to Him: When will the Kingdom come? Jesus said: It will not come by expectation; they will not say: "See there." But the Kingdom of the Father is spread upon the earth and men do not see it.
>
> (Saying 113)

This tension between the Gnostic understanding of apocalyptic symbolism and that of the Early Church which condemned it as heretical is the essence of what is sometimes called "the Judeo-Christian Problem." Is an apocalyptic Messiah to come (or come again) and thus grandly save the elect from evil, or is the "Kingdom of the Father" already here within us, within ourselves and our world—as is "Buddha-consciousness" and the "Mother Light"—only waiting to be recognized and fulfilled? The conundrum was inherited also by Islam, and supplied the whole sense of the contention between the Sufis of the mystic way and the orthodox Sunna of the law.

Because the Gnostic path was condemned as heretical, of necessity it went underground, and hence its influence on our culture is much less visible than are the effects of the orthodox views. It and views like it, however, have been kept alive by secret societies such as the Sufis, Freemasons, and Rosicrucians, whose influence on the founding of the United States is attested to by the symbolism of the Great Seal of the United States, on the back of the dollar bill. The Semitic/Zoroastrian/orthodox Christian image meanwhile came into dominance in Western Europe. This image of the "human as separate" laid the groundwork for the industrial revolution to come.

The Individual—Greek Views

The idealized image of the person in the classical phase of Greece provided the roots of the later European emphasis on individualism and individuality. The Greeks portrayed the Hero as one who acts

from a secular sense of duty—not toward others but rather toward himself—striving after what we translate as "virtue" but which in Greek is *arete*, excellence. Significantly, Greek theology was formulated not by priests or even by prophets, but by artists, poets, and philosophers. The Greeks were probably the first culture to develop an image of the human not primarily as a member of this race of tribe or of that, but as an individual being. Furthermore, when the city-state emerged fully developed in the later period of Socrates, Plato, and Aristotle, laws and ethical rules were sought *beyond* individualism for the regulation of conduct; but it was not to any supernatural authority that the Greeks looked, but to nature, and specifically, human nature. They saw virtue as a natural property of the person, whose nature was not an instinctual one (as with the lower animals), but the perfection of divine intelligence (shared with the gods above—gods who were not the "creators" of mankind, but themselves, also, children of the mystery of creation, having come into the world as its governing powers). Their artistic images of humankind were thus naturalistic, as was their philosophy, and their politics.

It is necessary to recognize, however, that the dominant "image of man" was for the Greeks, as for so many other slave-based economies, a dichotomous one—the image of the citizen differing significantly from that of the slave. Thus, although the Greeks had by the second century B.C. developed the necessary knowledge to build a powerful science-based technology, they did not do so. For in the Greek view the acquisition of knowledge was mainly for aesthetic or spiritual enjoyment of the citizens, there being little motivation to utilize technology to make routine labor more efficient.

While it is commonly believed that science, or what we think of as the scientific method, originated in post-medieval Western Europe, this is not the case. The scholars of this period, searching for more adequate methods of inquiry than those "worn out" by medieval scholasticism, turned to translating manuscripts of distant times and places. Only when the Greek scientific writings were translated into a culture that would support a "technological ethic" (as would fifteenth-century Europe with its Semitic roots) did the widespread exploitation of these ideas come to fruition. Although the modern scholarship behind this finding is somewhat controversial, the delayed application of Greek science likely represents an instance where one image of humankind had a clear-cut influence on cultural development. We explore this phenomenon in Chapter 4 because it provides a suggestive historical analogy for the present-day application of Eastern thought in the development of a science of consciousness.

Empire and Christianity—the Roman Catalyst

In terms of the image of man, the Romans made two lasting contributions to the Western heritage. First, they codified the earlier Greek notions of law and extended them throughout the known world. Indeed, the legal systems of most European nations are still based on Roman law. The Greeks saw man as a political animal; to this the Romans added the concepts of universal organization and administration. For the first time in Western civilization, the rights of citizenship—even Saint Paul of Tarsus boasted, "*cives Romanus sum*" (I am a Roman Citizen)—extended beyond the bounds of a city state, race, color, or creed. Thus the Romans' unique contribution was that anyone (except, of course, a slave) could aspire to become a member of the body politic, which the Romans defined as a set of allegiances, laws, and responsibilities.

The second Roman contribution to the Western image of man was an inadvertent one. It may be too much to assert that the later Roman legates left behind them a "legacy" of Christianity—indeed, the missionaries sent out by the early popes may have played a greater role. The fact remains, however, that the Romans planted the seeds of Christianity which were kept alive in the monasteries of Western Europe throughout the "Dark Ages."

The Age of Faith—and Contention

Following the fall of Rome in the fifth century A.D., there ensued a period of intermittent chaos which lasted until about the eleventh century when the Roman Catholic Church emerged as the dominant force in Western Europe.

The history of the "Age of Faith" is one of contention between competing images of humankind. For example, the classic Judeo-Christian view of man as essentially master over nature was overlaid with the restrictive notions of the Medieval Church as to the "proper" pursuits of man in relation to nature. Similarly, the strivings of the Church for political hegemony over the temporal rulers of Western Europe clashed with its original spiritual mission and emphasis on the all-importance of the life hereafter.

Even at the height of the Church's power, disruptive forces—spiritual, intellectual, and socio-economic—were constantly at work. The crusades, for example, brought Europeans into contact with more advanced economies and created a demand for new goods which were met by an ever-expanding merchant class. The discovery, during the fifteenth century, of a sea route to India, followed by Columbus'

discovery of the New World, opened up vast new possibilities for economic expansion and personal enrichment. Thus, despite the strictures of the Church, a new notion of "man" as an economic entity began to emerge.

Intellectually and spiritually too, the Western Church was losing ground toward the end of the fourteenth century, when the tide began to turn against it in its long battle against heresy. Over a century before Luther pinned his ninetyfive theses to the church door at Wittenberg, in 1519, Wycliffe in England and Huss in Bohemia had already tried to bring about a reformation of the Church. At the same time, in the universities of Western Europe, Arab astronomy and mathematics, transmitted by Jewish scholars, were being studied side by side with Aquinas and Saint Augustine.

Thus, gradually, the strands of secularism were being woven into the Medieval fabric of life until by the beginning of the sixteenth century we can see them drawing together to form a new pattern from which emerged our own society.

Man Over Things—the New Empire*

From the warp and woof of new and revived ideas fostered during the Renaissance and Reformation came notions of man as the individualist, the empiricist, and the rationalist. These notions gained irresistible power with the discoveries of Copernicus and Galileo, and brought about an essentially new image of man and his role in the universe.

By the seventeenth century the image of man which emerged from scientific studies was that of man as mechanism (Newton). The great search for the order permeating the universe was summed up in Bacon's phrase "the empire of man over things." The fundamental realities were the human being and nature. Nature was regarded as an objective reality—apart from the human—observable in every aspect and unaffected by either observation or the observer. The primacy of the act of measurement meant that new rules predominated for making knowledge verifiable and public, and so knowledge became better suited to "make ourselves masters and possessors of nature" (Descartes).

Evolving out of man's changing image of himself and his relation to the external environment he sought to control came a new application of the old Zoroastrian concept of progress—now offering new hopes for human betterment while at the same time explaining and justifying

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* In the next few sections the generic term "man" was not changed to "humankind" for purposes of contrast and emphasis.

the materialistic pursuits and excesses of industrial society. In fact, the idea of progress become indistinguishable from the idea of science itself. As the scientific pursuit became more objective and reductionistic, the images of mankind that it has fostered have also become more fragmented and out of touch with the mythic forces that the pre-scientific ceremonies, rites, and rituals helped man to experience.

The Human as Beast—the Darwinian, Freudian, and Ethological Views

In the next chapter we note the more salient characteristics of the economic image of human beings that has dominated the industrial era. Here, we discuss some of the other specialized images that are important today.

One such image is that of bestial man—man subject most fundamentally to his animal instincts. This image provides a unifying theme to the otherwise dissimilar scientific theories of Darwin and evolutionary thought, of Freud and psychoanalytic thought, and of Lorenz and other leading thinkers on the ethology of aggression. In each of these three schools there seem to be almost opposing emphases which reveal divergent images of the human being. On the one hand (usually dominant) is the image of Nature—human as well as animal—"red in fang and claw"—the human as man-beast, predator, and aggressor. On the other hand is the image of Nature as symbiotic, cooperative, and social—with an image of the human as having both aggressive and altruistic traits.

Darwin emphasized the competitive aspects of natural selection and the struggle for survival both in the animal and in the human world. Fifty years later the Russian Prince Kropotkin, with equally good scientific methodology, emphasized natural solidarity, intrinsic sociability, and tolerance—among animals as among humans. Similarly Freud emphasized the purely instinctual drives and in particular (in his later years) the "death instinct" (*Thanatos*). The neo-Freudians, on the other hand, emphasized the ego and man's sociability drives. Lorenz, Ardrey *et al.* have emphasized the "killer instinct" and the "territorial imperative." Crook and others, looking at other ethological findings, derive evidence for instinctually driven non-aggressive behavior and the importance of frustration and socialization in aggressive behavior.

Here we have an illustration of how one guiding image of man-in-the-universe (which includes not only oneself as a human, but the physical, social and conceptual world one lives in) to a large extent determines one's behavior in the creation of a *new* "image of man." To illustrate: Darwin comes upon the principle of natural selection and the struggle

for survival, not so much from his meticulous observations and collections as from reading Malthus' *Essay on Population*, and from living amidst a society in which *laissez-faire* economics and the ethics of rugged individualism were being championed. (It is noteworthy that Darwin's competitor, Alfred Wallace, working independently, also happened upon the insight of natural selection-through-struggle through reading Malthus; and that the very phrase "survival of the fittest," which first appeared in the second edition of *Origin of Species*, was contributed by Herbert Spencer, the philosopher of social evolution via *laissez-faire* economic capitalism and rugged individualism.)

Prince Kropotkin, on the other hand, was a political and philosophical anarchist whose ideology undoubtedly intruded upon his observations and interpretations no less than had Darwin's.

Each of the above opposing image emphases (the human as intrinsically competitive and violent but also as intrinsically altruistic as well) are currently appealed to in the formation of social policies: witness the debate surrounding Ardrey's *The Territorial Imperative* (1966). The most relevant question to ask with regard to such issues is not "which view is most true?" but rather "what are the likely consequences of acting from one or the other view in active contention?" and "can a view be found which creatively synthesizes them into a larger conception?"

The Human as Mechanism—the View of Modern Behaviorism

Objective psychology became behaviorism in 1913 when John B. Watson led a break with the older tradition of introspection, a tradition that had brought about little agreement about the nature of consciousness. More important, from the utilitarian point of view that has typified American thought, the introspectionist approach could not lead to prediction and control of data as could nineteenth-century physics. Thus, for scientific reasons, consciousness came to be thought of as a "construct" whose study leads to no fruitful results—a "black box" whose unknown mechanisms (which would become known by physiology, biochemistry, etc.) should produce behaviors that would be regular and predictable if we but study them the right way.

Instinctivist thought (endless lists of instincts being proposed to explain man's behavior) came into scientific disrepute at about this same time; hence it was convenient for the behaviorist school to incorporate Locke's image of the new born human as a tabula rasa on which is written the results of various processes of conditioning.

The branch of this school of thought which has proved most suc-

cessful emphasizes the technique of *operant conditioning*, a term originated by B. F. Skinner to denote a systematic procedure whereby the actions of an organism are brought under control by giving it a reward if and only if it behaves in a specified manner. This technique has been successfully used—in education, psychotherapy, and in prisons to alter whole behavior patterns of individuals.

A rather different approach to understanding (and controlling) behavior, also of proven effectiveness, is through the implementation of remotely activated electrodes in the brain.

The "psycho-civilization of society" has been advocated by means of various techniques of behavior modification such as operant conditioning (Skinner, 1971), electrocranial stimulation (Delgado, 1969), and psychochemical drugs (Clark, 1971). Only if such mentalistic and prescientific concepts as will, freedom, consciousness, and so forth are cast off, Skinner asserts, does man have a chance to attain a truly peaceful, rational, and humane society in the future.* Certainly, the techniques that have been developed within the view of "man as mechanism" are powerful and efficient. They work. Hence if *integrated* and reconciled with other views of man—views which have more adequate ethics and metaphysics (both terms that the behavioristic scientist insists are not part of his concern) on which to guide their application—this view and its products could conceivably be of great benefit to mankind.

The Human as Person—the View of Humanism and Humanistic Psychology†

Although its roots go back to Greek thinkers such as Socrates and Plato, the tradition known as humanism first flowered during the eighteenth-century period of Enlightenment. The central theme of humanism has always been the affirmation, perfection, and celebration of all that is thought to be uniquely human—especially the reflective and expressive qualities of humankind. This is in vivid contrast to the repressive qualities of the puritan ethic that so strongly influenced the economic image of humankind in industrialized societies.

More recently, humanism has surfaced in numerous forms, often as explicit alternatives to dehumanizing social forms. For example, the

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* "I am just completing a book on *Behaviorism* in which I answer a number of mistaken views about it. I am not sure that I really 'cast off' concepts such as will, freedom, and consciousness. I certainly reinterpret the data."—B. F. Skinner

† This section was written for the 1981 Pergamon Edition in response to Carl Rogers's suggestion that by jumping from the Freudian to the behavioristic to the systems theory view of man, the original SRI report gives unduly short shrift to humanistic psychology.—O. W. Markley

American Humanist Association arose in large part in order to offer an ethical (and legal) alternative to dogmatic religion, and the Association for Humanistic Psychology was created as a deliberate "third force" along side of the Freudian and behaviorist schools of thought in psychology. Although the leading proponents of modern humanism differ in a number of respects, they tend to agree on the importance of propositions such as the following, compiled by Klapp (1973, pp. 279 ff.):

- Man is one species; races and other biological subdivisions are relatively unimportant.
- If progress exists, it is to be measured by improvement in the life of *all* mankind.
- Killing one another for national or ideological reasons is not justified.
- A world order representing all mankind should be created as soon as possible.
- Certain weapons and technologies should be prohibited if for no other reason than because they threaten the future of man on this earth.
- Every culture and style of life that does not destroy human rights should be preserved.
- Customs, taboos, beliefs, and institutions which cramp the development of human potential should be reformed or abandoned.
- Social systems which restrict free activity of writers, artists, thinkers, and scientists are suspect.
- The standards which govern man should come from man himself and be cut to his measure.
- Concern for the well-being of man in this world should not be obscured by concern for the next.
- Much work is dehumanizing and should be changed to make it more satisfactory to the worker even at some loss of "efficiency" or profit.
- Many modern cities are unfit for human habitation.
- Many of the activities of the "counter-culture" today are an important part of experimentation to find a better life style for man.

The branch of explicitly humanistic thought currently making the most pronounced contributions to a more adequate image of humankind is undoubtedly that which is organizationally led by the Association for Humanistic Psychology and its ("fourth force") offspring, the Association for Transpersonal Psychology. Both being part of the so-called "human potential movement," these organizations tend to put more trust in the intuitive wisdom and good will of persons than in the formalized theories and rules of organizations, believing that there is an innate tendency toward wholesome growth and goodness in all persons that will be actualized if not prematurely frustrated by societal limitations. Both groups are recently programming many of their activities with an explicit focus on the possible evolutionary transformation of humankind, much as is described in (and partially as a result of) this study. Thus, to a large extent their emerging image is that described in Chapter 5.

The Human as Evolving Holon—the View of Modern Systems Theory

Over the past three decades an amorphous discipline termed "systems theory" has arisen—partly as a protest to overly positivistic and reductionistic methods in the physical and biological sciences; partly as a way to apply to the study of humans such new advances as cybernetics, information and communication theory, and computer-based simulation models; and partly as a way to reconcile and integrate concepts, laws, and models from different disciplines into a unified understanding. For many of its proponents, however, general systems theory goes beyond these objectives. It provides an entire world view, from which an image of humankind can be inferred.

In this view, the world (and its many subsystems) is not just a collection of analyzable components, but an integrated whole of organized complexity, one step beyond the Newtonian view of organized simplicity, and two steps beyond the classical world view of divinely ordered or imaginatively envisaged complexity.

Although the concept of a general systems theory (Chapter 4) is by no means uncritically accepted in the scientific community, it nevertheless seems useful here to examine two ideas stemming from this approach because they have important implications in terms of the "images of man." These are (1) that all natural systems are open, not closed (that is, proper understanding of system function can only be obtained by making reference to interactions with other systems outside of the boundaries of the given system under study; (2) that all natural systems have a hierarchical structure (that is, the system is made up to coordinated "subsystems," and the system itself is part of, or coordinated by, other higher level "supersystems").* The term "holon" (from the Greek *holos*—whole—with the suffix *on* suggesting a part) has been used to incorporate these system properties.† By using ideas such as these, the systems approach allows study of the seemingly purposive aspects of living organisms without making recourse to vitalistic or mystical ideas.

The person is a special case in systems thinking because of his self-conscious awareness and use of symbolic-conceptual systems to guide his behavior; he is a goal-directed, "adaptive" learning system or

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* The anthropologist and systems theorist Magoroh Maruyama has recently criticized the hierarchical tendency of general systems thinking as being an unnecessary and unthinking application of the dominant Western image of man—preferring what he calls a "mutualistic paradigm."—O. W. Markley

† See further description of this concept in Chapter 4.

"holon." The properties of general systems seem to apply even to man's conceptual activity. That is, owing to his social nature, his concepts must include the concepts held by others; and they must be "Janus-faced," incorporating more specialized concepts, just as they themselves are incorporated by more generalized ones.*

The systems view thus attempts to incorporate the more specialized images of man (as mechanism, as beast, as mystic, etc.) and emphasizes how these different *aspects* fit together holistically to make the human being a complex, goal-oriented learning system. It also has recently been integrated with evolutionary theory to show how conceptual reformulations can take place which coordinated previously existing ideas at a higher level of order and complexity.

Thus these ideas have immediate relevance for a future image of humankind that could be more adequate than the industrial/economic image.†

The Human as Spirit—the View of the Perennial Philosophy

Although most of the views of man we have surveyed have come into being during a particular era, often borrowing and adapting views of other cultures, there is one view that has remained surprisingly unchanged since it was first formulated in the Vedic era of India, about 1500 B.C. Although this view has always remained somewhat underground in most cultures, it has been visible, in almost unchanged form, as an identifiable image of humankind in so many times and places that Huxley has termed it the "Perennial Philosophy":

> *Philosophia Perennis*—the phrase was coined by Leibniz; but the thing—the metaphysic that recognizes a divine Reality substantial to the world of things and lives and minds; the psychology that finds in the soul something similar to, or even identical with, divine Reality; the ethic that places man's final end in the knowledge of the immanent and transcendent Ground of all being—the thing is immemorial and universal. Rudiments of the Perennial Philosophy may be found among the traditional lore of primitive peoples in every region of the world, and in its fully developed forms it has a place in every one of the higher religions. A version of this Highest Common Factor in all preceding and subsequent theologies was first committed to writing more than twenty-five centuries ago, and since that time the inexhaustible theme has been treated again and again, from the standpoint of every religious tradition and in all the principle languages of Asia and Europe. (Huxley, 1945, p. iv)

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* Appendix B represents comments by Sir Geoffrey Vickers on information systems and social ethics—comments very pertinent here and in later sections of this report.

† See Note A, p. 40.

The central characteristics of this view may be summarized as follows.

1. Those who most seem to be living it have always insisted that it is *not* a philosophy or a metaphysic, *not* an ideology or a religious belief, although onlookers have typically considered it so. Rather it is an experience that is attested to, often in paradoxical form, because the experience is said to be one of oneness, such that it resolves the polarities of time and space, yet the reporter must tell of the experience in terms of time and space.

> Behold but One in all things. (Kabir)
>
> An invisible and subtle essence in the Spirit of the whole universe. That is Reality. That is Truth. Thou are that. (Upanishads)
>
> True words always seem paradoxical but no other form of teaching can take their place. (Lao-Tse)

2. The basic nature of the universe is consciousness, and the human individual can participate in this "cosmic" consciousness. This is the Ground of Being. For the human it is a "superconscious" or divine aspect of one's being, and one's physical nature is a manifestation of universal consciousness.

3. Although the human can experience or participate in this cosmic consciousness, he or she usually chooses not to, going through life in a sort of hypnotic sleep, feeling that he is making decisions, having accidents occur to her, etc. If he begins to "wake up" and see more clearly, however, he becomes aware of the direction of the higher Self in this process.

4. Human potentiality is limitless. All knowledge, power and awareness are ultimately accessible to one's consciousness.

5. As a person becomes aware of this basic nature of reality, he or she is motivated toward development, creativity, and movement toward that "higher Self," and becomes increasingly directed by this higher consciousness. What is called "inspiration" or "creativity" is essentially a breaking through to ordinary awareness of these higher processes.

> When it breathes through his intellect, it is genius; when it breathes through his will, it is virtue; when it flows through his affection, it is love. (Ralph Waldo Emerson, "The Oversoul")

6. Evolution occurs, physical and mental, and is directed by a higher consciousness and is characterized by purpose. As humankind increases its level of consciousness, it participates more fully in this evolutionary purpose.

R. M. Bucke (1901) has defined cosmic consciousness in detail:

> The prime characteristic of cosmic consciousness is, as its name implies, a consciousness of the cosmos, that is, of the life and order of the universe.... Along with the consciousness of the cosmos there occurs an intellectual enlightenment or illumination which alone would place the individual on a new plane of existence—would make him almost a member of a new species. To this is added a state of moral exaltation, and indescribable feeling of elevation, elation, and joyousness, and a quickening of the moral sense, which is fully striking and more important to the individual and to the race than is the enhanced intellectual power. With these come what may be called a sense of immortality, a consciousness of eternal life, not conviction that he shall have this, but the consciousness that he has it already.

This view of man, if it can be experienced by more than the small minority of persons who have apparently realized it through the centuries, would seem to provide the needed sense of direction and the holistic perception and understanding described which the following chapters show to be needed.*

"The American Creed"

We conclude this highly selective survey of important images of humankind by inquiring what image or images were most important in the formation of the United States. In his classic study of black–white relations in the United States, *An American Dilemma,* the Swedish social scientist Gunnar Myrdal (1945) was struck particularly by the near-unanimous national endorsement of a coherent body of beliefs and values, an image of humankind whose characteristics he termed "the American Creed."

> America, compared to every other country in Western Civilization, large or small, has *the most explicitly expressed* system of general ideals in reference to human interrelations. This body of ideals is more widely understood and appreciated than similar ideals are anywhere else. (p. 3, emphasis in original)

The basic character and pervasive application of the "American Creed" were spelled out by Myrdal in one sweeping paragraph:

> These ideas of the essential dignity of the individual human being of the fundamental equality of all men, and of certain inalienable rights to freedom, justice, and a fair opportunity represent to the American people the essential meaning of the nation's early struggle for independence. In the clarity and intellectual boldness of the Enlightenment period these tenets were written into the Declaration of Independence,

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* See Note B, p. 41.

> the Preamble of the Constitution, the Bill of Rights and into the constitutions of the several states. The ideals of the American Creed have thus become the highest law of the land. The Supreme Court pays its reverence to these general principles when it declares what is constitutional and what is not. They have been elaborated upon by all national leaders, thinkers and statesmen. America has had, throughout its history, a continuous discussion of the principles and implications of democracy, a discussion which, in every epoch, measured by any standard, remained high, not only quantitatively but qualitatively. The flow of learned treatises and popular tracts on the subject has not ebbed, nor is it likely to do so. In all wars, including the present one, the American Creed has been the ideological foundation of national morale. (pp. 4–5)

The keynote of the American Creed would seem to be that of emancipation—not just the emancipation of a people from the bondage of tyranny and poverty, but the emancipation of humankind from the bondage of history and heredity.

This creed was not born of a single image of the human being but, like so many events in the real world, was the result of a vast compromise. One view was that enunciated over time by Thrasymachus, Machiavelli, Hobbes, and Hamilton—a pessimistic view that saw man as essentially irrational and irresponsible, subject to blind instinctual or environmental forces, whose life was "solitary, poor, nasty, brutish and short," and who would live "in an implicit state of war of all against all" until he unequivocally surrendered his dreadful freedom to the sovereign of an authoritarian state. A contrasting, and eventually dominant, view was that enunciated by Socrates, Cicero, More, Erasmus, Locke, Rousseau, and Jefferson—who stressed the faculties of reason and purpose, the moral attributes of dignity and responsibility, and the existence of sovereign individual rights flowing from these qualities.

These contending views continue to press for supremacy in American public policy, the system of checks and balances being designed to prevent excesses on either side. This solution represented perhaps the first pluralistic image of man as in active confrontation with an explicit assumption of equality between contending images (as contrasted with the pluralistic images of man in India where detachment from active confrontation was the ideal). It defied the great tradition which had assumed that the regulation of conflicting interests and the capacity of interpreting the general will must lie either with an enlightened despot or with an enlightened elite. Although this grand experiment has not been without its moments of difficulty (and indeed, as this study attempts to show, we are likely now to be in the midst of this tradition's greatest challenge), nevertheless:

> ....taking the broad historical view, the American Creed has triumphed. It has given the main direction to change in this country. America has had gifted conservative statesmen and national leaders, and they have often determined the course of public affairs. But with few exceptions, only the liberals have gone down in history

> as national heroes. America is . . . conservative in fundamental principles, and in much more than that . . . *But the principles conserved are liberal* and some, indeed, are radical. (Myrdal, 1945, p. 7, emphasis in original)

UNDERLYING ISSUES AND DIMENSIONS

By identifying a number of underlying issues and dimensions along which the various images that have dominated human history have differed, we not only can better portray the dominant image of humankind in our society, but we can contrast that image with the images of other cultures. This may prove of vital importance in the coming "spaceship earth" era, for not only will various dissimilar cultures have to coexist more interactively, but there is an increased possibility for a creative synthesis of differences—to the extent that these differences are highlighted in an appropriate context.

Free Will. Does the human have free will, or are his actions (including his choices) determined by various internal or external forces? Many, if not most, of the ancient images saw man as determined by magical, divine, or naturalistic forces, a theme that has returned via biological and behavioral science. Most modern images of man, however, see him as free, restrained only by the natural law of the universe and those arbitrary laws he has constructed for his own convenience.

Good versus Evil. Is human nature essentially good or evil? Or is the human neither, being shaped for good or ill by his choices or by his environment? Although many cultures have not dealt with this issue, it was made explicit in the Near East and has significantly affected the development of Western culture, having become an essential part of the Judeo–Islamic–Christian tradition. Most Western images of humankind can therefore be clearly evaluated with respect to this question.

Man and Nature. Is the human a competitor in a ruthless natural world, or is he an agent in a harmoniously balanced natural world? Or is he separate from and superior to nature, which he is to dominate for his own ends? Most cultures have assumed that the human being was intrinsically part of nature. The Semitic tradition was thus unique in setting him apart from nature. It was this tradition that has exerted the strongest influence on Western images of humankind and, indeed, may have been a necessary condition for the development of applied science as we know it today.

Mind versus Matter. Are we essentially mind, consciousness, spirit? Or are we composed of physical matter alone, a construction in whom life and thought is but a characteristic of the state of organization of the material? Most cultures have seen the human as essentially spiritual; only with the rise of objective science has the materialistic emphasis developed.

Mortal versus Immortal. Some images have death as the end of individual existence and experience. Others hold that the person has a soul or spirit which continues to exist consciously after physical death, either by reincarnation into another body or by moving onto some other non-material plane of existence. Virtually all images of man see him as somehow surviving physical death.

Divinity of Human Beings. Are the divine and the human essentially distinct, or is God the human's experience of universal reality at a profound level? This is the issue which most clearly separates the images of the mystical core of most "high" religions from the images popularized in their traditional teachings.

*Individual versus Society.** Is the individual important for his own sake, or is he important primarily as a member of the group? Similarly, is he valued for his intrinsic uniqueness, or for his extrinsic qualities and skills? The images of man in most ancient and modern cultures have emphasized him as a member of a society and have valued him for his extrinsic qualities. Only in the history of Greek and European culture have individualism and individuality come to be valued. And only in the French and American Revolutions did individual identity come to be idealized as the source of the equal worth of persons.

Progress. Is there a positive future toward which man and society are moving? Or is the notion of progress absent, replaced by an image of the essential unchangeability of the world? Although the idea of linear progress appears to have originated with Zoroaster and from thence to have influenced Western thought generally, the notion of the continuing rise and fall on a human and cosmic scale predominates in other cultures, finding its most notable expression in the Vedas of India.

Morality, Ethics, and Regulation. On what kind of ethical principles should human behavior be based? Naked power? Divine revelation? Traditional myths? Democratic agreements? Although the ethical aspects of various images of humankind have been based on all of

* "This should be a trichotomy rather than a dichotomy—individual versus institution versus society."—Michael Marien

these, there does seem to be an evolutionary ordering that takes place both in individuals and across cultures at differing states of development. This idea is explored further in Chapters 6 and 7.

Table 4 represents our estimate of the "center of gravity" or "mainstream" image dominant in the United States today. We offer this estimate not with any illusion that it is very accurate or that it is likely to please the holder of any particular image, but rather to get a sense of the dominant image of man held in the United States today which our future image of man will certainly have to incorporate if widespread chaos and disruption during a transition period are to be minimized.*

Table 4

ATTRIBUTES OF THE DOMINANT IMAGE IN CONTEMPORARY UNITED STATES

Has freedom. The person is conscious and rational, having freedom of choice controlled only by natural law and social constraints.

Is good. People are basically good and have good intentions; there are some exceptions but these stem from an unfortunate situation in life; as unfortunate situations increase, it is reasonable to trust others less.

Separate from nature. The person is superior to nature. Nature is to serve him, in accordance with the designs that humans apply by means of technology. The human is the highest being (either of creation or evolution) and therefore has a right to dominate nature.

Material and mortal. The person is a physical being, composed of living matter. He has a body and a mind that are related, yet separate. Material concerns count for more than mental or spiritual ones. Existence may well continue after death, but we should not behave as if that were true.

Not divine. Although the highest being in creation, the human is not in any way the same as God; reported mystic experiences or relations with higher spiritual entities are viewed with suspicion or alarm.

Individualistic. Except in times of war or other national emergencies, the person has a right to individualistic pursuits but with some social obligations. The meaning of life is to be found in individual fulfillment, which includes one's family and children who represent one's own progress through time.

Pro-progress. Material progress is important; the individual's purpose is to be productive, to change the world for his benefit and in so doing, to learn more about himself and the world. Whether this progress does or should apply to man's *nature*, however, is much less clear.

Ethically individualist and pragmatic. Although there is a continuing concern for ethical progress and fulfillment of the highest ideals of the culture, "right" (in practical terms) is that which works to the advantage of the individual.

* See Note C, p. 41.

Precisely how the American Creed has fared since Myrdal's (1945) observations is difficult for us to see and hence say, living as we are in the midst of the forces for reformation and counter-reformation.

Public polls in which the principles of the U.S. Constitution and the Bill of Rights were translated into attitude questions have repeatedly drawn such responses as "too liberal," "too much individual freedom." Yet movements like labor unionism in the early 1900s, civil rights (for minorities) in the 1960s, and women's liberation in the present decade typify the repeated emergence of collective attempts to make the American Creed more operational. Whether some sort of scientistic "psycho-civilization" of our society, or some sort of totalitarian control, or some new understanding of how democratic principles can function adequately will emerge in the years ahead—years that will likely bring increasingly severe challenges to our present system—is unclear. What does seem clear is that our nation is facing a crucial existential choice*—whether the American Creed is to remain viable during even the next 25 years. The image of humankind that develops is a fundamental part of that choice.†

NOTES

Note A

"General systems theory purports to offer an entire world view; unfortunately, the Society for General Systems Research (SGSR) is a hundred or so individuals each offering their world view, without any interest or mechanism for synthesis.

"The 1954 data for modern transdisciplinary science [given in Table 2] is none other than the founding date of SGSR. Well, see my comments below. In any event, I am surprised that you have no speculation as to the possible periods of the future. A good candidate for this would be the 'Methodology of Pattern' proposed by Julius Stulman in *Fields Within Fields*, 5:1 (1972), which goes well beyond the linear scientist found in general systems thinking. Or see Oliver Reiser, *Cosmic Humanism* (Schenkman, 1966).

"Natural systems are open, but man-made systems (physical and social) are not necessarily so, despite well-intentioned but naive attempts to impose biological metaphors on them. Most people in general systems theory—including von Bertalanffy and Laszlo—do not have an adequate understanding of social systems. Contrast their simplistic attempts to impose uniformity with the work of Bertram M. Gross, e.g. *The State of the Nation: Social Systems Accounting* (available separately or as monograph in *Bauer's Social Indicator*, MIT, 1966).

"Your acceptance of the mindless conventional wisdom of general systems theory reinforces my contention that you are neglecting an entire scientific culture—another state of consciousness—social sciences, managerial sciences, decision sciences, policy sciences, or whatever."—Michael Marien

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* The difficulty with the 'Our nation is facing—' rhetoric is that 95% of the nation is not aware of this choice—or is it 99%?"—Michael Marien

† See Note D, p. 41.

Note B

"Two important additional characteristics of this philosophy need to be emphasized: "(1) It is based, not on observation of external events, but on inner experiences, on observations of inner events, events taking place in consciousness. Thus it is based on direct preception and observation, just as is physical science, and in the same way, these observations and preceptions are subject to different interpretations. However, the perennial philosophy so-called, is essentially a distillation of the observations of thousands of gifted observers throughout the ages.

"2. The teaching that man is a microcosmic replica of the macrocosmic creation of God. Hermetic philosophy summarized this in the saying—'as above, so below.' The Vedanta in the expression—'Thou are that.' Jesus in the saying—'The Kingdom of Heaven is within you.' The conclusion is that by observing energy-events in consciousness, *within* the nature, one can attain to an understanding equal to or greater than that which can be gained by external observations—which from this point of view, look at surface manifestations only."—Ralph Metzner

Note C

"[Here you have] a lost opportunity: You failed to consider images of woman, or to put it differently, you failed to consider the image of man, *as contrasted with* woman. [For example], the Association for Humanistic Psychology and its sympathizers suffer from being designated an 'effeminate' organization. We are soft instead of hard, tender instead of tough, cooperative instead of competitive, intuitive instead of cognitive, concerned with process instead of analysis, expressive rather than instrumental, etc.

"The problem is not that our society fails to acknowledge the more humane ideals, but rather that it *feminizes and domesticates* these ideals and consigns them to home, church, school, and suburb. In the meantime men fight all the more ferociously in order to protect with their 'realism' this 'sweet idealism.' In Nixon's famous 'I see a child' speech, he adds:

> I see a gentle Quaker mother, with a passionate concern for peace, quietly weeping when he went to war, but understood why he had to go. . . .

"You see, weeping and passion and peace and understanding are all *for women.* In fact it is the function of Nixon's mother and other women to provide sufficient emotional support so that he can 'make it' in a political, commercial, legal, and international jungle, from which feminized ideals have been excluded.

"Actually both 'male' and 'female' images suffer through this 'schizogenesis.' Cooperation and passion are trivialized and sentimentalized by restricting them to the nuclear family and the garden suburb. In the meantime the worlds of politics and commerce grow brutal for lack of (falsely feminized) virtues."—Charles Hampden-Turner

Note D

"The idea of man as a *student of life,* or a *seeker of wisdom,* is one that has the greatest relevance to the transitions of society that we are involved in. The contemporary American ideal, while it has a place for the role of student, tends to think of it as temporary. By contrast the Perennial Philosophy thinks of man as always a student of life, or of *Tao,* or of Reality, or of the 'Actual Design' as we call it in Actualism. Laotse, one of the greatest of the Chinese sages, said 'The wise man seventy years of age, in tune with Tao, does not hesitate to ask a child of seven and learn from it.'

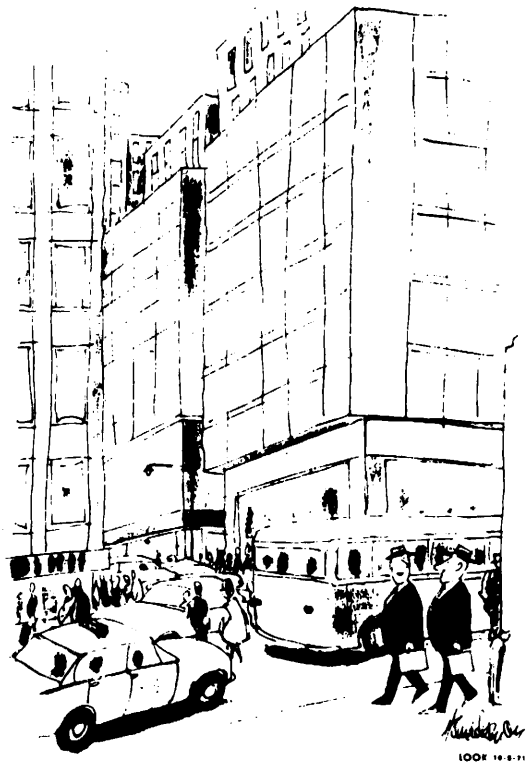
"The seeker, or student of life, seeks to gain insight and understanding by (1) exploring his own consciousness and (2) studying man as a microcosmic creation. He may also, under certain circumstances, study in a school, often referred to in ancient times as a 'Mystery School,' or with a teacher or guide. In such a school he does not study academic

subjects; rather he studies himself, in order to expand his awareness, sensitize his perception, and enhance the capability for expressing his creative self in action.

"The idea of man as a student of life also suggests a remedy for some of the deficiencies produced by our ideas of happiness as being equivalent to economic production and consumption. Then we have the degrading spectacle of men and women in their fifties and sixties, no longer economic producers, being left to vegetate in retirement communities. By contrast, there existed in India, until not too long ago, the concept of the *householder*, who after discharging his obligations to society and family, having raised his children to adulthood, retired from his business or profession and entered a meditation training center or ashram, or worked with a guru, to devote the rest of his life to the study of consciousness and self-understanding.

"Based on this concept one can envision older people revitalizing their life-goals and attitudes into a spiritually oriented, creative new direction, that would allow the traditional 'wisdom of old age' to be re-integrated into the communal life in a constructive manner.

"The image of man as a seeker or student of life fills all the characteristics of an adequate future image, as postulated in Chapter 5. It emphasizes the cooperative approach to nature and to other human beings rather than the competitive, exploitative, thus the ecological perspective. And it focuses human potential, thus the evolutionary perspective. And it undercuts the arrogance of dogmatism, whether scientific or religious, which shuts off awareness of the aspects of life outside the current theories and belief systems."—Ralph Metzner



"The way I look at it, there's a price tag on everything. You want a high standard of living, you settle for a low quality of life."

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CHAPTER 3

Economic Man: Servant to Industrial Metaphors

> The imperatives of technology and organization, not the images of ideology, are what determine the shape of economic society.... I am led to the conclusion that we are the servants in thought, as in action, of the machines we have created to serve us.
>
> J. K. Galbraith (1967)

> Technology... has become the prime source of material change and so determines the pattern of the total social fabric.
>
> R. J. Forbes (1968)

The above quotations reflect a prevailing sense that technological and economic developments have had a dominant influence upon the pattern of our total societal fabric. Indeed, industrialism is one of the most potent and widely spread cultural/societal systems in human history. In America, no modern institution has escaped its influence: the school, the family, the community and city, the church, all have been influenced by this primary driving force of the modern era (Miller and Form, 1967). Thus, the industrial revolution in modern times refers to more than machines and markets; it refers also to the people and institutions locked into a network of relationships dominated by economic and technological forces. The pervasiveness of economic forces suggests that we cannot anticipate the images of humankind that might emerge without giving consideration to the tugs and pulls of economic and technological influences.

SOURCES OF THE ECONOMIC IMAGE OF MAN

The social effects of the Industrial Revolution markedly transformed the lives and actions of individuals in Europe, especially by the mid-nineteenth century. For example, the emergence of the concept of "factors of production" (land, labor, and capital) had revolutionary implications for the Western image of humankind. Humans (the labor component) were no longer a part of the organic whole of society; rather, the person, the laborer, became an objectified and standardized

component of the production process. The tendency to see people as mere units in the production process, bought in an impersonal marketplace and forced to submit to the dictates of the factory in order to survive, was reinforced by the post-mercantilist socio-economic ideology of *laissez-faire*, which discouraged government intervention in economic activities. The image inherent in this setting could reasonably be described as "economic man":

- *rationalistic* (able to calculate what was in his own self-interest),
- *mechanistic* (a factor of production),
- *individualistic* (with great responsibility to take care of himself),
- *materialistic* (with economic forces acting as primary if not exclusive reward and control mechanisms).

In addition to the changes in economic structure that laid the groundwork for a market economy and factory-dominated society, we also can identify some of the basic value premises that emerged during the period of the Renaissance. This is important since many elements of the dominant images of humankind currently held by our society have their origins in the Renaissance and its aftermath, and can be inferred from the value premises of that era. These value premises are discussed briefly below.

Rationalism. Reason was elevated to a pinnacle in the eighteenth-century Age of Enlightenment: "Reason would discover the natural laws regulating existence, thereby insuring the progress of the human race" (Brinton *et al.*, 1955, p. 47). A number of threads formed the intellectual fabric of rationalism. First, there was the rejection of revelation as a source of truth. Truth was no longer something that was found through a religious intermediary and divine revelation; rather, truth was discoverable through empirical observation of the world. Second, there developed an invidious distinction between reason and emotion. The rational mode of perception became dominant since that was the mode most useful in dealing with a physical world. "The way was paved for the increasing preoccupation in modern times with phenomena that were susceptible to mathematical and mechanical treatment, and for the increasing suppression of non-mechanical and so-called 'irrational experience'" (May, 1966, p. 59). This suppression of the non-mechanical went hand-in-hand with the industrializing process, for that which could be calculated and measured had practical utility in the industrial world and what was irrational did not.

Individualism. In earlier societies, humans perceived themselves as inseparable components of the seamless web of being which extended

throughout their natural and social environments (Lovejoy, 1939). For example,

> To the Greek, the city-state was not merely a legal structure; it was a way of life. Every aspect of daily existence was intimately connected with it. The individual derived his importance from his relation to the state; he was viewed as a citizen who depends on the state and who can contribute to its welfare. But it is the state that is omnipotent.
>
> (Rima, 1967, p. 4)

Man also had a collectivist image of the person during the Middle Ages: "Each citizen, serf or priest or knight, knew his place in the hierarchy of church and feudalism; and all emotions were channeled in community and religious ceremonies" (May, 1966, p. 57). With the Renaissance and Reformation came a new belief in the power and dignity of the individual. There arose a new confidence that a person could overcome problems and forge a life by his or her own efforts and by following the promptings of one's own conscience.

Secular Progress. As the emphasis shifted from collectivism to individualism, so the focus of attention to life on earth and attainments in the here and now, rather than rewards in life hereafter. People came to see their future in an optimistic perspective. No longer was happiness something to be gained in an afterlife—happiness could be found in this life. This optimism was grounded in a faith that the future would prove to be congenial or at least neutral to the strivings of the individual (Heilbroner, 1959, p. 27). This corresponded with a faith in the power of science.

Natural Law. There developed a belief in a pre-established harmony in the universe, a natural law of existence. In its economic form, this was the belief that if every person pursued their own self-interest for material gain, then the well-being of society as a whole would be enhanced.

*Man as Master**. Man came to think of himself as uniquely apart from nature so that it was his destiny to master the natural environment. The roots of this concept of man's relationship to his environment can be traced, in part, to Judeo-Christian traditions. "Especially in its Western form, Christianity is the most anthropocentric religion the world has seen. Christianity ... not only established a dualism of

* For purposes of emphasis, the generic term "man" was not changed to "humankind" as in other sections.

man and nature but also insisted that it is God's will that man exploit nature for his proper ends" (White, 1967, p. 1205). With the industrial period came the convergence of operational images of man and technological means whereby man could master his environment.

Materialism. In this period, the satisfaction of the individual's material wants became not only a necessary activity but a desirable one as well. Where, in the past, the acquisition of wealth had been disdainfully regarded, at least theoretically, it now was strongly favored. Calvinism, as it came to be applied, suggested that one's life here on earth might hint at one's ultimate destination in the afterlife—to be "called" to one's work and be diligent in worldly endeavors while maintaining a spirit of rectitude was outward evidence of dedication to a religious life. Thus, "the energetic merchant was, in Calvinist eyes, a Godly man, not an ungodly one; and from this identification of work with worth, it was not long before the notion grew up that the more successful a man, the more worthy he was" (Heilbroner, 1968, p. 60). Although the role of the "Protestant Ethic" in the industrializing process should not be overly emphasized, "it is striking that without exception it was the Protestant countries with their 'Puritan streak' of work and thrift which forged ahead in the economic race" (Heilbroner, *ibid.*).

The compatibility among these value premises is striking and it is suggestive of the extent to which these premises collectively formed an image of man as possessor of a tremendous dynamism for altering the conditions of human existence. This is well summarized by Woodruff (1966) who examines the impact of European ideas upon the world and concludes:

> No civilization prior to the European had occasion to believe in the systematic material progress of the whole human race; no civilization placed such stress upon the quantity rather than the quality of life; no civilization drove itself so relentlessly to an ever-receding goal; no civilization was so passion-charged to replace what is with what could be; no civilization had striven as the West has done to direct the world according to its will; no civilization has known so few moments of peace and tranquility. (p. 16)

Although these value premises did not specify the exact form of society that would evolve, they did articulate the ground rules, so to speak, from which it would emerge. And in this function they formed a resilient, potent, and enduring base for the advent of the modern industrial era. But as the industrial system gives way to its socio-economic successor, so should the images of humankind, the values, and the conceptual milieu yield to the offspring they have helped create.

THE IMAGE OF ECONOMIC MAN IN THE CONTEMPORARY SETTING

Our society seems to have reached that point in American history where our dominant image of economic man no longer fits the physical reality. Until recently, the basic value premises of individualism, secular progress, materialism, and so on, have been commonplace in American society and gave support to societal change in the form of the industrial system. Further, these image components, growing out of the Renaissance, were sufficiently embracing in their interpretation and flexible in their adaptation to encompass a wide range of societal changes without themselves fundamentally changing—for example, theoretical notions of the essential equality of all humankind, which have only very recently, and still not fully, been incorporated into society as a practical reality. But in the process of historical evolution, merely a slight difference in rates of change can eventually create a significant disparity between images and societal experience. This "lead–lag" phenomenon—shown in its general version earlier as Fig. 1 and related specifically to the economic image of man in Fig. 8—takes on added

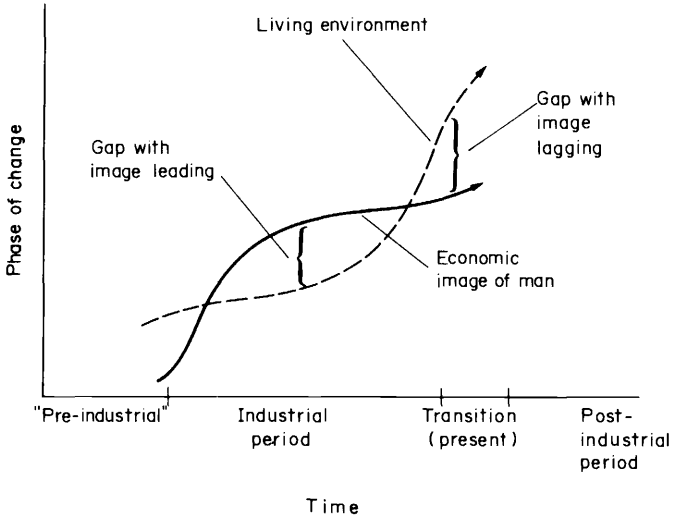

Fig. 8. Hypothesized interaction between the economic man and society.*

* "You have made superb use of Polak, and your diagrams have added significantly to his own conceptualizations of the process and ingredients of image change."—Elise Boulding

"This diagram is too simplistic."—Margaret Mead

significance when applied to the particular historical period since the Industrial Revolution.

In Fig. 8, a portrayal of this period, the economic image is at first anticipatory; in other words, it is operating as a set of "ground rules" providing direction to societal change as industrialism emerges. The gentle slope of image change in the later portions of the industrial period suggests that the economic image continues to change, but in a slow evolutionary way as it is articulated to a degree through interaction with the changing living environment. Also during this stage, the living environment is gradually, and then with increasing momentum, being altered so as to conform with the rationale of the anticipatory, economic image of man. Then follows a "short" period of relative congruence or match between this image and the living environment. The period of congruence does not last for long since the economic image of man, which has become firmly embedded in the whole societal framework, provides a base for further changes in the living environment. Among these changes are increasing urbanization, increasing material abundance, growing energy utilization, and expanding transportation and communication networks. Changes in this living environment then proceed rapidly in accord with an internal dynamic that can "overshoot" the image base from which the initial momentum derived. In this later phase, the economic image of man must increasingly adapt itself to the realities of the altered living environment if it is to be a supportive image. However, such change in the underlying image of man is difficult to secure since the image is so basic to the society's "world view" that it changes only very slowly and with great effort; thus, the image increasingly lags behind societal changes and a gap or mismatch grows. When this mismatch between the image and the realities of the environment becomes too great, there is societal disruption—arising from a severe loss of meaning, purpose, and direction. This, in turn, sets the stage for basic readjustment between the image of humankind and the societal context.*

The Poverty of Our Abundance

There are two useful ways of assessing whether the foregoing analysis is relevant to changing images in our era. First, we can note that the economic image was born at a time when scarcity and abject poverty were facts of life. The question emerges, are they still such dominant facts of life that the image retains appropriateness for organizing our

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* Readers may want to refer back to Table 2 (page 6) for additional illustrations of "overshoot."

collective and individual behavior? Second, we can note the operational value premises that accrue from this image—premises that are inferred from the way in which people behave rather than what they say. These premises, in turn, can be related to the present societal environment and their continued appropriateness for organizing and directing our behavior can be evaluated. These points are discussed below.

John Maynard Keynes (1930) anticipated the profound disorientation and loss of meaning that might occur when a society achieved a condition of relative affluence but continued to deal with it as if there were continuing scarcity.

> The economic problem, the struggle for subsistence, always has been hitherto the primary, most pressing problem of the human race..... Thus we have been expressly evolved by nature—with all our impulses and deepest instincts—for the purpose of solving the economic problem. If the economic problem is solved, humankind will be deprived of its traditional purpose. Thus for the first time since his creation man will be faced with his real, his permanent problem—how to use his freedom from pressing economic cares.... There is no country and no people, I think, who can look forward to the age of leisure and of abundance without a dread. For we have been trained too long to strive and not to enjoy. (p. 211)

That we are rapidly approaching this point in America is dramatically illustrated by data which show changes in poverty levels and median family income levels over the last 40 years. There has been a veritable revolution in affluence—both in magnitude and in the rapidity with which it was acquired. In roughly the space of half a lifetime, from 1929 to 1969, the proportion of the total U.S. population in poverty fell from 60 percent to 12 percent (Allen, 1952; Census Bureau, 1970). Median family incomes rose, *in* 1969 *dollars*, from $2100 (estimated) in 1939 to $9433 in 1969 and will rise to an estimated $22,000 by the year 2000 (Census Bureau, 1970; Population Commission, 1972). There can be no doubt that this unprecedented material wealth, acquired so rapidly, represents a quantum departure from past conditions. From this evidence alone, it is clear that one could expect a disjunction between the functional role of our traditional images of humankind and the new material reality they confront. In the words of the social psychologist, Kenneth Keniston (1965):

> With the age-old goal of universal prosperity within sight, we must question whether the methods—technological values and virtues, the instrumental goals of our affluent society—that help us approach this goal will serve to take us beyond it. (p. 428)

Obviously, the foregoing data and comments should not be interpreted as a suggestion that there are no longer serious problems of poverty in our society. This cannot be the case when 12 percent of the U.S. population in poverty translates as 25 million people. What can be questioned is whether a continuation of scarcity notions will help

people get out of poverty. In many respects, the societal reforms necessary to cope with poverty (e.g. redistribution of income) have much in common with the reforms necessary to cope with the problems of affluence. Therefore, these are more complementary than competing concerns.

For those who now exist in relative affluence, scarcity premises may still seem appropriate for psychological rather than material reasons. The nature of this perennial scarcity is discussed by Easterlin (1973) in his article, "Does money buy happiness?":

> Each person acts on the assumption that more money will bring more happiness; and, indeed, if he does get more money, and others do not (or get less), his happiness increases. But when everyone acts on this assumption and incomes generally increase, no one, on the average, feels better off. Yet each person goes on, generation after generation, unaware of the self-defeating process in which he is caught up. (p. 10)

Thus, the purchase of happiness is an illusory phenomenon, "a distant, urgently sought, but never attained goal" (Easterlin, 1973, p. 10).

Despite the contemporary success in creating scarcity which is increasingly psychological, there are reasons to believe that "manufactured want" will not long endure in our society. First, we are destined to run, sooner or later, against the limits of world resources. For example, we are seeing these limits reached in food and energy shortages. Second, our material abundance seems to have been accompanied by a disturbing spiritual, personal, and social poverty. Etzioni suggests that the hedonistic thrust of the more recent period of industrialism arises when "old patterns of meaning erode without being replaced by a new set" (1972, p. 6). Thus, we have found only ephemeral and transient meaning through our consumption behavior. However, human needs are hierarchically ordered such that higher needs emerge when lower needs are satisfied (Maslow, 1962; Graves, 1967). This implies that as we become relatively satiated materially, other needs will arise—friendship, love, self-actualization, community with others—to assume a place of primary importance in people's lives. In turn, this suggests that profound disorientation may occur when our underlying image of economic man continues to exhort us to behave and find meaning in a way of life that is inimical to the fulfillment of these newly emergent needs.

The Present Mismatch between Premises and Societal Realities

There are a number of inferable value premises that characterize the workings of our society. They may never have been declared as guiding

premises, but the behaviors and policies during the industrial period suggest that they, or their close relatives, must have been at work. Below we list a number of such premises which seem possibly obsolescent. Since these are too many to discuss in any detail, seven that have particular relevance to the image of economic man are amplified in the discussion.

POSSIBLY OBSOLESCENT PREMISES THAT TYPIFY THE RECENT INDUSTRIAL ERA

(1) That *progress is synonymous with growth of GNP,* that quality of life is furthered by a system of economics based on ever-increasing consumption.
(2) That the individual should be free to make his own choice of "the good," and that the choices he makes in pursuit of *self-interest will somehow add up to desirable overall societal choices.*
That *people are essentially separate,* so that little intrinsic responsibility is felt for the effect of present actions on remote individuals or future generations.
(3) That *humankind is separate from nature,* and hence it is our destiny to *master* nature.
(4) The "*technological imperative*" that any technology that can be developed, and any knowledge that can be applied, should be.
That the search for knowledge is appropriately dominated by *utilitarian values*—science supported to the extent that it promises new manipulative technologies.
That the aggregate knowledge of *specialized experts* constitutes wisdom.
That both societal growth and protection of one's own interests are best served by *competitive aggressive behaviors.*
(5) That *man is rational* and that reductionism in positivistic scientific thinking is the approach to knowledge most to be trusted.
(6) That *individual identity* is to be equated with material possessions acquired and/or occupational status achieved.
(7) That there is *freedom in affluence,* that it is possible for people to earn "enough" money, and simultaneously have full freedom of choice.
That the future of the planet can safely be left to autonomous *nation-states,* operating essentially independently.
The "political premise" that "what ought to be" is not a meaningful concept because it is not achievable.
That *economic efficiency* should be pursued indefinitely through the organization and division of labor and the replacement of humans by machines.

Premise One: that *progress is synonymous with growth of GNP* and that growth is inherently good. It is now well accepted that gross measures of growth such as GNP do not tell us a great deal about our society's welfare. For example, the level of pollution is correlated with the level of GNP: the question arises, what is growing—pollution or social well-being? Given the destructive as well as benevolent potential of our powerful economy, we can no longer afford blindly to accept the premise that "bigger is better" and "growth is good." The momentum of such an ideology may be suicidal.

When we combine our growth ethic with a passion for hard, numerical evidence of growth, we find that we tend to maximize most what we can measure best: the GNP, the rate of employment, years of

education received, the number of cars produced, and so on. While these indices of success are useful, they tend to relegate more subjective measures of success (aesthetic maturity, capacity for love, environmental quality) to an inferior status. Further, "hard" measures of growth such as GNP give a false sense of security, as long as they are going up, because they sidestep the crucial question: abundance for what?

Premise Two: that there is a natural law of beneficial *self-interest* which assures us that when persons act in their own competitive, material self-interest, the public good is well served. In its economic form, this belief in a harmony between individual self-interest and the welfare of society as a whole was the essence of the *laissez-faire* concept.

There are several problems with this premise. A different description of this "natural" law is that: if we set up a social framework in which people are encouraged to be generous, most of them will rise to the occasion; set up one which encourages them to be selfish, and most will sink to that level. Thus, the assumption that humankind is motivated only by immediate self-interest may well be another of the self-fulfilling hypotheses of society. Having helped create a world in which human relationships are increasingly forced into the marketplace, we find superb confirmation of the initial dogma, that humankind is governed by marketplace motives (Claiborne, 1971). The incompatibility of this motivation with human actualization is summarized by Melvin Tumin (1964):

> ...one may fairly say that what business stands for, ideologically insists upon and tries to get adopted as general principles of conduct, run directly against and reduce the chances of evoking affection and love as principles of relationship... in promoting themes quite inimical to identification, affection, and significant membership, business thereby and to that extent tends to bring out, standardize, and reward the most unsocial impulses in man. (p. 130)

Not only does this diminished conception of persons exist in the realm of business practice, it is supported by economic theory which has "still an unmistakable aura of eighteenth-century pleasure–pain psychology ..." (Rima, 1967).

Premise Three: that *humankind is separate from nature* and it is its obligation to conquer nature. Humankind, so long subservient to nature, now finds itself in an increasingly powerful role as the creator of its own environmental context. However, given the highly interdependent links in the ecological chain, our capacity for manipulation of the environment must give way to an enlarged sense of symbiotic responsibility.

Premise Four: that the *technological imperative*, the increasing ability

and hence requirement to shape and control the environment, including people, is an unqualified good. This is related to the utilitarian bias in the search for knowledge, so that only that knowledge is pursued which promises new manipulative technologies. The "technological imperative"—that any technology which is possible is, *ipso facto*, necessary and desirable to apply—is now conflicting on occasion with what may become "social imperatives." For example, because the SST was possible it was presented to the American public as necessary and desirable. The public, however, decided that it was neither, and after an extended national furor, the project had to be abandoned. We are beginning to weigh the social, psychological, and environmental costs against the worth of such products of technology.

Premise Five: that we are first and foremost *rational beings* and feeling should be subordinated as an inferior aspect of our nature. This is an understandable premise in that it supported development of the cognitive skills needed in the industrializing process. However, this empirical view relegates the speculative world of art, music, poetry, and religion to a position of lesser reality. How then are we to give meaning to life in an affluent society if the "higher" pursuits of people must be subordinated as "lower" in order to produce that affluence? We must realize the dehumanizing influence in the suppression of the nonrational human potentials.

Premise Six: that *individual identity* and success in life are to be measured by material possessions acquired and/or occupational status achieved. The biblical injunction against this kind of thinking is to inquire what it profits a person to gain the world but to lose his soul. However, one's soul has become redundant in a world secularized by affluence; "the most effective way to establish [identify] distinctions is through styles of consumption" (Downs, p. 64). *Fortune* magazine recently reported that in the consumer market of the 1970s there is

> an increasing insistence by the customers on using consumption to express themselves, to help in fashioning their own identities.... For increasing numbers of Americans, the clothes they wear are not simply material objects; on the contrary, they are viewed ... as the most basic expression of life style, indeed of identity itself.
>
> (Silberman, 1971)

Premise Seven: that there is *freedom in affluence.* We have traditionally assumed that if people can simultaneously earn "enough" money and be given "freedom" of choice, they can take care of themselves. The fallacy of this view lies in believing there is no conflict between earning the money and the freedom of choice that is then available. The very act of earning "enough" money constrains the number of social,

psychological, political, and physical choices that one can make. Margaret Mead has pointed out that to introduce cloth garments (effectively) into a grass- or bark-clad population, one must simultaneously introduce closets, soap, sewing, and furniture. Cloth is part of a complex cultural pattern that includes storing, cleaning, mending, and protecting (Slater, 1970). Imagine, then, the cultural constraints implicit in our society which is so laden with goods and services. Thus, the real philosophy underlying "freedom in affluence" is that once you have enough money to be free from want, then all further income gives you the freedom to want—as long as you want only more material goods and services. This premise runs afoul if wants arise that cannot be largely satisfied by material means.

The preceding discussion is only suggestive of the potential mismatch between our inferable value premises and the societal context in which they are operable. This lack of congruence calls into question, at a deeper level, the utility and desirability of the economic "image of man." It is difficult to tell when and how congruence—and thereby meaning and direction—will be reestablished in our social order. There are, however, several forces for resolution that will likely be involved as a higher level of reintegration emerges.

GOING BEYOND: IN SEARCH OF IMAGE/SOCIETY RESOLUTION

There are two distinguishable methods by which congruence might be reestablished:

1. The trajectory of the industrial state dynamic may be sustained and the image of humankind adapted to fit that dynamic.
2. The industrial state dynamic may be either self-limiting or limited by society so as to conform to the guiding influence of a newly emergent image of man.

In either event, the economic image is hypothesized to require change; however, the nature of that change is quite different for the two responses. Although these two alternatives are an oversimplification of the interdependent process of societal evolution which inevitably implies the dialectical interaction between images and environment, nonetheless they do alert us to the following questions:

- How powerful is the industrial dynamic?
- Can we control that power?
- Do we have emerging images of man to direct it?

The Power of the Industrial State

Technological change has an unquestioned primacy in virtually every area of our collective existence. It provides the motor for the continual social change to which we must somehow adapt (Keniston, 1965). During the industrial period, the forces of economic/technological change were unleashed but the agencies for the control or guidance of technology were still rudimentary (Heilbroner, 1967). Thus technological advance became a near-autonomous driving force, bringing about major changes in the total social fabric. The society is under pressure to revise its underlying "metaphors of meaning" or images of man so as to conform to the new conditions technology has created.

The powerful structuring influence of economic forces upon developed societies is dramatically illustrated by the fact that industrialism creates standardized societal forms which are strong enough to transcend traditionally distinctive cultural boundaries and differences. Alex Inkeles, who has done extensive and detailed cross-cultural studies of this phenomenon, writes that:

> There is substantial evidence, over a wide attitudinal and experimental range, that perceptions, opinions and values are systematically ordered in modern societies.... Modern society... is more or less unique in the extent to which it produces standardized contexts of experience.
>
> (Inkeles, 1969, p. 2)

Other extensive cross-cultural studies have reached similar conclusions. Adelman and Morris (1967), in a study of economic growth and socio-political change in seventy-four countries, state that:

> During this process of successive differentiation [which accompanies economic development], the economic aspects of the society become increasingly more important and more explicit until, at the fully developed stage, economic considerations have become a powerful force in shaping national behavior. (p. 267)

Thus, it does seem plausible to conclude that economic processes and products are creating an interlocking network of values, institutions, incentives, physical structures, and social structures that exact conformity as the price for inhabiting this societal environment. Once we have created a living environment, we are destined to be products of that which we have created. We cannot start afresh. René Dubos makes the point that:

> The environment men create through their wants becomes a mirror that reflects their civilization; more importantly it also constitutes a book in which is written the

> formula of life that they communicate to others and transmit to succeeding generations. The characteristics of the environment are therefore of importance not only because they affect the comfort and quality of present-day life, but even more because they condition the development of young people and thereby of society.
>
> (Dubos, 1968, pp. 170–171)

Although it is clear that the "imprinting" force of the industrial state is strong, it seems by no means certain that the industrial dynamic is sustainable. The industrial dynamic may be self-limiting as it runs up against the limits of world resources, as it no longer provides people with a sense of self-identity and meaning, as its structure reaches a point of increasing instability and vulnerability.

The self-limiting character may already be reflected in our apparent need to make major modification of our economic institutions. It might seem quite unrealistic to think of drastic change in the massive and powerful business organizations were it not for a historical parallel. Probably it would have seemed quite preposterous in the mid-eighteenth century to imagine that, over major portions of the globe, governments would soon be considered legitimate only if they derived "their just powers from the consent of the governed," if they became "governments of the people, by the people, and for the people." The social power of granting or withholding legitimacy, though its mechanisms are subtle and little understood, has impressive force—as monarchies and colonial powers came to realize.

An analogous challenge to legitimacy appears to be building up with respect to business institutions. The legitimacy which in the past was granted on the basis of ownership and managerial expertise is being attacked. Consumers, environmentalists, civil-rights groups, and modern feminists are placing new requirements on business for social responsibility. Workers are demanding not only a voice in the policy-making and decision processes hitherto reserved for management, but also improved work environments and "meaningful work." The emergence of huge multinational corporations with economic powers comparable to those of nations has brought awareness that these private-sector institutions have impacts on human lives comparable to the impacts of political governments, and hence should be subject to the demand made of governments to assume responsibility for the welfare of those over whom they wield power.

The Control of the Industrial State

Although the industrializing process has a very powerful impact upon the rest of society, it is itself largely dependent upon tech-

nological change, which tends to be an uncontrolled and undirected process. The reasoning behind this contention is as follows:

- Economic growth depends largely upon technological change—economic studies typically attribute between 60 percent and 90 percent of economic growth to the forces of technological change (Hollander, 1965; Kuznets, 1966).
- The direction of technological change in the *short run* depends largely upon profit potentials and, therefore, technological change occurs as an unplanned and ungoverned process in the unrelated profit pursuits of many independent firms (Schmookler, 1966; Rogers, 1962).
- The direction of technological change in the *long run* depends largely upon the state of scientific knowledge, which develops haphazardly through the accretion of many small bits of knowledge from many independent sources (Mesthene, 1970).

In both the long and short runs, the regulation of technological change is peculiarly difficult owing to systemic shortcomings. Control over its direction requires a great deal of expertise; however, the demands for specialization inherent in the development of expertise necessarily narrow the focus of regulating agencies at the same time that the consequences of our technologies are having an increasingly broad impact. Therefore, from a systemic perspective, the possibility of effective regulation of technological change would seem to be declining at the same time that the need for guidance is increasing.

There are forces beyond the rather accidental convergence and impact of technology which reinforce the feeling that "the course of social change is quite beyond our capacity to control or even influence" (Keniston, 1965). For example, the market mechanism largely reacts to short-term profit potentials and substantially discounts the dysfunctional consequences that might accrue from decisions based upon short-time horizons. Also, the result of using such criteria as net profits, units produced, and attendance levels as measures of societal progress is that:

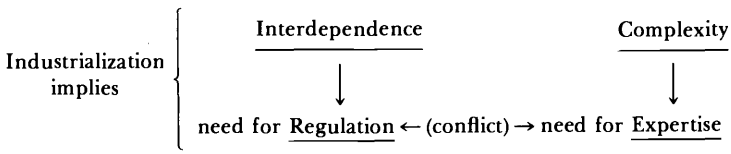
> . . . each sub-component of society tends to define its values and goals, not in terms of quality, inner satisfactions or fulfillments, but with respect to position relative to other like components within the competitive context, irrespective of the state or direction of movement of that context.
>
> (Wilson, 1970, p. 21)

In addition, there may be fundamental, systemic "control deficiencies" that inevitably emerge as a society becomes highly developed (e.g. with increasing urbanization, growth of the economy, growth of political institutions, interlocked transportation and communications networks, and so on). It appears that "industrial man" has created an

interdependent societal environment of such proportions that it has inadvertently reached a critical, systemic mass which is beyond his direct control. We have aggregated what were comprehensible smaller systems into larger and oftentimes incomprehensible supersystems:

> [there is a] . . . growing reliance on supersystems that were perhaps designed to help people make analyses and decisions, but which have since surpassed the understanding of their users while at the same time becoming indispensable to them. . . .
>
> (Weizenbaum, 1972)

The simultaneous need for and lack of control over societal changes at the macro-systemic level can be visualized as follows:



This schematic suggests that as a society becomes increasingly developed, a logical consequence is for the system to become increasingly *complex* and *interdependent.* An increasingly complex system—given biological, learning, and mechanical limitations to human decision-making capacity—implies the need for division of labor and increasing specialization, i.e. the need for *expertise.* Further, an increasingly interdependent system requires increasing *regulation* to insure smooth functioning and to prevent damaging perturbations. Several conclusions follow from these characteristics of large societal systems:

- Increasing interdependence implies increasing vulnerability of the system: one hijacker can take over a multimillion dollar airliner; a localized power grid failure can plunge the whole U.S. eastern seaboard into darkness; the shutdown of a brake plant can stop production at major auto assembly plants and also at "upstream" plants. The entire system, then, is no stronger than its weakest or most vulnerable component. This weakness, which becomes more pronounced as interdependence increases, necessitates increasing predictability, order, control, and regulation of societal processes (human and mechanical). As Donald Michael has pointed out, this weakness is further aggravated by the fact that as the size of the population increases, "even if the *percent* of disturbing events that occur doesn't increase, the *number* of events that occur will increase" (1968). Further, as more people and processes are grouped together, the number of linkages (vulnerability points) increases more than proportionately—perhaps exponentially.

- Increasing complexity requires increasing expertise in order to cope with that complexity. However, this trend may seriously compromise our much prized *democratic processes.* If people do not have the capacity to make informed decisions, they may feel obliged to defer to the expert. We see evidence of this in the common belief that "the President has all the facts and knows many things that we do not—

therefore, trust in his decisions." Another way of stating this is that the viability of a democracy depends upon the informed decision-making capacity of its citizenry, i.e. the "*relative* political maturity" of the people must at least maintain parity with the complexity of the issues confronting the public. If the acquisition of *relevant* knowledge does not proceed at about the same pace at which the decisions become complex, then relative political maturity will decline. This may have two consequences: (1) increasing reliance placed upon the "expert" to maintain order and control, with a resulting compromise of our democratic processes, or (2) reluctance to give control to the "expert" but, with an increasing inability to make *informed* decisions, the result is that the system may truly go "out of control."

- Increasing *interdependence* requires that the whole system be guided—to allow any element to exist outside of the domain of guidance is to threaten the entire, intertwined network. An increasing scope of control, in turn, implies governance by that body whose powers extend over the entire system—the national government. Thus, a predictable consequence of economic growth (with its systemic concomitants) is an increasingly *broad* focus of federal involvement. Increasing expertise, on the other hand, implies an increasingly *narrow* focus of specialization and division of labor (whether intellectual or physical). A disturbing thought arises: *Who is the overall expert with overall control?* Can we expect any single person, such as the President, or group, such as the Domestic Council, to have the human capacity to aggregate all relevant expertise and maintain their *own* relative political maturity? Are they not subject to the same human limitations that have necessitated the demise of the "Renaissance man" for the sake of developing many narrow if deeper extensions of knowledge?

In earlier times, when our society was comprised of many small and virtually self-sufficient units, a wrong decision usually had very limited consequences. Today, an inappropriate decision can have vast consequences for the entire societal system. While the interdependence, vulnerability, and need for effective control of the system are increasing, the means of control may be decreasing.

Even this cursory analysis suggests that we cannot attain a post-industrial society with industrial-era means of regulating human and institutional conduct. There is the further suggestion that our societal system may become increasingly destabilized and vulnerable to chaotic disruptions. Thus, the "undirected" power of the industrial system has contrasting implications. On the one hand, it could be extremely difficult to redirect our society in any direction other than where the natural momentum seems to be taking it. On the other hand, this natural momentum may be strongly self-limiting when a critical mass of systemic complexity and interdependence is reached. The latter point suggests that out of the ensuing disorganization may come a sufficient freeing-up of the system to allow the injection of fresh images and corresponding institutional structures in such a way as to give us a new burst of momentum into the post-industrial era.

The Growing Impotence of the Economic Image

While our economic image has become less and less capable of guiding the societal context created by technological change, there has also been a decline of constructive utopian thinking. Indeed, the words "utopian" and "myth" currently connote impracticality, fantasy, and irrelevance to everyday concerns. When we label something utopian it is often to dismiss it out of hand. When we speak of myth it is often to characterize something as false. These pejorative connotations suggest that we live today without the benefit of positive anticipatory myths, symbols, images:

> ...as thinkers, Americans rarely if ever now attempt to construct an imaginary society better than that in which they live; and at the same time, the faith that our society *is* in some sense a Utopia has surely disappeared.... But if we define Utopia as any attempt to make imaginatively concrete the possibilities of the future, Utopias have not in our own day ceased to exist, but have merely been transvalued.... Our visions of the future have shifted from images of hope to vistas of despair; Utopias have become warnings, not beacons. Huxley's *Brave New World,* Orwell's *1984* and *Animal Farm,* Young's *The Rise of the Meritocracy,* and ironically even Skinner's *Walden Two*—the vast majority of our serious visions of the future are negative visions, extensions of the most pernicious trends of the present.
>
> (Keniston, 1965, p. 327)

This wave of negative visions of the future suggests that the image of humankind which proved so powerful in the Industrial Revolution is increasingly impotent as an organizing metaphor. Rather than being pulled by an anticipatory image of a positive future and pushed by the momentum of a realized past, we are now only being pushed by the momentum of our realized past without the attraction of a magnetic image of the future. To the extent that this is true, it would seem that our society is out of control, with guiding images virtually non-existent and the system operating on its own complex of micro-decisions. This loss of guidance via positive images might be tolerable if the internal dynamic of the industrial system were sufficiently organized that the numerous individual decisions yielded a desirable result. But our experience and present situation make all too clear how haphazard is the internal dynamic. We are thus doubly disadvantaged: *we have no guiding images to impose upon the industrial system and the system itself seems to have no internal macro-guiding processes.*

Thus the industrial state at this point has immense drive but no direction, marvelous capacity to get there but no idea of where it is going. Somehow the breakdown of the old images has seemed to lead more to despair than to a search for new images.

CONCLUSION—PROSPECTS FOR THE FUTURE

The material abundance associated with the industrial era has not been acquired without tremendous costs. Accompanying industrialism was an erosion of Western man's sense of a cosmological order:

> Contemporary man no longer "naturally" sees himself as a useful and necessary member of a social whole geared into a meaningful plan of existence within the totality of a cosmic or divine order.
>
> (Luckman, 1970, p. 584)

A meaningful existence is largely derived from the existence of, and congruence between, the human being's relationships to self, society, and universe. Although profitable, the industrial period has thus been very costly as it has left us alienated, to varying degrees, from these sources of meaning. Mysteries of the cosmos have seemingly been displaced by the cold rationality of science. A sense of community has been displaced by an incomprehensible urban existence. Social pressures have created an "other-directed" mentality such that many are alienated even from themselves. This would suggest that the next phase of our societal evolution should be the reintegration of man with his sources of meaning—to find the deep roots of significance among the ephemeral artifacts of our society. The continued extension of the industrial state seems poorly suited to this task. We are challenged now to look beyond the technological and material frontier to a new American frontier which is essentially that of man searching for himself.

To summarize: The interrelationship between the power of the industrial state, the control of the industrial dynamic and the lead–lag relationship of images can be woven into two distinct societal fabrics which could plausibly emerge out of the present. Stripped of all refinement, the skeletal outlines of two responses to the current image-society mismatch might be:

1. A "technological extrapolationist" response. This hypothesized response assumes that: (a) the industrial dynamic would be sustained, (b) it would continue to be relatively "uncontrolled," and (c) the economic image of man would continue to lag and be forced to make adaptive changes in accordance with the dictates of the evolving industrial dynamic.

2. An "evolutionary transformationalist" response. This hypothesized response assumes that: (a) the industrial dynamic is either self-limiting or else will be limited by society, (b) the dynamism of

the "American Creed" will regain control (a greater degree of societal direction in response to the will of the people) over our societal system and subsystems, and (c) a new humanistic image of humankind will emerge which will guide us into a post-industrial era.

Despite the seeming clarity of these two responses, we are still faced with a dilemma. To the extent that modern people and their images are being shaped by the urban–industrial environment, it would seem fruitless to try to change "the image" without changing the environment which demands certain patterns of behavior. On the other hand, it would seem equally fruitless to try to change the powerful dynamic of industrialism without the help of a potent image of humankind to guide us toward a different societal trajectory. One alternative is to attempt to do both. The other alternative is to accept—and some would suggest suffer—the consequences of the working out of the logical extensions of the industrial-state paradigm. What is implied by both of these alternatives is considered in greater detail in Chapter 7, where they are developed at greater length.

CHAPTER 4

Influence of Science on the "Image of Man"

> Let us suppose for a moment that we are back in the year 1600, concerned with forecasting probable future trends. In retrospect it is clear that one of the most significant events in progress was what came later to be called the Copernican revolution... What was the essence of this remarkable transformation that started with the brash suggestions of Nicholas Copernicus and Giordano Bruno and led to consequences as diverse as a tremendous acceleration in physical science and a decline in the political power of the Church? One useful interpretation is that a group of questions relating to the position of the Earth in the universe, and the nature and significance of the heavenly bodies passed out of the realm of the theological and philosophical and into the realm of empirical inquiry. No longer were these questions to be settled by referring to this or that ecclesiastical or scholarly authority; rather they were to be subjected to illumination by systematic observation and experiments.
>
> Willis Harman in "The New Copernican Revolution" (1969)

The explosion of science and the kind of knowledge about man and his universe that came as a result of this shift in authority structure has transformed science into one of the most powerful influences on our image and conception of humankind today. As we shall see, however, science now stands at the threshold of yet another series of changes whose consequences may be even more far-reaching than those which emerged from the Copernican, Newtonian, Darwinian, and Freudian revolutions. Questions regarding consciousness, awareness, subjective and transpersonal experience, the roots of fundamental value postulates, and related matters constitute a set of concerns that may, like earlier questions regarding the physical universe, be passing from the realm of theological and philosophical and into the realm of systematic empirical inquiry.

This chapter is organized in three parts. The first is a general discussion of the characteristics and inherent limitations of science, including brief mention of areas in which the old mechanistic metaphors and deterministic assumptions have proven inadequate and yielded to probabilistic laws of causality and weird models quite foreign to anything in ordinary experience.

The second part comprises a cursory examination of a number of scientific frontier areas where anomalies are showing up or data do not fit comfortably into the old paradigms. These are the challenges which may in the end result in a shift to a new, expanded scientific

paradigm when the strain of patching up the old or suppressing the offending data becomes too great.

The third part of the chapter examines some of the sources and characteristics of a possible new scientific paradigm. Throughout, the interaction is emphasized between scientific paradigms and cultural images of man.

CHARACTERISTICS AND LIMITATIONS OF CLASSICAL SCIENCE

Science is ideally a search for knowledge and enlightenment carried out with an objective and pragmatically defined attitude. The spirit of science is that of open, unbiased inquiry into whatever interests the investigator. The classical view of science is essentially based on the following axioms (Conant, 1951):

- Reason is the supreme tool of humankind.
- Knowledge, acquired through the use of reason, will free mankind from ignorance and will lead to a better future.
- The universe is inherently orderly and physical.
- This order can be discovered by science and objectively expressed.
- Only science deals in empirically verifiable truth.
- Observation and experimentation are the only valid means of discovering scientific truth, which is always independent of the observer.

As we shall see, recent developments in a variety of frontiers of scientific inquiry make us progressively less sure that we know what these axioms mean, or should mean.

Paradigms in Transmutation

The scientific inquiry is not something that can be examined apart from the society in which it is embedded. An active dynamic process exists among the developing scientific knowledge, its technological applications, and the surrounding cultural context. As the new knowledge generates new technologies and these are applied to influence the physical and social environment, the cultural context is affected. But this in turn affects the kind, form, and application of new knowledge. In a way similar to that portrayed by Fig. 8 (page 49), conflict grows between societal ends and the consequences of technological applications, and this brings challenges to the basic axioms of the scientific activity.

The commitment of science to *verifiable* knowledge renders it naturally Promethean. The mythical bold explorer Prometheus stole fire from the Gods and thereby gave man control of his own destiny. Prometheus' brother Epimetheus liked to play with his brothers' dis-

coveries, not always with due regard for the consequences. The Gods, angry over Prometheus' theft, gained their revenge by sending Epimetheus a wife, Pandora, with her proverbial box which upon being opened released all mankind's ills and troubles. Only Hope remained inside, to preserve man's sanity in the face of his new misfortune. As de Ropp (1972) points out:

> Our age, the age of the new Prometheans, illustrates as does no other age, the depth of the Promethean myth. Never before have the Prometheans been so daring. Never before have the Epimetheans been so rash and never has Pandora's box been so crammed with menace.

This Promethean–Epimethean conflict between science and civilization is one, perhaps the dominant, force presently modifying the patterns of scientific conceptualization and experiment. Emergence of a "new transcendentalism" in the culture is a second. And new developments in certain scientific frontier areas form a third.

The goals of society, influenced by the cultural image of man-in-the-universe, help to define the research territory of science. Thus the content of science is affected by the prevailing image of man. Then the act of scientific inquiry involves another set of image processes involving models of the problem to be investigated. Many scientists have stressed the importance of proper imaging in scientific investigation; one nuclear physicist, Martin Deutsch, has remarked (1959):

> In my own work, I have been puzzled by the striking degree to which an experimenter's preconceived image of the process he is investigating *determines the outcome of his observations.* (Emphasis added)

The prevailing image of man-in-the-universe also enters into the interpretation of observed phenomena. The scientist almost inevitably refers back to the model of causality contained within the more basic image to decide on an acceptable interpretation of his data and findings. The myths and images of the culture influence perception of what seems possible in the universe and is therefore acceptable—scientifically or otherwise.

Thomas Kuhn (1962) used the term "scientific paradigm" to refer to the total pattern of perceiving, conceptualizing, acting, validating, and valuing associated with a particular image of reality that prevails in a science or branch of science. These theoretical models with their associated behavior patterns may operate successfully for a limited time, but in the dynamic processes of scientific development tend to rise, fall, and be replaced—often by an expanded paradigm that includes the earlier one as a special case. When a paradigm is more or less successful at accommodating the phenomena being perceived (and,

we recall, what is perceived is affected by the form of the dominant paradigm), then we have what Kuhn terms "normal" science.* Its central activity is the articulation and elaboration of the reigning paradigm.

However, when a sufficient amount of anomalous data has accumulated that does not fit the paradigm's terms of explanation, then one or more new candidate paradigms may emerge and there results a period of "crisis" science. Events during such a period can be highly complex, for as Polanyi (1958) remarks:

> A hostile audience may in fact deliberately refuse to entertain novel conceptions such as those of Freud, Eddington, Rhine or Lysenko, precisely because its members fear that once they have accepted this framework they will be led to conclusions which they—rightly or wrongly—abhor.
>
> Proponents of a new system can convince their audience only by first winning their intellectual sympathy for a doctrine they have not yet grasped. Those who listen sympathetically will discover for themselves what they would otherwise never have understood.

Changes in paradigm constitute the most critical moments in science, for they determine whether a new realm of reality is to be successfully incorporated into the operations of science. These are also the times when the dominant image of humankind bcomes most crucial since the issues involved may include "abhorred" conclusions. This of course does not include every possible case; strong reaction to a theory does, however, often mean that a paradigmatic limitation has become involved.

The anomalies that appear near the beginning of a "crisis" period in science may, because of their prematurity, be ridiculed or ignored. Stent (1972) suggests that a discovery is premature "if its implications cannot be connected by a series of simple logical steps to canonical, or generally accepted knowledge." Science's encounter with prematurity is a basic problem. When it occurs, the ideal commitment of science always to examine the facts of a matter can weaken, and the facts may be either ignored or attacked. The significance of Mendel's discovery of the gene in 1865 was not understood until about 35 years later and was ignored until that time. Polanyi's 1916 model of the adsorption of gases onto solids was rejected out of hand as ridiculous until it was

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* "There is *never* a period of normal science: What Kuhn calls paradigms are multiple and usually disconnected theories, postulates which are constantly being tested, falsified and altered or verified and reclaimed *pro tem.* The process is dynamic; in time it alters every tenet of science. The abandonment of an important tenet (like geocentricity) is sometimes called a revolution."—Henry Margenau

Kuhn's use of the term paradigm is controversial among many members of the scientific community; some scientists regard Kuhn as correct, others do not.

"rediscovered" as correct about 40 years later. However, when a new theory can be seen to involve immediate relevance to the dominant image, a new phenomenon may enter the field. Stent regards the subject of ESP as currently in the realm of prematurity, given the general reactions of the scientific community to the subject. Even as reported by Stent, however, it might be more proper to regard it not as being only premature but also as a taboo in science.

One could argue, as does Dubos (1972), that there are no taboo topics, since science is always willing to deal with all questions within its capabilities—and ultimately all problems are "scientific." In practice, however, history often speaks differently and echoes Kelvin's point (1970) that: "In principle we may say that the 'facts' speak for themselves; in practice they do so only when accompanied by a chorus of approval." Shaw remarked: "All great truths begin as blasphemies." We might well ask, what have been the great blasphemies in science?

On the level of the physical sciences, the classic case is that of Galileo. The Copernican theory that the earth circled the sun was tabooed by society, particularly by the Church. As Hanna Arendt (1958) explains, it was permissible for scientists of the day to use the Copernican theory in their mathematical calculations, but it was not permissible for Galileo to invent a telescope demonstrating it to be true. In the eighteenth century a controversy raged around the question of meteorites as rocks which fell from the sky. After the Lavoisier commission decided that rocks could not fall from the sky, museums threw away their collections of meteorites since they were no longer "real" (Morrisson, 1972). Unidentified flying objects are taboo today also, even though a significant percentage of the cases on record are acknowledged as unexplained (Hynek, 1972).

Taboos in biology have included Darwin's theory of evolution and at one time the study of anatomy, which was regarded as a violation of the "temple of the body." Contemporary taboos include the relation between genetics and IQ (Beale, 1971) and human sexuality (Shainess, 1973). To some extent the aura of taboo also hangs around B. F. Skinner's behaviorist theories.

In the psychological realm, where issues related to images of the human being are the most explicit, taboos have included: dreams, hypnosis, death, suicide, homosexuality, parapsychology, subliminal perception, and psychedelic drugs. Only some of these areas are now beginning to emerge from the stigma of taboo (Farberow, 1963; Dixon, 1971; Kleitman and Dement, 1957; Hilgard, 1965; Noyes, 1972). Of course, because a theory is tabooed, it does not *necessarily* contain truth (Krippner, 1973). The taboo problem in science arises when an investigation *could* be performed to answer a question, but is not for reasons that are political, ideological, or irrational.

Thus we can see that the issues of prematurity and taboo are powerful shaping influences on the content of scientific research. In cases where a topic involves both, it has even less chance of investigation. In many such cases the "holding factor" appears to be adherence to a particular image of humankind, sometimes on the part of scientists themselves, sometimes by society, and occasionally by both—in spite of the existence of significant data to the contrary.

Limitations of the Scientific Process Itself

The human activity basic to science is observation and the recording thereof. However, a science based on description has limits imposed on it by the epistemological limits inherent in the process of description. Goedel in 1931 showed that it is impossible to demonstrate the internal consistency of complex systems without resort to principles of inference *outside* the system. This means there is a class of problems that must remain formally undecidable. Similarly Tarski (1944) established that any theorem expressed within the terms of a given formal language can be proved true only by reference to another language richer than that expressing the theorem. As Margenau (1965) bluntly expresses it:

> Science no longer contains absolute truths. We have begun to doubt such fundamental propositions as the principle of the conservations of energy, the principle of causality, and many other commitments which were held to be unshakeable and firm in the past.

Bremerman (1965) suggests a different kind of boundary with his theory defining an upper limit to the amount of information that can be held in any system—at least in terms of the current framework of analysis. This limit would prevent man from understanding his own brain if all he can use is the operations of the brain-as-system itself.

Another limitation which is at least equally difficult to deal with is the more or less exclusive orientation toward the analytic/rational mode of problem solving. In the West, the only alternative has always seemed to be illogical "irrationality," our language being ill-equipped to discuss what many great scientists have acknowledged as the source of their discoveries: intuition. Recent results in brain research (discussed in detail later) indicate that linguistic expression and analytic thought are associated with the left side of the brain whereas the right side deals with field-oriented, synthetic perceptual modes. Hence, "left-side" thinkers tend not to acknowledge "intuition."

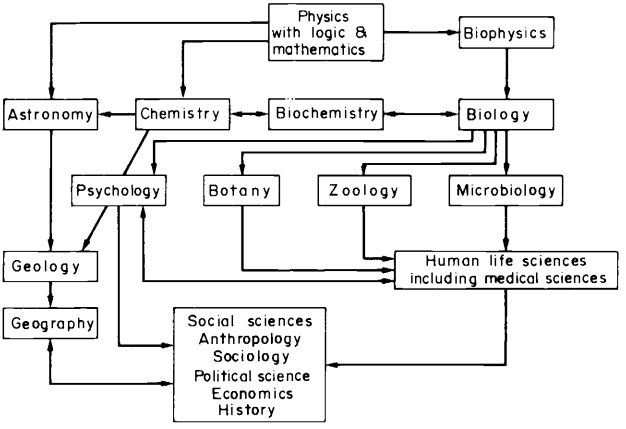
A third limitation is specialization, which Bohm (1971) refers to as the natural fragmentation problem in science. Margenau (1973) points out that in large measure, specialization is simply a by-product of the

increasing complexity of science. In this sense it has been a necessary and powerful tool. However, it has progressed to the point where our attention has been directed away from the somatic or general systems aspects of nature; and as Fuller (1973) has pointed out, any species that has overspecialized has always become extinct owing to a loss of adaptive ability.* The impact of specialization in science is to reduce science's possible framework of explanations.

Closely allied to specialization is the limitation imposed by the reductionist method. This is the approach in science which proceeds to investigate systems by breaking them up into parts. As Ashby (1973) describes it:

> Faced with a system, the scientist responded automatically by taking it to pieces. Animals were anatomized to organs, organs microscoped down to cells, cells studied as collections of molecules, and molecules smashed to component atoms. This method of analysis tended to become dogma; and, in fact, the reductionists tended to assert that all science was to be advanced in this way alone. "Get to know the properties of each part, and you have only to put the parts together again and you will know the whole."

This method, reduced to absurdity, tends to generate statements like "life is nothing but physics and chemistry." It also leads to the picture of the sciences (Schlegel, 1972) shown overleaf.



This model suggests that the kinds of procedures which physics and mathematics used in the nineteenth century should be applied to all other sciences, and leads to statements like: "biology depends on the judgment of the physicist" (Szent-Gyorgi, 1961). It is quite true that the

* "This point by Fuller, applied to us, might indicate why we will not survive if our technological resources are threatened, why we must relearn how to survive with only our natural resources, and why it is imperative to rely on machines only if one knows how to fix them, or do without them."—Stanley Krippner

reductionist method of analysis has brought about major progress, and the model would constitute a quite logical picture of the sciences as a whole if science were to be confined to the analysis of the kinds of systems addressed by nineteenth-century physics. These systems involved little or no interaction between the component parts: they were in fact "reducible" systems. For these systems, the information needed to describe the whole system (and therefore control it) is almost equivalent to the amount of information needed to describe the parts in isolation: the whole is equal to the sum of the parts.

There is, however, another class of systems involving rich interactions between the component parts. Biological and ecological systems are good examples. In these, synergy or the properties of the whole system created by the interactions of the parts operate to such an extent that reductionist analysis cannot achieve a theory capable of extension and prediction. Arbib (1972) points out that:

> We found that we needed to modify Newtonian mechanics to get to relativity when we entered the domain of the very fast; and we needed to modify them again to get to the laws of quantum mechanics when we entered the domain of the very small. Thus we must not be unprepared to have to find new laws of physics when we enter the domain of the very complex.

The reductionist framework therefore contains inherent limitations when applied to highly complex systems, such as the brain or biological system as a whole, and new physical principles will have to be discovered before proper scientific description of these can be made. Perhaps a kind of periodic table of the principles governing systems of evolving complexity will be the next advance in scientific method.*

Still one more characteristic of classical science is challenged by recent developments on numerous fronts, namely the idea that the objective world explored by the various scientific probes is essentially separate from and independent of the subjective experience of the investigator. The perturbation of the objective system by the act of observing shows up in particle physics as the Heisenberg Uncertainty Principle. It appears in biological and social science in the effects of experimenter expectations (Rosenthal, 1971; Orne, 1959) and in the Hawthorne effect (Roethlisberger and Dickson, 1939). It is most clearly to be encountered in the area of psychic research since if the psychic phenomena have any reality at all, the mind of the observer is most surely an ineradicable component of the experiment.

Thus the limitations of science have had important consequences for the way in which the contents of science are defined. Only those aspects

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* Henry Margenau offers additional comments in his discussion of "modified reductionism" in Appendix C.

of reality that can slip through the various limitations end up included in the content of science. Science deals with a selected set of metaphors; other possible metaphors have in the past been excluded, whether because of reductionist bias or commitment to a peculiar concept of objectivity. The prevailing "image of man" intervenes in the scientific process by shaping the definition of both the research territory and interpretations of the results of scientific investigation. Contrariwise, the past orientation of science toward understanding of the physical world has contributed to a materialistic emphasis in the culture as a whole.

As we examine some of the contemporary scientific developments that challenge old scientific paradigms, it must be from the standpoint of this two-way interaction between the changing scientific paradigm and the societal image of man. It is not that either *causes* the other, but rather that they tend to move together.

CRUCIAL FRONTIERS IN SCIENTIFIC INQUIRY

Challenges to the past paradigms of science, some old and some recent, appear in such diverse research frontiers as physics, biology, psychology, and parapsychology. Following are brief mentions of some of the most important.

Modern Physics and Cosmology

The modern revolution in physics began quietly: on February 21, 1870 a 24-year-old named William Clifford suggested to the Cambridge Philosophical Society that a particle of matter was really nothing but a kind of hill in the geometry of space! In 1873, still believing in classical continuity, Maxwell published his equations describing the continuous nature of the electromagnetic field but later remarked, in a startling intuition of things to come:

> The study of the singularities and instabilities, rather than the continuities of things . . . may tend to remove that prejudice in favor of determinism which seems to arise from assuming that the physical science of the future is a mere magnified image of that of the past.

The full meaning of that glimmer of the future began to erupt in 1900 when Planck showed that energy was *not* emitted in a continuous fashion, became stronger in 1905 when Einstein proved that light came in packages called "quanta," and reached its final breach from the continuous dream when Bohr incorporated the fundamental discontinuity in the universe into his model of the atom and eventually the

Principle of Complementarity, suggesting that light could be both wave *and* particle. As John Wheeler succinctly put it (1971): "A sibyl seems to say, 'choose: paradox or nothing'."

Einstein then promised a kind of continuity with his theory of General Relativity, ending the dichotomy of time and space, and suggesting not only that matter and energy share the same equation, but that gravity can also be included into a unified field theory. Suddenly the universe was pure geometry. As Margenau (1963) describes it, matter simply dematerialized: "The hard and solid atom has become mostly empty space. Electrons . . . may indeed be points, mathematical singularities haunting space."

Suddenly the universe became personal again. Bronowski (1973) describes it well:

> Einstein showed that the laws of physics are universal, that is, are formulated in the same terms by every observer, but only because he carries his own universe with him. Time as you measure it may be different from my time, mass as you measure it may be different from my mass, speed and momentum and energy may all be different; it is only the relations between them that remain the same for us both. Each of us rides his personal universe, his own travelling box of space and time, and all that they have in common is the same structure or coherence; when we formalize our experiences, they yield the same laws.

And so, as Jeans (1973) remarked, "The universe begins to look more like a great thought than like a great machine," or as Eddington (1928) had put it, "The stuff of the world is mind stuff."

At the forefront of physics today the real world recedes. As Eddington once remarked:

> In the world of physics we watch a shadowgraph performance of familiar life. The shadow of my elbow rests on the shadowtable as the shadow-ink flows over the shadow paper. . . . The frank realization that physical science is concerned with a world of shadows is one of the most significant of recent advances.

Indeed everything has been found to be receding, for General Relativity predicted that the universe itself is expanding, and by 1929 Hubble had demonstrated it. Far from the limited Copernican vision, now we know that we are part of an immense galaxy of about 100,000 million stars, arranged in a disc-shaped spiral 100,000 light years in diameter, about three-fifths of the way out from the center of the disc, and moving further out at a mere 35 kilometers per second. The "edge" of the universe is now billions of light years away and full of strange wonders: quasars, pulsars, and black holes. And even stranger, though logical, postulates of antimatter, time flowing backwards, negative mass and particles travelling faster than the speed of light are part of the new tapestry.

It is a world full of logic stranger than dreams. Everett (1971) has suggested that just as in relativity where the passage of time is relative to the observer's frame of reference, in quantum mechanics, the visible outcome of an event is also relative to the observer. Thus *all* possible outcomes actually take place, but the observer can see only the one happening in his or her frame of reference. Physicist de Witt (1970) then argues:

> Every quantum transition taking place on every star, in every galaxy, in every remote corner of the universe, is splitting the local world on earth into myriads of copies of itself.

Many physicists have objected strongly to the notion of a universe containing myriads of three-dimensional Xeroxes of themselves. The idea is not idle speculation, however, but arises from the urgent need in modern physics to somehow unite quantum theory with general relativity.* Physicist and Nobel laureate Eugene Wigner (1961) has suggested a role for human consciousness at the deepest levels of quantum reality; is he correct? We must wait and see, and perhaps remember Jung's admonishment:

> Space flights are merely an escape, a fleeing away from oneself, because it is easier to go to Mars or to the moon than it is to penetrate one's own being.

Modern physics and cosmology have placed the human in a universe inestimably more rich and extraordinary than the mechanical vision ever prepared him for. Indeed, as LeShan (1969) has argued, the cosmic man of modern physics bears strong resemblance to the image of "man-in-universe" of Eastern philosophies. For this person, too, reality is apparent, dynamic, and inhabited by both harmony and strangeness. And if the extension of science is technology, and today we have the technology of the hard and solid matter of the nineteenth century, then what can possibly be the technology of matter transformed into curvature in space-time†

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* "And it seems to some that such union cannot be achieved unless the problem of consciousness, which appears in every act of measurement, is taken seriously and included in the theory."—Henry Margenau

† "The (past) Faustian interpretation of (historical) time was subordinated to the will to power, symbolized by Newtonian mechanics which treated bodies moving in space as inert recipients of energy. The (present) Riemannian space-time of the Leibnitzian culture has a strong Chinese tinge: fields of forces compose the extension of the universe which displays a curvilinear 'infinity'."—Roland Fischer

Other Physical Sciences

While several areas of the physical sciences impinge on questions relating to images, two of the strongest impacts come from thermodynamics and the computer sciences generally.

The concept of entropy emerged from the study of thermodynamics in the nineteenth century. The Second Law of Thermodynamics says that isolated systems naturally tend toward a state of maximum disorder, and so the universe must inevitably "run down." Our ultimate fate then became invasion by chaos, and since this was a law of nature, there was nothing that could be done. The human being and life are therefore insignificant since there is no larger process toward which humankind can evolve if the physical universe is decaying.

The concept still holds sway, though it has been noticed that it is not applicable to living systems; Huxley (1963) and others suggested that life violated the Second Law of Thermodynamics. Now we know that living systems exist under different conditions. Entropy was defined for closed, equilibrium systems cut off from their surroundings and unperturbed by external forces. Living systems are open and far from equilibrium, exchanging material with their environments. Damnation by the Second Law is therefore not quite so total, and as the characteristics of complex systems become more apparent, the operation of the Second Law may be seen to be even more restricted. The present situation in physics, where absolute certainty is no longer possible, should warn us that total commitment to the scientific paradigm of knowledge can place us in the position of accepting a deprived concept of reality, which clearly has never been the intention of science.

Similarly, the earlier mechanistic view of cybernetics—that "the brain is merely a meat machine"—is rapidly giving way to the less restrictive notion of the computer as an extension of the human nervous system. McLuhan believes that computer systems will be used to "augment" human intellect, just as cultural forces augment the individual's abilities (Englebart, 1973). An example of this process is the use of the computer to open up new and creative possibilities in the modern arts, described by Youngblood (1970).

Chapanis (1970) stresses that the difficulties in harmonizing the man–machine interface, which used to be attributed to the limits of man, can just as well be regarded as the limited abilities of the machine. Though man's calculating rate is slow, subject to error and fatigue, machine systems have more difficulty correcting their mistakes, have very limited methods and choices of action, and are so far incapable of forming hypotheses. More and more effort is being directed toward making the computer accommodate to the man rather than the other way around.

Attempts to create "artificial intelligence," which Minsky (1968) describes as "the science of making machines do things that would require intelligence if done by men," have so far resulted in computers being taught to play chess, simulate proofs of mathematical theorems, and to "understand" simple English, though not yet in a fashion exceeding human capability (Newell, 1969). Present work at Stanford and MIT is focused on developing more sophisticated robots. Goedel's theorem, mentioned earlier (page 72), indicates, however, that machine systems can never be conscious of themselves except by reference to another machine. Human consciousness is conscious of itself as a unity and seems to have properties that can never be created artificially.

In 1923 J. B. S. Haldane predicted that although physics was then the major center of scientific interest, this century would be remembered as the century of biology. Surveys of the current trends in scientific literature (Garfield, 1972) now confirm Haldane's prediction.

Humans as Species. Much of the early significant work in biology concerned the human as a species. While many of the old theories have been discarded or modified, there are a number of important new concepts which affect man's relationship to others of his species, to the environment as a whole, and this place in the evolutionary scheme.

In population biology, for example, extensive studies into the dynamics governing human population growth indicated that humankind is on the brink of discovering that it is also bound by the S-shaped sigmoid curve governing the growth characteristics of so many other species (Salk, 1973). As noted earlier (see Fig. 6), the values governing the first part of the curve where the survival of the species depends on the survival of the individual (competition, survival of the fittest) must be different from those governing the second part of the curve, where the survival of the species depends on the behavior of the whole species (cooperation, survival of the wisest). The complex questions surrounding the population problem have been discussed by many authors (e.g. Ehrlich, 1970; Commoner, 1971). Clearly the main impetus for these studies is the need for man to evolve to a systematic image of his being, considerate of the survival of the whole species.

Closely allied to these developments are ecological studies. The latter have radically changed the image of the human as conqueror of nature to a sense of being in cooperation with nature. The growth ethic has been challenged (Meadows, 1972); our attempts to dominate nature have been criticized (Commoner, 1971); our role as augmenter of nature has been stressed in several ways (Dubos, 1973; Salk, 1972; Fuller, 1969; Laszlo, 1972). Again the need for viable systems-oriented images is the main finding of these studies. Further, they have

stressed the interdependence of humankind's existence and that of other species, as well as the environment as a whole. As Handler (1970) states it:

> Undoubtedly more species than anyone now realizes are essential for man's survival and welfare. For both beneficial and harmful types, we need to know the physical and chemical conditions under which they can survive and reproduce, the extent to which they can adjust to change, the optimum conditions for survival and reproduction.

The need to protect the stability and diversity of all species of flora and fauna has emerged into heightened popular awareness as a result both of these studies and of the emergencies caused by industrial mismanagement globally.

Similarly, evolutionary theory has now developed to the point where it extends all the way from the realm of all species down to the molecular/atomic level. The interrelationship of all species as an evolving whole was first proposed by Darwin in 1859. Mendel's discovery of the gene allowed the elaboration of the mechanism of heredity, while the discovery of DNA as the carrier of information in the gene (Watson, 1953) extended our knowledge of the process into the domain of the very small.

These findings led to a renewed debate about the role of chance and determinism in evolution, since only statistical description of events at the atomic level is possible. As a result, some scientists concluded that genetic change can occur only by the mechanism of random mutation. "Chance *alone* is at the source of every innovation, of all creation in the biosphere" (Monod, 1971). This image of the human species as the victim of mere chance places man in an absurd role—most scientists would see something more operative. Waddington (1969) explains that the inert gene, as it moves toward the process of becoming an organism, passes through a series of steps, many of which are influenced by both the molecular and organismic environment. Thus in the emergence of the organism, order is imposed on the initial randomness. Weiss (1969) shows how there exists "determinacy in the gross despite demonstrable interdeterminacy in the small."

Thus both chance and determinism are involved at least (perhaps consciousness as well) and the systems developed by evolution become the crucibles of a creative process (Dobzhansky, 1971). The trend of evolution is seen as being toward systems of ever greater complexity and sophistication. In our species, particularly, culture is an intervening factor (von Foerster, 1971):

> Culture, as a manifestation of man's effective and symbolic behavior, is at the same time cause and effect of man's genetic constitution. As cause, it determines the mechanisms of natural selection in his self-made ecology; as effect, it is determined by the creative processes that can be mastered by his biological constitution.

Dubos (1967) points out that the human's biology is now basically stable while the human psyche may be said to be rapidly evolving,* and as Huxley (1947) suggests:

> Since in the process of evolution, values emerge, they must be taken into account by the scientist. We find values not merely emerging from the evolutionary process, but playing an active part in its latest phase.

von Foerster (1971) then suggests that "The superior survival value of brains exchanging experience and thought will favor the evolution of this organ." Earlier, Teilhard de Chardin (1959) had noted that "Evolution is an ascent towards consciousness." The human is regarded as being at the very forefront of this process, the growing tip as it were. Thus the forces and counterforces of chance and determinism become poised in a delicate balance, with our species as one of the "rare spearheads . . . or trustees . . . of advance in the cosmic process of evolution" (Huxley, 1963).

While it is still too early to say which of these hypotheses will prove most useful, it is clear that evolutionary theory is, and will probably remain, at the heart of humankind's image of itself.

Molecular Biology and Genetics. The unfolding of the sciences of the human as a biological entity has created several major shifts in the image of humankind. Even if all the physical principles necessary for the complete description of the biological system are not yet with us (Elsasser, 1966), it now seems clear that the basic unit of life is the cell and that its information is largely, if not completely, carried in the DNA which makes up its genes. This totally physical description of the living system has threatened the "vitalist" philosophies which maintained that the living entity was possessed of some special non-physical component. As Hayes (1971) remarks:

> There can be no doubt that this new vision of ourselves as merely the very complex, and perhaps even predictable, end-product of an exclusively macromolecular evolution will exert as profound an effect on our social, ethical and political attitudes as have the enlightenment of Darwin and Freud.

This gives rise to what Dubos (1968) terms "biological freudianism." However, perhaps there need be no conflict between the two notions, on the one hand that heredity determines the characteristics of the

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* "Your image of psychically evolving humankind is, I think, incorrect."—Elise Boulding

As Dr. Boulding's reasons for holding this view are too lengthy to include here as a footnote, and as they pertain to various other sections of this report, they are included as Appendix A.

adult human being, and on the other, that the environmental experiences of early life exert a shaping influence—the nature versus nurture argument. The conflict is apparently resolved in the view that the genes provide potential which is modulated by environment. However, the persistence of the concept of karma in the doctrines of the East suggests that future scientific metaphors may include still other influences.

The notions of genetic "engineering," cloning, and the like have provided new impetus to the old visions of eugenics and the "improvement" of human stock. The relationship between genetics and "intelligence" is currently controversial but is not in itself a new idea. However, with genetic engineering, *all* of human nature would be in some sense apparently subject to human choice. This concept could potentially have a most profound impact on the human self-image.

Exobiology/Origin of Life. From studies of the origin of life and the principles of extraterrestrial biology (exobiology) come clear images of our cosmic origin, even though they are in terms of our physical being. The fusion of these two areas brings the first glimpse of a cosmological biology, as Bernal (1965) first outlined it:

> A true biology in the full sense would be the study of the nature and activity of all organized objects wherever they were to be found on this planet and others in the solar system, in other galaxies and at all times future and past.

Studies of the self-organizing properties of elemental chemical systems by Miller (1963) and Fox (1970) have shown how the amino-acid building blocks of life form spontaneously in primordial mixtures and naturally give rise to more complex forms. The knowledge that between the planet's formation and the first emergence of simple life forms, meteors brought 335 million tons of these same amino acids to earth clearly lends substance to Oistraker's remark (1973): "Atoms in your body have been through several stars—they were ejected many times as gas from exploding stars."

Increased understanding of the origin of life can only augment our search for other kinds of life amongst the estimated hundreds of millions of inhabitable planets in our galaxy alone (Dole, 1964). Indeed, the beginnings of active research into the possibility of extraterrestrial intelligence (Handler, 1970) suggest a new sense of continuity of life. Though the problems are formidable, the near future will see, if present trends continue, a significant increase in information on the origin of life which will be "of prime relevance to the most profound and ancient biological and philosophical questions of human

civilization . . . partial answers (to which) . . . have given rise to various religious, philosophical and political systems" (Handler, 1970).

Brain Research. Research in brain function is one of the most rapidly expanding frontiers of modern science. The tools of almost every major discipline are being used and the vital need for integration of the sciences may be realized through our attempts to study our own mental functions.

In contrast to other areas of biology, the early study of the brain had a strongly electrical orientation; by 1791 it was known that the brain was electrically excitable and by 1932 the well-organized motor effects and emotional responses in conscious animals had been created by electrical stimulation (Galvani, 1791; Fritsch, 1870; Hess, 1932). We know now that the brain possesses the most efficient signal-detection scheme known (Trehub, 1971). The work of Hess, Penfield, and Olds involving the implantation of electrodes to create signals internally has allowed the mapping of large portions of the brain. Control of psychological phenomena and stimulation of memory have resulted from this work. As Delgado (1969) describes it:

> Autonomic and somatic functions, individual and social behavior, emotional and mental reactions may be evoked, maintained, modified or inhibited, both in animals and in man, by electrical stimulation of specific cerebral structures. Physical control of many brain functions is a demonstrated fact but the possibilities and limits of this control are still unknown.

Of no less importance has been the recent emergence of some detailed knowledge of the chemistry of brain function. Results have indicated that malnutrition can cause serious damage to the developing brain, and so many of the poor are doubly disadvantaged. Theories suggesting that chemical processes in the brain (RNA and protein synthesis) are involved in learning and memory have raised the possibility of chemically improving these functions in the human—though this is still controversial and definite conclusions have yet to emerge. Highly purified genetic strains of mice have been isolated and shown to have markedly different learning abilities for laboratory tasks, suggesting that at least some kinds of genetic differences can affect memory and learning. Many mind-altering substances have been discovered with effects ranging from hallucination to tranquillization and trance. Such developments led Kenneth Clark, as President of the American Psychological Association, to suggest in 1971:

> We might be on the threshold of that type of scientific, biochemical intervention which could stabilize and make dominant the moral and ethical propensities of man and subordinate, if not eliminate, his negative and primitive tendencies.

Clark proposed the development of chemically based "psychotechnologies" (primarily to bring control over the tendencies of national leaders, in an attempt to lower the possibility of nuclear war). Delgado has urged the development of a "psycho-civilized" society such that dangerous behavior in man can be modified by electrical stimulation of the brain. Thus certain areas of modern brain research clearly raise profound moral questions which, if unresolved, might propel civilization toward *Brave New World* and *1984*. The issue has been raised, whether the control of the brain made possible by electrical stimulation of the brain (ESB) is essentially different from placing the individual in a prison, where the prison bars, instead of being iron rods, are a complex of metal electrodes wired into a computer. Delgado (1969) believes that such questions are still premature:

> This Orwellian possibility may provide a good plot for a novel but fortunately it is beyond the theoretical and practical limits of ESB. By means of ESB we cannot substitute one personality for another, nor can we make a behaving robot of a human being. It is true that we can influence emotional reactivity and perhaps make a patient more aggressive or amorous, but in each case the details of behavioral expression are related to an individual history which cannot be created by ESB.

A completely different line of investigation is split-brain research.

The data indicate that the part of the brain which talks, uses language, engages in logical problem-solving, and reads this page is the left-hand side. Experiments have shown that split-brain patients who have lost the use of this left hemisphere have no verbal output and cannot express perceptions. The other side of the brain functions differently, being primarily responsible for our orientation in space, body image, recognition of faces; it processes information more diffusely and can integrate information more readily. If the left side is analytic and reductionist, then the right is more holistic and integrative. Bogen (1973) calls the left hemisphere the "propositional" mind and the right the "appositional" mind. He suggests that investigation of the "appositional" mind, or right hemisphere, may lead to the discovery of new forms of communication (which may not be language), better suited to dealing with both our evolutionary heritage and our on-going experience of the universe in holistic terms.

Sperry (1967) notes that this functional asymmetry of the brain is apparently unique to higher mammals and most emphasized in man. Bogen (1973) suggests that if the right hemisphere is dominant for certain higher functions, we may suppose there might be others, and that perhaps every higher function is distributed unequally between

the hemispheres.* In normal humans, the two are connected and some information is passed from one hemisphere to the other. Scientists are only beginning to explore the complex interrelationship of the two minds of man. Perhaps Einstein's term for creative thought—"combinatory play"—will prove prophetic of future research findings. Split-brain research is leading toward more understanding of what Polanyi (1964) terms "tacit knowledge:" Our tacit powers decide our adherence to a particular culture and sustain our intellectual, artistic, civic and religious deployment within its framework. By forming and assimilation of an articulate framework these tacit powers kindle a multitude of new intellectual passions.

Platt (1970) reminds us that: "Perception is the first thing we experience and the last thing we understand. It is the beginning of knowledge and also, in some sense, the end of it." In the end, perception is a personal phenomenon and it may not be possible to "objectify" it without limit. Physicists investigating the physical universe found that beyond a certain point of refinement of matter, there is a limitation of relativity and uncertainty on the objective knowledge principle. Brain research today may be approaching a similar limit imposed by what Delgado (1969) terms "psychological relativity." The Newtonian concept of centers in the brain governing various activities ceases to be valid beyond a certain level of complexity in investigation. Beyond that point, and particularly when it comes to higher mental functions, the picture tends to blur.

The development of biofeedback techniques in the past decade (described later) has brought another important research tool into this same area. In the West it had been considered that those aspects of our bodily functions which could be brought under voluntary control were strictly delimited by the division between the sympathetic and autonomic nervous systems. This assumption was in sharp contrast to the Eastern view which held that any bodily function could be consciously modified at will. Miller (1971) and Kamiya (1969) have now shown that the latter view is largely correct; that the individual pro-

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* "There are historical 'consequences' to the shifting of epochs: swinging from the digital (left, rational) to the analog (right, symbolic) hemisphere! In the past 2,000 years, the pendulum has swung twice from analog to digital and back, and it is now swinging towards the analog for the third time. Perhaps we have just about passed the point more than halfway. The great outburst of creative activity which marked the first few decades of the century may be viewed as resulting from an interhemispheric integration of the digital and the analog zeitgeist. Apparently, artistic and scientific creativity reach maximum at a point midway between a digital and a subsequent analog epoch."—Roland Fischer

vided with feedback has the ability to become conscious of, and in a limited way modify, the activities of both his own brain and the rest of his body. This development represents an important shift away from the "robotomorphic" images presented by ESB research and the chemical domination of mind suggested by Clark.

Split-brain research has directly challenged the unitary mind concept, and we now know that the total number of possible states of the brain can be given only by a number of truly astronomical proportions—according to Anokhin (1971), a one followed by a line of zeros stretching out into space 24 times the distance from the earth to the moon! No wonder that to some, the brain has begun to look like an enormous hologram (Pribram, 1971). As physicist Weisskopf remarks (1972):

> The deeper we penetrate into the complexity of living organisms, into the structure of matter, or into the vast expanses of the universe, the closer we get to the essential problems of Natural Philosophy. How does a growing organism develop its complex structure? What is the significance of the particles and subparticles of which matter is composed? What is the structure and history of the Universe?

Biological Rhythms and Bioelectric Fields. Modern biology has developed an understanding of man centered largely around a chemical paradigm. In recent decades, however, more attention has been given to the complementary electrical aspect of biological functioning (Presman, 1970) and as a result, factors that were previously regarded as unimportant have been recognized as significant. For example, certain low-level radiation has now been found to affect adversely important parameters of human functioning such as reaction time, mood, and the rates of biological processes (Adey, 1972; Colquhoun, 1971; Krueger, 1973; Fischer, 1966). Becker (1963) has correlated frequency of admissions to mental hospitals with geomagnetic fluctuations.

The combined body of this work suggests that (1) the electrical environment of man is just as important as the chemical, (2) inattention to this environment adversely affects a significant (though undetermined) segment of the population, who may end up being treated as "mentally ill" when the problem may be an electrically imbalanced environment. It is only recently that some action has been taken to investigate this whole question of "electromagnetic pollution" and clearly, a vast amount of work remains to be done (Healer, 1970).

Research into the effects of various kinds of fields and electrical currents on biological organisms had led to improved rates of healing (Becker, 1971) and apparently more effective control of pain, as well as correlations between the electrical environment and the incidence of

various diseases (Barnothy, 1971). Many of these field phenomena are rhythmic in nature, affecting and being affected by weather patterns for example, and there is a new surge of interest in the investigation of biological rhythms and their significance for the human being (Luce, 1971). As a result, the highly rhythmic nature of many aspects of human functioning is becoming clear and the combination of these two areas of research is beginning to present a view which more closely resembles that of the old astrologers, with their emphasis on the importance of the cosmic environment for human affairs, than the more conventional view wherein the immediate chemical environment of the organism is considered paramount.

On a larger scale, the strongly rhythmic patterns of many phases of societal phenomena, such as war and conflict, create the desire to understand causal factors for them on a much wider scale than previously considered reasonable. This suggests to some the Aristotelian image of the universe itself as a sort of organism—the "cosmobiological conception of nature." At the fringes of these developments lies the recent research into the old Eastern technique of acupuncture, based on such concepts as "energy flow" and a more field-oriented approach to the human organism. It may be that reorientation toward the "field approach" may serve to bring the biological view of humans more closely in line with the Eastern view, which holds that the individual is essentially part of the cosmic evolutionary process.

Consciousness Research

Science has been concerned with the relationship of things to one another and not to ourselves (Lonergan, 1957). However, it is our consciousness that perceives relationships, even when science has erected an interface of instruments between reality and the observer. The important anchor point of the observer has been often overlooked. Chaitanya (1972) notes that:

> It was soon forgotten that to describe experience completely, one had to mention the consciousness looking out as well as the universe which was seen when it looked outward.

In Western science it has been generally assumed that the consciousness involved in scientific observation should only be of the kind that produces objective knowledge. In recent years, however, there has been increased scientific interest in consciousness as such, in the relations between physical states and consciousness, and in the ways altered

states of awareness can affect perception, thinking, feelings, and behavior. Researchers from psychology, neurology, and many other disciplines are studying sleep and dreaming, meditation, brain-wave control, yoga, hypnosis, and other states of consciousness. These studies indicate that not only does man have rarely used potentials which can be learned, but that elements of these states are more common than previously thought and their influence on perception is such that the world seen by them differs in many respects from that characterizing "normal" consciousness. As the visible light band is a minute part of the total electromagnetic spectrum, so "normal" human consciousness is showing up to be a small portion of total human awareness.

It is becoming clear that many altered states of consciousness and other topics can be brought into the realm of scientific inquiry. Many of these subjective states or phenomena were originally classified as religious or mystical in nature, and hence excluded from scientific study as not being objective, physicalistic, or subject to general observation. These attitudes are changing, first because the breakdown of subjective–objective dichotomies is demonstrating the importance of consciousness, and second because technological developments have made it possible to discover physiological correlates of subjective states—dreams, for example, can now be detected and monitored through rapid eye movements (REM) and EEG recordings. As a result of such advances, these former topics of mysticism are moving into the domain of scientific verification and exploration.

Hypnosis. Major scientific research into the nature and characteristics of hypnosis has increased rapidly in the last decade. The state of hypnosis is still not well understood, but it can be defined as a state of mind usually induced by another person, which involves control over attention and also communication with parts of the mind usually outside of awareness, such as memory, subconscious processes, and physical control of the body. The hypnotized person's usual structure of reality recedes, enabling him to have intense absorption in one facet of awareness.

Present research indicates that many affects are possible through suggestion in the hypnotic state: control of pain, enhanced memory and mental abilities, changes in motivation and emotion, changes in habits, increases in creativity, and control over physical processes, including blood flow and treatment of many diseases (Weitzenhoffer, 1953; Hilgard, 1965; Krippner, 1969).

It appears likely that most phenomena which can be evoked by a hypnotic suggestion from a hypnotist can also be done by an individual himself, through self-hypnosis and self-suggestion (Sparks, 1962). The

technique is one which can be learned individually and in groups. An example of this is the technique called "autogenic training" developed by Schultz and Luthe (Luthe, 1969) which uses self-suggestion exercises for therapeutic medical treatments, e.g. relaxation, increasing blood flow to hands and feet, creating mental calmness.

Researchers are finding that deep states of hypnosis are not necessary for many of the affects to be produced, so it is likely that self-hypnosis and self-suggestion can be used by a great many persons in our society. The list of potential uses of hypnosis is extensive and impressive, and one may wonder why hypnosis is not used more extensively and more frequently.

One partial answer is that we do not have a paradigm, in medicine or in our culture, within which hypnosis can be understood and used consistently and responsibly. Our medicine is based on the manipulation of material processes through material means: drugs, surgical intervention, diagnostic tests. So strong is the preference for physical means of treatment that psychophysical processes are fringe areas: psychosomatic ills, the neuroses, and mental conditions and treated frequently with drugs, placebos, or psychosurgery, instead of through psychological methods. With a supportive psychological and experiential context, in which hypnosis is considered normal and useful, leading to autonomy and self-control, its potential would be more likely to be accepted, explored, and used.

Biofeedback. Many of the results obtained through hypnosis—voluntary control of a wide variety of internal states—can also be achieved through biofeedback training (BFT). This is a technique of giving a person precise and immediate feedback on a particular physical process as it occurs. The most widely known BFT has been applied to the control of brain waves. In a procedure devised by Kamiya (1969), an electroencephalograph is used to monitor a person's brain waves and arranged to sound a tone whenever alpha frequencies (8–14 cps) occur in the brain. The subject is instructed to note how he is thinking when the tone sounds and to try to keep the tone sounding. With this feedback, many individuals learn to increase the proportion of alpha waves in their brain, often within a few hours.

As we noted earlier, this kind of control was always thought to be impossible in the West. The pioneering work of Kamiya (1969) and Miller (1971) changed this belief: the physical processes that have so far proved amenable to learned voluntary control include brain waves (alpha and theta frequencies), heart rate, blood pressure, body and skin temperature, muscle relaxation, and even the electrical activity of single cells in the spinal cord (Barber, 1971).

The consequences of this development for the individual's ability to learn the full range of controls that are possible over the activity of his own brain have been mentioned earlier. Some preliminary reports from this research indicate that such control is established through a different kind of conscious volition, a "passive volition." This may change the ways in which knowledge gained in these states can be processed or used.* A less appreciated aspect of this new technology is that it can allow the person to become more specifically sensitive to the effects of changes in his environment, normally unnoticed and occurring as a result of changes emanating from remote locations, e.g. the effects of changes in the magnetic and electromagnetic environment on reaction time and the generation of hypertension (Presman, 1970). The psychosomatic basis for many diseases may also be explored in a more dispassionate way, allowing the patient to become aware of the full situation surrounding illness. This could have significant consequences in overall mental stability and the sense of self-responsibility in the individual.

Dreaming. This is the most common altered state of consciousness that people experience. Dreams have been a subject of interest from early times and have often been associated with precognitive experiences and creative experiences of all kinds. Freud concluded that dreams were images created by the subconscious to express emotions, desires, and feelings, chiefly as wish fulfillments (cf. Freud, 1950). Others have found that dreams present trial solutions to problems, show images and goals, and dramatize themes and patterns from waking life. Jung suggested that they represent contact with the basic archetypal images which are also expressed in myths.

About two decades ago researchers discovered that when a sleeping person dreams, his eyes move under his closed lids (Aserinsky and Kleitman, 1955). This discovery, simple though it was, made it possible to get recall of a person's dreams during the night by simply waking him or her during rapid eye movement (REM) sleep, rather than relying on his spotty recall the morning after. Once the correlation was made, then a study of EEG patterns revealed that dreaming went in cycles through the night, with the length of dream time increasing toward morning. The conclusion is clear that although dreams occur to everyone, for some individuals they are not accessible to conscious memory in the morning.

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* See Elise Boulding's remarks in Appendix A regarding self-hypnosis and "mind games" which use passive volition.

Interest in dreams and dream consciousness cuts across several fields. Psychotherapists are exploring the meanings and uses of dreams for the individual's personality, life problems, and growth needs (Freud, 1950; Perls, 1969; Martin, 1955; Faraday, 1972). Researchers in neurology and psychophysiology are studying the mechanisms of dream production and the function of dreams for the mental health of the individual. The possibility of controlling or guiding dreams is being explored by researchers in consciousness (Tart, 1969, 1970; Witkin, 1969; Casteneda, 1972) and others have studied the relation of dreams to ESP (Dunne, 1939; Ullman and Krippner, 1970). The findings from this research suggest that humans have extensive and important dream lives, which contributes to their psychological, emotional, and physical health, and that their dreams can be used for their benefit in a number of ways:

- Dreaming is essential for mental health, and dream deprivation results in detrimental psychological effects.
- Actions, plots, and themes of dreams can to some extent be controlled.
- Solutions to personal or practical problems can be produced in dreams.
- Literary and artistic creations can be developed through dreams.
- Emotional conflicts and needs can be communicated through dreams.
- Different parts of the personality can communicate through dreams.
- Integrative and positive personality images can occur in dreams.
- Telepathic and precognitive information can be received and expressed in dreams.
- "Waking consciousness" can be maintained in some dreams.
- Telepathic, predictive, and other apparent ESP messages may occur in dreams. (See the later section in parapsychology.)

Meditation. Though interest in meditational practices has increased markedly in the West during the past decade, some of the techniques themselves are thousands of years old, being drawn from classical traditions of mysticism, religious practices, and methods of self-understanding. There are two general types of meditation. In one, the individual gathers his attention on an object, a thought, a sound, or some other internal or external sensation, with the goal of merging with that object. In the second technique, the meditator clears his mind so that he is empty of thoughts, ideas, feelings, sensations, or "programs." Whichever technique is used it must be learned and practiced if it is to have any effect.

The limited amount of scientific research that has been done indicates that meditation results in lowered rates of metabolism, respiration, blood flow and oxygen consumption, increased alpha waves in the brain, and increased relaxation (Wallace, 1970). The psychological effects include a vast range of reported phenomena, such as: recall of experiences, abilities to shut out distractions, changes in color or shape

of objects, and feelings of relaxation or peace (Deikman, 1963; Tart, 1969).

Also there is some evidence that different methods of meditation produce different results that are consistent with the goals of the practice. For example, EEG studies show that in Zen meditation, continual awareness of the external world is maintained (Kasamatsu and Hirai, 1966) while in Yoga meditation, external stimuli are ignored (Anand, Chhina, and Singh, 1961). Each of these is appropriate to the intention—to remain aware of the outside world in Zen, and to withdraw from it in Yoga.

Psychologically, some meditators experience the world transcendentally following meditation, seeing it as fresh, new, and often more brightly colored. This kind of transfiguration (reported in Deikman, 1963) is similar to reports of experiences by religious mystics, and indicates that meditation may give individual insights into parts of awareness which are deeper than normal everyday consciousness.

Psychedelic Drugs. In the last 15 years there has been increased interest in chemical substances that change the quality and characteristics of normal everyday consciousness, particularly through such drugs as lysergic acid, mescaline, psilocybin, and others. These drugs, referred to as psychedelics, hallucinogens, or psychoactive chemicals, expand or contract the field of consciousness; they seem capable of enhancing perceptions and sensations, giving access to memories and past experiences, facilitating mental activity, and producing changes in the level of consciousness, including what are reported as transcendent experiences of a religious or cosmic nature (Masters and Houston, 1966).

Although uncontrolled and illegal drug use in the United States has hampered scientific research, psychoactive substances seem to have many potential uses if used under proper conditions* (Masters and Houston, 1966; Aaronson and Osmond, 1970; Krippner in Tart, 1969).

- Psychotherapy using psychedelic chemicals has had remarkable success.
- Some studies have shown that creativity can be enhanced, at least in artists and creative workers.
- Therapeutic sessions using psychedelic drugs with patients suffering terminal diseases have resulted in less pain and apprehension regarding death.

* "Psychoactive substances have many potential uses—and misuses. (See Wayne O. Evans and Nathan S. Kline, *Psychotropic Drugs in the Year 2000.* Charles C. Thomas, 1971.) It is irresponsible to wax enthusiastic about the potential of drugs without also cautioning about the many problems that they are causing."—Michael Marien.

- Transcendent, religious, or "cosmic" experiences occur to some.
- Hyperawareness of body states and physiological processes have been reported.
- Some evidence indicates that parapsychological abilities may be enhanced.

These potentials, as with those deriving from hypnosis, meditation, and other altered states of awareness, are subject to the conditions set by the individual through his personality and his expectations, the setting and context of the treatment, and the sophistication with which the particular drug is used. The potential of these techniques has not been fully explored, largely owing to a combination of the problems sometimes associated with their use in ill-suited conditions and an unfavorable societal attitude.

Unconscious Processes and Subliminal Stimulation. The theory that parts of our thinking and mental processes are outside of our awareness is becoming accepted today. Initially called the subliminal self (Myers, 1903) or the unconscious (Freud, 1950), the suggestion of unconscious processes first seemed in conflict with the image of rational man, in which the individual was regarded as fully conscious and rationally in charge of his thoughts and behavior. Now there is general realization that many mental processes take place outside of awareness, and these influence our actions, our thoughts, and our feelings.

The notion that the senses could receive information below the normal thresholds for perception or awareness has also been the subject of controversy many times during this century. Laws prohibiting subliminal advertising were drawn up even when its actual existence was being questioned by psychologists. Dixon (1972) has recently reexamined the whole question in a critical light and found that as measured against eight different experimental criteria, the phenomenon is real and has been found to affect at least eight different aspects of perception and behavior.

The Superconscious. Freud's concept of the unconscious mind emphasized a pool of negative, emotion-ridden conflicts, and this notion has come to characterize the unconscious. Currently there are indications that a concept of a superconscious aspect of mind is emerging. The superconscious is the name given to the creative, intuitive, inspiring aspects of mind, those which have positive and self-directing qualities (Assagioli, 1965; Aurobindo, 1971; Teilhard de Chardin, 1969). Like other mental activities that are outside of conscious awareness, it may be expressed in dreams, hunches, feelings, and intuitive "knowings." At present the idea of a superconscious is scattered among a number of philosophers, psychologists, and other investigators of con-

sciousness. If the concept is a viable one, it may coalesce with as much force and effect as did the earlier idea of unconscious processes.

Toward a Science of Consciousness. Besides the study of specific states of consciousness, researchers are beginning to develop explanatory and descriptive theories regarding consciousness. Lilly (1972) hypothesizes that the mind (and body) is a human biocomputer, with programs and metaprograms which can be analyzed and altered. Muses (1972), a mathematician, describes consciousness mathematically by hypernumbers. Tart (1971) considers states of consciousness as information-processing systems, with units such as memory, emotion, sense of identity, evaluation and decision, and awareness. Krippner (in White, 1972) has listed twenty states of consciousness, with criteria to distinguish each. Such theories require investigation and further development, but indicate that an investigation of consciousness and its alterations is scientifically feasible.

Here we can summarize as follows: the extension of the scientific method to the study of consciousness itself has resulted in the identification of an increasing number of distinct states of consciousness, each with distinct characteristics through which reality may be experienced or interpreted. Tart (1972) suggests that the rules of correspondence which exist between "normal" consciousness and the "external" world should also be discovered between other states of consciousness and the realities "external" to them. This extension of the scientific method could, he suggests, greatly enhance science and the usual assumption of science that "our ordinary, normal, so-called rational state of consciousness is the best one for surviving on this planet and understanding the universe" (Tart, 1973). The consequences could be profound not only for science, by extending greatly the meaning of generalization for example, but also for the image of humankind. The image stemming from this research as a whole is basically one which overlaps with the image from evolutionary theory, wherein the course of evolution moves toward increasing complexity on the physical level and increasing awareness in the arena of consciousness.

Parapsychology and Psychic Research

We come now to research on phenomena that violate the paradigms of physicality or causation, or that cannot be explained by the known laws of the universe. The four major divisions of this kind of research to date are as follows:

- *Telepathy.* The perception of another person's on-going mental activities without the use of any sensory means of communication.
- *Clairvoyance.* The ability to know directly information or facts about events occurring in remote locations, without normal sensory means.
- *Precognition.* The ability to know of events or happenings in the future without sensory or inferential means of knowing.
- *Psychokinesis (telekinesis).* The movement of matter by non-physical means or direct mental influence over physical objects or systems.*

The first three are often referred to collectively as *psi* phenomena, or extrasensory perception (ESP); psychokinesis is sometimes referred to under the rubric of psycho-energetic phenomena. The main task chosen by early workers in these areas was proof of the actual existence of the phenomena; the seemingly sporadic nature of their occurrence meant that the only proof which could be sought at the time was statistical in nature (Rhine, 1961).

Margenau (1966) has suggested that the proper approach would be to attempt to find those conditions necessary to concentrate the phenomena sufficiently to ensure their reliable occurrence in a laboratory situation. There are many indications that this is now possible, as more and more reliable data from scientific investigation are emerging about the occurrence and characteristics of these phenomena. We survey these findings briefly:

- Altered states of consciousness, particularly those tending toward relaxation, facilitate receiving ESP information. This has been found for the states of dreaming (Ullman and Krippner, 1970), deep relaxation (Brand and Brand, 1973), alpha brain wave states (Honorton, 1969), and hypnotic suggestions (Krippner, 1967).
- Physical states and processes can be "induced" telepathically. In experiments with identical twins and also with unrelated persons, physical changes such as the rate of blood flow, electrical skin resistance, and brain wave patterns have been sent from one person to another (Dean, 1966; Tart in Ryzl, 1970; Duane and Behrendt, 1965).
- Telepathy is more likely between persons who have mutual liking, or who have physical or emotional bonds (Anderson and White, 1956; Duane and Behrendt, 1965).
- Emotions and emotional content can be transmitted telepathically. Moss (1969), for example, presented emotionally stimulating visual and musical sequences to senders, and percipients (the receivers) reported corresponding emotional feelings.
- High motivation enhances psi phenomena (Rhine and Pratt, 1957).
- Belief in extrasensory perception raises ESP scoring levels in laboratory experiments; disbelief lowers them (these are colloquially called sheep vs. goat experiments) (Schmeidler and McConnell, 1958; Palmer, 1971).
- Telepathic or other psi information is often received subliminally, and gains access to the conscious mind through hunches, dreams, intuitions, and feelings (L. E. Rhine, 1961).

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* "Of the 4 effects, most scientists have greatest reservation with respect to telekinesis—in spite of work at Boeing and in Russia. Telekinesis is also of least importance for the discussion that follows."—Henry Margenau

- The information is often interpreted through the receiver's own frameworks of perception, rather than seen as it was sent. For example, the visual message of a boxing match may be translated into an image of an ocean with pounding waves; messages regarding street riots may be consciously perceived as relating to earthquakes (Moss, 1969).
- Scores on ESP tests have been correlated with several different personality characteristics (e.g. Kanthamani and Rao, 1973).
- Psychokinetic effects have been demonstrated in the laboratory to affect quantum processes, mechanical and electronic systems, and falling dice and other objects (Adamenko, 1972; L. E. Rhine, 1970; Green, 1973; Ostrander and Schroeder, 1970).
- Psychokinetic or paranormal physical effects are almost always small in laboratory experiments, but may be of large magnitude in real life situations, such as poltergeist phenomena—which may be caused in some cases by psychokinesis (L. E. Rhine, 1970; Roll, 1970).
- In experimental studies, the psychokinetic effect almost always shows a significant cyclic decline in strength over short time periods (L. E. Rhine, 1970).

These findings are still scattered pieces of information, and as yet the field awaits an integrating theory or set of principles which will reveal lawful patterns. Scientists from disciplines other than psychology are entering the investigations of psychic phenomena, and this has widened the variety of search criteria being brought to bear on the issue. Just as the chemist knows that certain conditions of temperature, pressure, timing and concentration of chemicals are necessary for a reaction to yield a given product, modern psychic research is piecing together the complex pattern of conditions likely to enhance the occurrence of telepathy or precognition.

Several new developments make these investigations more feasible now than they were in the past:

- It may be possible to train psychic abilities using techniques of immediate feedback to enhance the learning process (Targ and Hurt, 1972).
- Psychics have always referred to other modes of perception as part of their ability, e.g. the perception of "auras" or fields around the body as sources of information. Electronic instrumentation sensitive to minute changes in magnetic and other fields around the body can now be used in a biofeedback set-up to enhance these kinds of perception (Beal, 1973).
- Electronic instrumentation can further be used to detect and monitor psychophysiological states which are correlated with psychic functioning (*ASPR Newsletter*, 1972).
- The use of gifted psychics in laboratory research is increasing. Many of these persons apparently have voluntary control of various parapsychological abilities (Green, 1972; Stanford Research Institute, 1973).
- Certain aspects of physics that were thought to logically prohibit most psychic phenomena are no longer held so rigidly. The classical formulations of the principles of causality and conservation of energy are not holding up in certain situations in quantum physics (Margenau, 1965) and thus physical theory is making room for some of the kinds of causality involved in psychic phenomena.
- Theories of the phenomena based on quantum mechanics and physics have begun to emerge; in one of these, the theoretical curve for the distribution of psychic abilities in populations closely matches experimental data (Walker, 1973).

In psychic research, where the theoretical issues are in many cases identical with the limits of physics, it is understandable that many relevant general models will come from physics. For example, attempts are being made to relate "hidden variable" theory in quantum mechanics, concepts of hypernumber and hyperspace, and theories of sub-atomic particles to a description of the physical world in such a way that it includes, at least theoretically, the information that can be the basis for psychic perception (Walker, 1973; Muses, 1972–3; Kozyrev, 1968; Koestler, 1972).

Impact of Psychic Research on Images of Humankind. The present form of science has based itself upon a particular kind of separation between subjective and objective realities, and has argued that its discovered laws make it so. This remained relatively unchallenged until the early twentieth century, when the deeper probing of science began to reveal a universe that renders objective knowledge impossible once a certain kind of highly responsive system is approached. As noted, this shows up particularly in physics—where the atomic level is so sensitive to the nature of the measurement necessary for the acquisition of objective knowledge that this knowledge becomes impossible to achieve.

A similar phenomenon occurs in research on the human brain. Eccles (1970) has described the connection between events in the brain and energy transitions occurring at the subatomic level in atoms. His suggestion is that whole chains of actions and responses of the nervous system are capable of being initiated by tiny energy transitions occurring at the quantum level, since the brain possesses cells which can be affected by these very small energy transitions, cells whose firing can trigger other whole sets of neurons. This interface between quantum mechanics and brain research will no doubt be one of the vital growing areas of science in the future, and may overlap present inquiries in psychic research in important ways.

It is of course at the level of information itself that all theories, whether physical, biological, or psychological, must fuse. All the issues involved, however, seem to hinge upon the relationship between the physical world and that of consciousness, and it is this relationship that is "on trial" when psychic phenomena are debated.

An important aspect of this relationship is the demonstration that the body is sensitive to many more than the several classes of stimuli in normal sensory perception. In subliminal perception the presentation is such that the threshold of perception for the sense modality being tested is never reached, and yet evidence clearly shows that information *is* transferred. Dixon (1972) concludes that subliminal stimulation has been shown to affect dreams, memory, adaptation level, conscious

perception, verbal behavior, emotional responses, drive-related behavior, and perceptual thresholds. Thus subliminal perception research has been held by some to be the essential point of departure from conventional psychology into those issues in the theory of perception which also involve psychic research and, ultimately, the relationship between the brain and the "external" world.

However, a recent experiment, if substantiated, points to a far more radical departure from presently accepted psychological theory. This experiment, by Puthoff and Targ (1974), depends upon the discovery that if a stroboscopic light at about 15 flashes per second is shined in a subject's eyes, a characteristic alpha component (around 10 or 11 cps) appears in his electroencephalogram. In the Puthoff–Targ experiment two remotely isolated subjects are used, some prior degree of rapport having been established between them. The light is flashed in one subject's eyes and the other is asked to guess whether, in a given time interval, the light is on or off. While the second subject is usually unable to guess better than a chance basis, the telltale alpha component appears in his EEG. The important deduction is that unconsciously he knows with a certainty, in an extrasensory way, when the light is in the other person's eyes—even while he is denying such knowledge to his conscious mind.

In other words, this watershed experiment appears to provide clear evidence of universal telepathic capacity with almost complete repression (for most persons) of awareness of this source of knowledge. Demonstration of this repression phenomenon does much to explain the puzzling erratic character of psychic research data. It opens the possibility of radically new research methodologies in which the inhibiting effect of the "internal censor" is bypassed by utilizing responses (such as EEG components) that the organism has not learned to repress.

The implications of the experiment goes much further. If telepathic capacity is shown to be universal and almost completely repressed, this suggests that the same may be true of the whole range of reported paranormal phenomena—clairvoyant remote perception; abnormally rapid healing; precognition; retrocognition of other lifetimes; teleportation, "thought photography," and other forms of psychokinesis; and the rest. Kuhn (1970) describes how, in the replacement of scientific paradigms, a watershed point is reached where the accumulated weight of discrepancies and anomalies that cannot be fitted into the old paradigm tips the balance, and it becomes more profitable (in emotional as well as in rational terms) to seek a new paradigm than to patch up the old. Recent experimental researchers, including especially the experiment mentioned above, strongly suggest that the range of

human potentialities is far greater, that the role of out-of-consciousness mind processes is far greater, and that the power of expectations and images is far greater than can be accounted for under the old paradigm.

Clearly the dominant image of human nature in Western society today does not as yet include the potentialities implied by the vast and puzzling range of reported psychic phenomena. On the other hand, public interest in this realm is evidently growing. If Lawrence LeShan (1969) is correct in his theory that the assumptions held about reality influence the "reality" experienced, then changing cultural assumptions about the possibility of psychic phenomena may have consequences for the frequency with which they are observed to occur. (Hypnosis researchers in the early nineteenth century typically observed that the hypnotic trance brought forth latent clairvoyant observation and diagnosis capabilities in their subjects. A century later those doing hypnosis research were more certain that these phenomena were physically impossible, and they no longer seemed to occur.)

If the newly re-energized area of psychic research does flourish, with the dual impetus of increasing public tolerance and new methodological tools, its impact on modern culture may be profound. As earlier indicated, in the current Western scientific paradigm "reality" tends to be physical, causal, mechanistic, and objective. The data of psychic research suggest that reality includes paraphysical effects, that nonmaterial mental states exist and transact with physical systems, and that humanity has a mental or consciousness aspect which transcends its physical nature.

General Systems Theory and Cybernetics

We may let Gregory Bateson introduce a final research area to be mentioned here:

> the growing together of a number of ideas which had developed in different places during World War II . . . the aggregate of these ideas [being called] cybernetics, or communication theory, or information theory, or systems theory. The ideas were generated in many places: in Vienna by Bertalanffy, in Harvard by Wiener, in Princeton by von Neumann, in Bell Telephone labs by Shannon, in Cambridge by Craik, and so on. All these separate developments in different intellectual centers dealt with . . . the problem of what sort of a thing is an organized system . . . I think that cybernetics is the biggest bite out of the fruit of the Tree of Knowledge that mankind has taken in the last 2000 years.
>
> (1972, pp. 482–484)

General systems theory is in essence an attempt to integrate in some rational terms, with appropriate metaphors, the diverse knowledge

flowing from the whole of scientific investigation. It aims at being both holistic and empirical. One of its most basic propositions, empirically supported, is that laws and principles found to govern the systems particular to one discipline are likely to have import for the systems peculiar to other disciplines.

For example, Wiener (1954) observes that the operations of modern complex computing systems are precisely parallel to those of living organisms in their use of feedback to counteract the thermodynamic tendency toward increasing entropy (i.e. confusion, disorder). In both cases there are similar processes of collecting information from the outside world, transforming this information into more usable forms, basing action on the transformed information, and reporting the consequences back to the internal regulatory apparatus.

The concept of many systems as potentially having similar functional or structural models is an essential part of what in 1954 was termed General Systems Theory by von Bertalanffy (a theoretical biologist), Boulding (an economist), Gerard (a neurophysiologist), and Rapoport (a mathematician). It should be noted that they specifically rejected the notion of the person being only an assembly of the parts of systems that the reductionist approach suggests (Buckley, 1968).

The main thrust for the systems approach may be said to have stemmed from biology. The trend toward, and need for, viewing biological systems in other than reductionist terms came from the thinking of von Bertalanffy, Weiss, Cannon, Bernard, and others in the 1920s and 1930s though their work did not gain widespread recognition until after World War II. Then it was realized that although parts of the biological system might be said to be both in equilibrium and closed, the whole system was not so structured, and so new concepts would be necessary if these systems were to be accurately described by science.

In turn, the systems approach was fruitfully applied to many aspects of the study of organisms, e.g. to the cell (Rashevsky, 1938), to permeation in cells (Osterhout, 1932), to metabolation (Bertalanffy, 1932), growth theory (von Bertalanfly, 1934), and excitation (Hill, 1936). However, the terms of its initiation were broader than this and Ashby (1973) describes the kinds of cross-fertilization that were envisaged as possible if the inhibitions of specialization could be removed:

> The neurophysiologists were generally unwilling to think of the cerebral cortex as a place where epidemic-like processes were occurring. The economists ordinarily would not take a person seriously who suggested that the banking system worked rather like the liver.

Further, the advantages of the systems approach were made apparent when Sir Ronald Fisher successfully challenged the reductionist premise by demonstrating that in ecological systems, plots showing the effect of one variable change at a time could never show the effect of varying two or more of them simultaneously. A second major advance was achieved when radio engineers mastered the problems of feedback circuits which had enormous sensitivity but were wildly unstable until it was understood how the interactions created by the feedback operated on the system. When Norbert Wiener discovered that the results could be applied to systems generally such that "goal-seeking" or "self-corrective" devices could be constructed utilizing the feedback principle, then systems science began in earnest, but again, for specialized purposes.

Now it is understood that interaction in systems is a vital element and it requires a new approach; hence Weiss's (1969) point that:

> The number of statements necessary to describe the whole system is more than that necessary to describe the parts . . . the "more" in the above statement does not at all refer to any measurable quantity in the observed systems themselves; it refers solely to the necessity for the observer to supplement the sum of statements that can be made about the separate parts by any such additional statements as will be needed to describe the *collective behavior* of the parts, when in an organized group.

Further, the ways in which systems are structured in terms of hierarchies that allow them to deal effectively with increasing complexity is another essential component (Weiss, 1969).* Thus we find that systems in general have only certain kinds of responses to growth, new information, or change, all of which have common meanings in systems theory. In general such responses are characterized by sudden restructuring phenomena which are usually preceded by dissonance in the system showing up at several levels simultaneously. These events are also accompanied by a trend toward greater simplification as well as interactive transitions across levels of the old subsystemic structure. It is not yet clear whether transitions of this kind can actually be guided; this question emerging from the systems approach is one of the most demanding challenges which we must meet in the near future (Platt, 1970).

Thus it is clear that information emerging from the systems approach can have immediate relevance for the study of many parts of the human environment. The hierarchization notion is common to

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* See Note A, p. 109.

language (Chomsky, 1965), voluntary action (Bruner, 1969), instinctive behavior (Tinbergen, 1951), and numerous other kinds of systems. Laszlo (1969, 1972) and Salk (1973), among others, find ethics and values as having an objective base in norms echoed in the structure or "metabiology" of living systems. Bateson (1972) states the promise of cybernetics and general systems theory most ambitiously in dealing with the dilemma to which human consciousness aided by modern technology have now brought us:

> Today the purposes of the consciousness are implemented by more and more effective machinery, transportation systems, airplanes, weaponry, medicine, pesticides.... Conscious purpose is now empowered to upset the balances of the body, of society, and of the biological world around us. A pathology—a loss of balance—is threatened.... On the one hand, we have the systemic nature of the individual human being, the systemic nature of the culture in which he lives, and the systemic nature of the biological, ecological system around him; and, on the other hand, the curious twist in the systemic nature of the individual man whereby consciousness is, almost of necessity, blinded to the systemic nature of the man himself. Purposive consciousness pulls out, from the total mind, sequences which do not have the loop structure which is characteristic of the whole systemic structure. If you follow the "common-sense" dictates of consciousness you become effectively, greedy and unwise—... [where] I use "wisdom" as a word for recognition of and guidance by a knowledge of the total systemic creature. Lack of systemic wisdom is always punished.... Biological systems—the individual, the culture, and the ecology—are ... punishing of any species unwise enough to quarrel with its ecology. Call the systemic forces "God" if you will. (p. 440)

SOURCES AND CHARACTERISTICS OF A POSSIBLE NEW PARADIGM

We have examined some characteristics of science as it has been, and also some of the developments that may be forcing change in its basic paradigm. Now we want to look at some of the interactions between science and society and suggest some characteristics of the new scientific paradigm that may be emergent.

Interactions between Science and Society

Science today affects the lives of an unprecedented number of people, in terms both of technological impact and of their direct involvement in the activity. The number of Americans who are in some manner occupationally involved in scientific research and development is approaching 5 percent of the working population (Schlegel, 1972). The highly complex and costly operations of science have become a subject for debate in all the advanced societies (Ciba, 1972; Calder,

1963). This increased impact and the high cost of science bring a heightened interaction between society's attitudes to science and the content and quantity of scientific research.

For at least a century, the relationship between science and modern society in many ways has resembled that which formerly existed between religion and society. In advanced societies, most people have sought explanation of natural phenomena in scientific terms, where formerly, explanation was sought from the authority of the major religions. Thus, science has acted as a kind of validating filter through which events in the "real" world had to pass before they could become accepted. However, in performing this function, science has often ended up rejecting as unreal or illusory many aspects of subjective experience of phenomena which cannot be explained by its own paradigms—psychic phenomena, UFOs, religious experiences—as well as some of the taboos listed earlier. In recent years, major institutions of science have begun to recognize that they can no longer refuse attention to aspects of human experience having high currency in society, and that to continually deny existence to widely experienced realities is to eventually destroy their own authority.

Related to these changes within science is society's growing disenchantment with science. Generally speaking, this disenchantment has been exacerbated by the sometimes disastrous misapplication of technology made possible by science. In the eyes of many, the distinction between science and technology is blurred; as a result, today's ecological crisis, the spinoff of science into military technology, and other problems of advanced societies are blamed on science itself.

This new hostility toward science is reflected, for example, in decreased enrollment in science-degree programs at colleges and universities. It has also repeatedly been used in the political sector to initiate massive cutoffs of funding for basic science—even though the development of military technology continues to flourish. There is a growing belief in the possibility of discovery-specific targeted funding in science, although examination of the patterns of scientific discovery discloses that one of its essential qualities is unpredictability.

The influence of social factors on science can pull in two opposing directions. On the one hand, social pressure can enrich the whole content of science by stressing the need for science to address itself to many issues now excluded. Important future developments might include, for example: extension of models of causality to include new phenomena interlocking with developments in physics; theory of complex and mutual causal systems and psychic research; the role of consciousness in both quantum mechanics and the general realm of state-specific sciences; the vital parameters of ecological and global

systems as wholly interconnected systems leading to more enlightened macro-decision-making.

On the other hand, if previously cited problems of misunderstanding of science and the role of technology prevail, then science will have its base of operations diminished by the social demand for almost exclusive attention to short-range problems and goals, thus causing a deterioration of the quality of the scientific enterprise as a whole. Thus, certain social pressures may be actually molding science into becoming exactly what society most wishes it *not* to be.

Although it has become commonplace to note how science has transformed society, we may well have underestimated the converse—how much the changing values of society have accelerated or decelerated, and affected the form and content of, scientific activity. As Edelstein (1957) points out, the Greeks discovered and tested most of the essential elements of the scientific method. They did not, however, develop their discoveries into practical application. One of the reasons for this, Farrington (1953) suggests, was that Greek society was based on a slave economy, and there was, therefore, no need for the development of technological applications. A more fundamental restriction, as Edelstein (1957) notes, was the Greek image of man in relation to nature: "The world was there to live in and not to be used and made over." Hence, the Greek approach to the pursuit of knowledge was largely aesthetic, although as Aristotle prophetically remarked: "Man vanquished by nature becomes master through technics."

In contrast to the Greek notion of "man," the Judeo-Christian view holds that "man" is essentially separate from the rightful master over nature. This view inspired a sharp rate of increase in technological advances in Western Europe throughout the Medieval period. On the other hand, the severe limitations of scholastic methodology, and the restrictive views of the Church, prevented the formulation of an adequate scientific paradigm. It was not until the Renaissance brought a new climate of individualism and free inquiry that the necessary conditions for a new paradigm were provided.

Interestingly, the Renaissance scholars turned to the Greeks to rediscover the empirical method. The Greeks possessed an objective science of things "out there," which D. Campbell (1959) terms the "epistemology of the other." This was the basic notion that nature was governed by laws and principles which could be discovered, and it was this that the Renaissance scholars then developed into science as we have come to know it.

Today, scientists are experiencing a sense of restriction from the limitations of the objective and reductionist approach, akin to the limitations felt by the Renaissance scholars in relation to the Medieval schoolmen's approach.

The time is clearly ripe for a new vision, and it is natural to wonder if once again the methods of inquiry developed by another culture might not be strong where ours are providing weak. As indicated by Table 5, it may be that these methods will be found in an "epistemology of the self," such as has held sway in the East. Certainly, there is a sudden new interest in oriental knowledge of various methods of control over bodily and mental functions. Like the Greek methods, these techniques have lain dormant in their culture of origin insofar as general application and "objective" development are concerned. Now, however, the Eastern discoveries are being validated in the West by biofeedback and other techniques. In short, the scientific knowledge of the West may be the environment needed if discoveries of the East are to develop and receive* widespread application to the practical concerns of humankind. This is not to suggest that modern science would or should adopt totally all the Eastern notions of consciousness, but rather that they might be fruitfully adopted and synthesized with traditional Western scientific methods to produce the next stage in man's evolutionary advance. As Oates (1972) commented:

> What appears to be the breaking down of civilization may well be simply the breaking up of old forms by life itself (not an eruption of madness or self-destruction), a process that is entirely natural and inevitable. Perhaps we are in the tumultuous but exciting close of a centuries-old kind of consciousness—a few of us like theologians of the Medieval church encountering the unstoppable energy of the Renaissance. What we must avoid is the paranoia of history's "true believers," who have always misinterpreted a natural, evolutionary transformation of consciousness as being the violent conclusion of all history.

Characteristics of a Possibly Emergent Paradigm

Much of what has been discussed in this chapter is to the point that the scientific paradigm and, through it, scientific research findings affect the dominant "image of man" in the society—but contrariwise the society's priorities and its cultural prejudices influence the scientific paradigm. At the present moment in history both developments within science itself (e.g. changing metaphors) and pressures from the rest of society (e.g. disenchantment with the present science-technology thrust)

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* "This is a most important admonition, which could be further elaborated. Northrop's 'Meeting of the East and West' here makes an important point. In my own writings, where I introduced P-plane and C-field, I called attention to the fact that the East dwells largely in the protocol plane of immediate experience (which includes introspection and esthetic immediacies), refusing to enter the field of rational constructs. The West, on the other hand, overemphasizes C, the rational. P and C are connected by rules of correspondence. My insistence is upon equalizing the emphasis on the two."—Henry Margenau

Table 5

ELEMENTS OF AN HISTORICAL ANALOGY FOR EXPLORING THE FEASIBILITY OF A NEW SCIENTIFIC PARADIGM

Element of the historical analogy	*in* Medieval to Industrial transformation (past)	*and* Industrial to Post-industrial transformation (future)
Approach or idea with undeveloped potential	Early Greek development of an epistemology of the "other" on which an objective physical science could be based	Early Oriental development of an epistemology of the "self" on which an objective/subjective psycho-physical science could be partially based.
Image blocking development of the idea for human betterment in culture of origin	Dominant image of the world as there to live in, not to be used and made over; free people enjoying knowledge for its aesthetic value; slaves doing the work—hence uneconomic to replace human energy by technology	Dominant image of the person as essentially a spiritual being deluded by the "maya" of physical existence—hence uneconomic to apply self-knowledge to problems of material existence
Motivating conditions for development of idea	Perceived limitations of the scholastic method, desire for empiricism and practical physical technologies	Perceived limitations of current reductionistic, objective methods; ecological problems beyond resolution by physical-technologies alone; desire for "value incorporating" social and psycho-technologies

Image of humankind necessary to foster development of the idea	Person as a being separate from nature, appropriate to dominate nature through exercise of individual will and reason	Person intrinsically part of nature, appropriate to harmonize self and nature through exercise of the individual and the collective, with objective and subjective means
Building blocks for development of idea	Translation of Greek thought; development of measurement mathematics, engineering, and later "pure" sciences of specialized discipline	Translation of Oriental thought, synthesis with general systems theory, learning theory, and emerging disciplines of holistic objective/subjective inquiry
Result of full development of idea	Powerful objective science and physical technologies; industrial corporations with necessary capitalization to exploit new technologies	Balanced "moral" science and economics oriented toward ecological well-being; balanced emphasis on physical, social, and psychotechnologies; new institutional forms yet to be discovered and created

may be bringing about a basic change in the scientific paradigm. From the nature of these various forces we have examined in the preceding discussion it is possible to deduce some characteristics that the emergent paradigm would be likely to have if it is responsive to these forces. The following eight characteristics are among the most important:

1. The new paradigm will likely be *inclusive rather than exclusive.* Science as it has been known to now will be included as a special case, distinguished by a positivistic bias that resulted in relative neglect of subjective experience, and a serious schism between the "two cultures" of science and the humanities. There will be recognition that any system of knowledge that has guided a stable society, whether that society be sophisticated or primitive, ancient or modern, Eastern or Western, may be assumed to be rooted in the human experience of its time and place and hence in that sense valid, not to be lightly assumed away as a quaint superstition.

2. It will likely be *eclectic in methodology* and in its definition of what constitutes knowledge. It will be guided by the dictum of Saint-Exupéry, that "Truth is not that which is demonstrable. Truth is that which is ineluctable"—which cannot be escaped. Thus the new scientific paradigm will not be slavishly wedded to the controlled experiment as the paragon of the test for ultimate truth. Furthermore, it will not be solely reductionistic in its quest for "explanations," recognizing that, for instance, a teleological cause may complement, not contradict, a reductionistic cause.

3. The new paradigm will likely make room for some sort of *systematization* of subjective experience, the domain which has heretofore largely been left to non-science—the humanities and religion. That is to say, it will include study of those experiences from which we derive our basic value commitments. From this characteristic flow several others:

4. It will likely foster *open, participative inquiry,* in the sense of reducing the dichotomy between observer and observed, investigator and subject. Insofar as it deals with a "human science," it will be based on collaborative trust and "exploring together," rather than on the sort of manipulative deception which has characterized much experimental psychological research of the past.

5. It will likely be *a moral inquiry,* in the sense of investigating (and applying) what values are wholesome for man (much in the sense that the science of nutrition investigates what foods are wholesome for man), rather than a "value-free" inquiry.

6. It will likely highlight *a principle of complementarity,* or reconciliation (analogously to wave and particle theories of light) of such "opposites" as free will and determinism, materialism and transcendentalism, science and religion.

7. The new paradigm will likely incorporate some kind of concept of hierarchical *level of consciousness*, or levels of subjective experience. These will be distinguishable in the sense that concepts and metaphors appropriate to one level do not necessarily fit another. They will be hierarchical, not in the sense that one is higher than another on some value scale, but in the sense of structural hierarchy, and also in the sense that the consciousness of intense moments of creativity are accompanied by, in some testable meaning, more awareness than times of "ordinary consciousness," and those in turn involve more awareness than deep sleep. The notion of a spectrum of potential consciousness connotes extending the range of recognized "unconscious" processes (i.e. processes of which we are not usually conscious although the potentiality appears to be present of experiencing them directly) to include a vast range of reported experience in the provinces of creative imagination, "cosmic consciousness," aesthetic and mystical experience, psychic phenomena, and the occult. This range will include, importantly, both subconscious choice—man "hiding from himself," repressing not only feelings and memories but also knowledge of his own potentialities—and supraconscious choice, the direction of a "higher self" manifesting itself in hunches and inspirations and "choosing better than we know." The metaphors appropriate to the "highest" levels will include some way of referring to the subjective experiencing of a unity in all things (the "More" of William James, the "Divine Ground," Brahman) of which the "higher self" (the "Oversoul" of Emerson, Atman) has immediate knowledge.

8. Thus the paradigm *will allow a much more unified view* of human experiences now categorized under such diverse headings as "creativity," "intuition," "hypnosis," "religious experience," and "psychic phenomena"—and also a more unified view of the processes of personal change and development that take place within the contexts of psychotherapy, education, "growth centers," religion, and crisis confrontation.

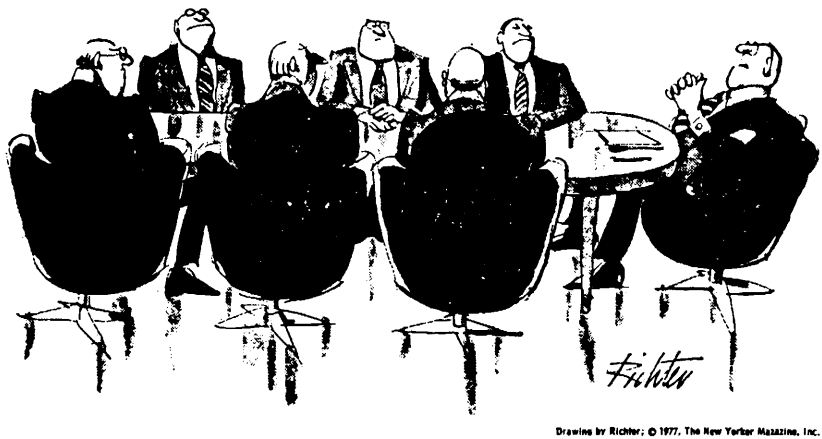
The guiding paradigm of scientific activity and the dominant image of man in society are not the same thing. They are, however, interdependent and a change taking place in one will surely affect the other.

NOTE

Note A

"Weiss's point that the rules of interaction must be given does not provide the whole story here. Complex patterns can be generated by simple rules. However, in Ulam's formulation, it takes a greater amount of (Shannonian) information to describe the

finished pattern than just the rules of interaction alone. Thus the amount of information (Shannonian) *grows*. This is contrary to Shannon's formulation that the amount of information decreases but can never increase. Furthermore, often the rules of interaction *cannot* be inferred from the finished pattern. It is important to realize that Shannon's information theory was developed to combat noise in systems and is therefore based on the rules of random interference. Thus it cannot explain the increase of complexity, structure and differentiation in biological systems. Biological and social processes, on the other hand, are based on differentiation—amplifying as well as structure-maintaining mutual causal relations, and can increase and maintain differentiation, structure and complexity. So Shannon's information theory is inadequate for biological and social systems. [See Maruyama (1963) for further details.]"—Magoroh Maruyama



Drawing by Richter; © 1977, The New Yorker Magazine, Inc.

"The question before the board, then is whether or not to enter an altered state of consciousness."

CHAPTER 5

*Characteristics of an Adequate Image of Humankind**

We have seen how the predominant image of humankind in a society is a powerful shaping force on the social environment and how the social environment, in turn, influences the society's image. We have also seen how the dominant images that guided this society through an age of incredible success are now being challenged, because of our inability to deal adequately either with the problems created by the success or the problems attendant to past and emerging social and scientific developments.

Now questions of tremendous import arise. Could an image of humankind emerge that might shape the future, as the currently dominant images—man as the master of nature, inhabitant of a material world, and consumer of goods—our legacy of the past, have shaped our present culture? Could such a new image provide the bridge to carry us safely over to a post-industrial era? If so, what characteristics should the emergent image entail, such that it would be *both* feasible and adequate for the satisfactory resolution of the serious problems currently facing the society?

From the nature of contemporary societal problems, studies of plausible alternative futures, and our earlier considerations of the role played by a society's dominant image, we can postulate a provisional list of characteristics that a new image must possess if it is to become dominant and effective. At the minimum we believe it would need to: (1) provide a holistic sense of perspective on life, (2) entail an ecological ethic, (3) entail a self-realization ethic, (4) be multi-leveled, multi-faceted, and integrative, (5) lead to a balancing and coordinating of satisfactions along many dimensions, and (6) be experimental and open-ended. We examine these requirements more closely below, and will consider the feasibility of emergence of such an image in Chapter 6.

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* To prevent misunderstanding, it should be emphasized that the word "self" in this chapter is meant to have a trans-personal connotation along the lines described in the next chapter. For this reason, some readers may prefer to scan Chapter 6 before reading further.

A HOLISTIC SENSE OF PERSPECTIVE

A holistic perspective and understanding of life seems absolutely vital if we are to overcome the fragmentation and alienation that have become so common in the latter part of the industrial era. If in the absence of the myths and rituals of pre-scientific societies we are to regain a sense of meaningful purpose and integration—at the level of self, of society, and of the universe—a generally acceptable sense of perspective or understanding must emerge in our society of "what it is all about." Just as an adequate new image should serve to reintegrate the specialized images that at present contend with each other, so too should it lead to a satisfactory sense of perspective and derivative methods for experiencing and participating in construction and discovery processes through which that perspective is maintained. Only then will the needs of continued evolution and the important function once served by myth and ritual again be fulfilled.*

ECOLOGICAL ETHIC

An ecological ethic is necessary if man is to avoid destroying the complex life-support system on which our continued existence on the planet depends. It must recognize that available resources, including space, are limited and must portray the human as an integral part of the natural world. It must reflect the "new scarcity" in an ethic of fragility, of doing more with less. It must involve not only a sense of mutual self-interest between individuals, but also the interests of fellow men and the more extensive interests among fellow creatures (both near and far, both present and future). An ecological ethic would imply movement toward a homeostatic (yet dynamic) economic and ecological system, in which the human acts in partnership with nature to harmonize ecological relationships and in establishing satisfactory recycling mechanisms. Such an ethic is necessary to achieve a synergism of heterogeneous individual and organizational micro-decisions such that the resultant macro-decisions are satisfactory to those who made the component decisions, and to society. (The alternative way of arriving at satisfactory macro-decisions involves behavior controls that would deprive the individual of freedoms, as well as being in conflict with the next characteristic.)

An ecological ethic should incorporate concerns that are broader than those of the physical/biological ecosphere, however. It should also lead to concern for the processes of coordinated and balanced need-

* See Note A, p. 121.

satisfaction and well-being among cultures (cultural ecology), among various institutions and types of activities such as the arts, the humanities, the sciences, politics and so forth (institutional ecology), and among various aspects of the self (intra- and trans-psychic ecology).

SELF-REALIZATION ETHIC

The desirability of this characteristic of the new image is based on the view that the proper end of all individual experience is the evolutionary and harmonious development of the emergent self (both as a person and as a part of wide collectivities), and that the appropriate function of social institutions is to create an environment which will foster that process. This is the ethic which must supersede the man-over-nature ethic and the material-growth-and-consumption ethic which have given rise to a large portion of man's problems as he became increasingly preoccupied with solely material aspects of exploiting and controlling nature for selfish ends on a fragile and finite planet where the pursuit of such goals can be suicidal.*

This self-realization would relieve the current hostility toward industrial and bureaucratic practices which tend to diminish man and the anxiety that we have somehow lost a sense of direction in the control and management of our human affairs—of what our ancestors would have called our destiny. The wide acceptance of a new ethic is required if we are to restructure our social institutions to satisfy the individual's basic need for full and valued participation in the society. As corollaries to this ethic, self-determination of individuals and minority groups would be fostered, diversity of choices would be honored, social decision-making would become largely decentralized, and the mechanism of creative voluntarism would be preferred over public bureaucracy for the accomplishment of most social tasks.†

Properly understood, these two ethics, the one emphasizing the total community of life-in-nature and the oneness of the human race, and the other placing the highest value on development of selfhood, are

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* See Note B, p. 122.

† "Let us realize that self-realization is very much an upper middle class/bourgeois/academic/liberal nostrum that, as you suggest, will cure everything for everybody.... I am all for self-realizing, but I entertain far more modest expectations. Moreover, I can be totally self-realized, but still be anxious as hell 'that we have somehow lost a sense of direction in the control and management of our human affairs.' The self-realization paradigm requires far more critical examination than you have given it here—just remember, that for most Americans, self-realization is winning a trophy in the bowling league. There is no indication how this will be otherwise."—Michael Marien

not contradictory but complementary. Both are necessary to synthesize and coordinate mutualistic and hierarchical approaches in a symbiotic manner. The ecological ethic corrects for a selfish distortion of the self-realization ethic, and the latter corrects for an excessively collectivist version of the ecological ethic. Together, the two ethics leave room for cooperation and for wholesome competition, for sociality and for individuality. But if the two ethics are to harmonize, the term "self" must be understood in broad terms, incorporating the diverse roles and aspects of existence of the human being. To quote three modern theorists,

> It is by now widely accepted that the history of evolution may be regarded as the development of ever more complex organizations of living matter: molecules, proteins, cells, groups of cells, animals.
>
> (Metzner, 1968)

> Consciousness, rather than being the product of a particular neural circuit . . . is the *organization* of the bio-system; that is, awareness *is* the "complementary" aspect of that organization—its psychological equivalent.
>
> (Deikman, 1972)

> Consciousness can be defined as a phenomenon which is synonymous with the structure of an organism.
>
> (Wolf, 1970)

Thus, corresponding to the generally increasing complexity and differentiation of evolving biological systems, there has been a concomitant increase in *consciousness* which reflects that evolving state. Our sense of self must incorporate this vision if we are responsibly to accept the challenges that our era presents.

Just as the different systems within the body (cells, organs, and so forth) are interrelated, so too are the different systems within the body-politic (persons, institutions, and so forth), and this interrelatedness of necessity increases as our civilization becomes more tightly coupled and complex. It represents a higher degree of organization of the bio-system. If we try to "love our neighbor as ourself," not because it is what we have been taught is proper but because we hold the underlying image and perception that our neighbor *is* in a real sense ourself, then it might indeed become more feasible to arrive at meaningful social goals that can be satisfied within ecological constraints. Thus the new image of humankind should incorporate transpersonal as well as individualistic aspects of existence.*

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* See Sir Geoffrey Vickers' very relevant comments on "Social Ethics" in Appendix B.

MULTI-DIMENSIONAL, MULTI-FACETED, AND INTEGRATIVE

We earlier noted how the images of humankind have over the past several hundred years become increasingly fragmented as specialization and reductionism have come to be emphasized in mature industrialized societies. If this trend is not reversed it is likely to lead, not only to continuing fragmentation of personality and culture, but also to ideological conflict as social policies based on old images compete for dominance. (For example, witness the current debate over the image of the human as portrayed in Skinner's *Beyond Freedom and Dignity* (1971) and operant conditioning in the schools.)

At this point in history, ideological conflict is too costly—our weapons are too strong and our institutional environment too fragile. If a new image is to contribute to resolution of the planet's woes, it must provide for an integrative reconciliation of the apparent dichotomies between opposing images (as quantum theory reconciled wave and particle images in physics). The new image must also be integrative in the sense that it builds on past successful images. Seldom if ever have historical infusions of new images from external sources been of a non-violent nature, whether the new image was imposed by physical power or brought in by a charismatic messiah who was persuasive to some but not to others. For the new image to foster a smooth transition to a benign post-industrial and eventually planetary society, it has to be absorbed into the lives of people and the institutions of society without the disruptions that accompany most revolutions. This can only happen if the new image and its implications are seen as an integration, reinterpretation or improvement of the old.

Any image of humankind that has guided a stable society, whether that society be sophisticated or primitive, ancient or modern, Eastern or Western, agricultural or hunting or industrial, must be assumed to be rooted in the human experience of its time and place and in that sense valid. That image which can lead toward a pluralistic yet symbiotic world of greater fulfillment cannot be in direct opposition to any of these more restricted images. In the specific case of late twentieth-century America, the new image must somehow be made compatible with the basic symbols and images of the American democratic experiment, and with the individualism of the frontier and the energetic activism of American enterprise.

But just as the new image should be integrative, so too should it entail a high degree of differentiation, not blurring the distinctiveness, focus, and validity of various specialized images in efforts at integration. It therefore must be adequately multi-faceted, and, in keeping with the sense of evolution, *coordinate those differences at a higher level of complexity and coherence.*

To perform this task of differentiated integration, the new image will likely have to be multi-dimensional.* In keeping with the lessons learned from ecology and general systems theory, any new image will have to order the various aspects of our existence at the physical, organic, social, psychical, and spiritual levels. As Polanyi (1966) and Weiss (1969) have pointed out, these levels form a hierarchy; the functioning of systems at each level relies on the elemental laws of the lower level; but the principle of the operations of a higher level can never be derived from the laws governing the lower—the lower level system received its meaning from the higher system, which integrates the particulars of the lower into a new emerging Gestalt. Such a multi-leveled image of humankind could thereby help both to integrate the contributions from various disciplines of science, and to contain meaning for and serve the needs of individuals and groups at varying degrees of maturity and modernity, just as relativistic physics includes Newtonian mechanics and common-sense observations as special cases of restricted validity.

Thus, if the requirements of various cultures, belief systems, and personality types are to be served, if cultural unity with diversity† is to be fostered and the evolution of consciousness to be furthered, the new image must portray a general direction of growth in which various conceptual emphases are reconciled but retained. For example, the emphasis of: individuality and community; the way of the yogi (inwardly directed change) and the way of the commissar (outwardly directed change); freedom and determinism; nature and nuture; male and female; sensory and extrasensory; and salvation or progress through efforts by self and society and through divine intervention. The meaning of divinity must somehow come to incorporate both the images of person as separate from God, and of person and God as different levels of the same reality. In all such cases the various partial images appear as *complementary* truths, neither denying the other, thus reflecting the views of such diverse groups as children and adults, lettered and unlettered, abstract and concrete minds.

Both of the dominant conceptual images basic to Western democracy (an agnostic survival of the fittest and a trustworthy invisible hand) are in need of revitalization if self-interested individual micro-decisions are in fact to combine into satisfactory macro-decisions in today's complex,

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* See Note C, p. 122.

† "The term 'unity with diversity' should be replaced by 'symbiotization of heterogeneity.' Although, as you [Markley] pointed out in conversation, the term 'unity with diversity' is likely to be understandable to more people, it misses the point completely. *This point is very important.*"—Magoroh Maruyama

interconnected society. Thus, if the operative principles based on a view of the human as possessing free will and a valid sense of values are to remain viable, the new image must accommodate the concept and experience of the transcendental, the expansion of consciousness, in personal and cultural evolution.

BALANCING AND COORDINATING SATISFACTIONS ALONG MANY DIMENSIONS

The maximizing of concerns along one narrowly defined dimension would not allow the other criteria listed above to be met in a way that contributes to an increased quality of life. The related ideas of balance and coordination stem from ecology and general systems theory (as well as from various cultures' notions about wisdom), and provides a needed corrective to the one-sided life style of achieving an increased standard of living that has accompanied the growth of the value-empty economics and science in our industrial society.*

Such a new image of man might be supportive of a philosophy (and indeed, a public strategy) of "well-being"—a term that Weisskopf (1971) uses to replace the term "welfare" and the older terms "happiness" and "utility," which have come to have predominantly economic connotations. Such a philosophy would have to acknowledge that:

> . . . a person, a family, a group or a nation can have too much wealth and income and may suffer from too much change, economic growth and production. It may consider that the way in which wealth is produced, distributed and consumed can, in itself, lead to a destructive way of life.
>
> (Weisskopf, 1971, p. 182)

Just as the complexities of ecology fare badly from single-valued approaches of such physical technologies as DDT, so too do the complex needs of the human system from treatments such as typify exclusively allopathic (drug-based) medicine, or a minimum-wage law. The hierarchical structure of human needs requires coordinated "satisficing" if the overall goal of well-being is to be served. (The term "satisfice" was coined by Herbert Simon, 1957. It stems from our

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* "The term 'balance' should be replaced by 'symbiosis.' In symbiosis differences do not have to be 'reconciled.' You make positive use of differences. For example, plants convert carbon dioxide to oxygen, and animals convert oxygen into carbon dioxide. They do the opposite. Symbiosis makes use of this difference. The idea is completely different from 'reconciliation.' Also, 'balance' is based on the paradigm that what one gains is what someone else loses. But in symbiotic paradigm, everybody gains."—Magoroh Maruyama

recognition that the trade-offs in real life are such that true "satisfactions" are not usually possible—hence we suffice as best we can, arriving at decisions that do not properly satisfy but may indeed "satisfice.")

In addition to these somewhat idealized objectives, however, the new image should point toward a transformed state of industrialized society that will seem achievable and preferable to the present state, yet have functional utility in the present. A positive guiding image is a crucial determinant in the fate of a people. In individual psychotherapy (Frank, 1972) and in societal revitalization (Polak, 1973), the expectation of success in confronting and dealing with crises is often a far more important variable than the specific methods or approaches used. For example, the American response to World War II seems to prove that our society is capable of extraordinary mobilization when it perceives itself to be in a crisis that it comprehends and expects to be able to deal with. But of course the present situation is different from World War II; as Pogo said, "We have met the enemy and he is us." Rather than encouraging propagandistic efforts to mobilize society, a new image should lead to understandings of personal and social actions suitable for the highly interconnected and complex—but limited—environment that the symbol "spaceship earth" has come to signify. The image should have ethical implications that are immediately practical in application and should validate the sense that there is a way out of our current difficulties.

EXPERIMENTAL AND OPEN-ENDED

Self-consciously evolutionary rather than dogmatic and paradigm bound attitudes and images are necessary. It is unreasonable to expect the rate of change in society to diminish. If the society of the future is to avoid the image obsolescence and crisis that our present society faces, it will be necessary to anticipate—rather than just to react to—the necessity for such paradigm changes, and continuously to seek more adequate conceptions and images.

Thus the new image of humankind should incorporate the contributions of subjective processes as well as objective sciences. It should portray a vision of man-in-the universe that is unrealized but appears realizable—incomplete in the sense of pointing to the greater mystery that each individual or culture must discover for itself, and thus encouraging exploration and self-development on the part of individuals, groups, and the entire human venture.

Indeed, this last requirement, that a new image be open-ended and

evolutionary, may be the key to the productive transition from an industrial past to a post-industrial future. For one of the strongest of current conflicts is that of *incremental* versus *revolutionary* change. Incremental change is typically seen as being inadequate to overcome the resistance of institutions which must somehow be fundamentally changed.

Revolution, on the other hand, might well cause so much social upheaval that the cure would be worse than the disease. We suggest that the resolution of this dilemma could be fostered by an "image of man" in transformation which portrays the person and human culture as growing elements in an evolving cosmos. If personal and social evolution is seen as an *integral* part of human life, then perhaps much less impetus would be required to bring about needed change. One such image has been expressed in Dunn's (1971) phrase, "process teleology", in which human beings

> ... establish the process of human development as the goal of the process of social evolution. Both the process and the goal are understood to be open to further transformation as we advance with the practice and understanding of them. (p. 244)

With such imagery it is conceivable that the incrementalist/revolutionary dilemma could be resolved by revolutionary changes at the conceptual level in the near term, but accompanied by incremental changes at the operational level, leading to thoroughgoing transformation of society only in the longer term.

NOTES

Note A

"Holistic thought and analysis are essential to understand the change through which we are passing. If we are going to work our way through the pitfalls and dilemmas inherent in your convincing visions of the future with a minimum of waste and agony, we can only do so if we are unable to perceive the interrelationships of things and appreciate the problems inherent in the inexorable synthesis.

"There are two rather fundamental obstacles in the way of this achievement: one is intellectual and the other institutional. Alfred North Whitehead foresaw the first in 1925 when he wrote of the evils of specialization:

> ... the ignoration of the true relation of each organism to its environment ..., the habit of ignoring the intrinsic worth of the environment which must be allowed its weight in any consideration of final ends .... In short, the specialized functions of the community are performed better and more progressively, but the generalized direction lacks vision. (pp. 282, 283)

"So we are deprived of the intellectual tools and disciplines necessary to simplify, refine, and synthesize the components of the holistic visions which you set forth. Furthermore, most academic bureaucracies, structured to reward specialization, are not helping the situation.

"A second—and related—obstacle to the holistic approach emerges from the structure of our institutions, such as government, corporations, and universities. These institutions have been made legitimate by a framework of ideas, and ideology, which emerged some 300 years ago as an explicit rejection of Medieval holism. (I describe this ideology, somewhat imprecisely, as Lockean . . ..) Our institutions have departed from the old ideology even as it has eroded; their foundations are shaking. But even as they shake, our institutions and their managers understandably tend to cling for legitimacy to the old ideas."—George C. Lodge

Note B

"This should be called 'heterogenistic self-realization ethic.' In order to un-brainwash the readers, it is necessary to repeat 'heterogenistic' where needed. 'Self-realization' may mean, in the minds of many, giving the 'opportunity' to everybody and 'enabling' everybody to become standard middle-class, enabling everybody to go to college, etc. I would rewrite the entire passage as follows:

> [The new image] must embody or imply a heterogenistic self-realization ethic, based on the view that the basic principle of the biological and social processes is increase of heterogeneity and of symbiotization, that the individuals are unique and different, that the desirable end of all individual experience is the further development of the emergent self, and that the appropriate function of social institutions is to create an environment which will allow for and facilitate heterogeneous development of individuals and symbiosis within human species as well as among all living species."—Magoroh Maruyama.

Note C

"Three interpretations must be mentioned here: hierarchical, atomistic, and network. In the first school of thought, represented by Aristotle, Thomas Aquinas, Polanyi and Weiss, these dimensions are conceptualized as levels in a hierarchy. The second school of thought, having its origin in the Nominalists of the Medieval Age and translated into the ideology of democracy in England and in the U.S.A., sees the whole as nothing but a statistical sum of its parts. The third school of thought, developed particularly since the advent of cybernetics in 1940s, sees the whole as characterized by the *pattern of network* formed between individual elements. In some cases such a network may be pre-designed according to a centralized plan. But in many cases the network will form as a result of interaction between the elements without anybody planning ahead. Ecological interactions are an example of the latter. The evolutionary process is another example. The result is different from a mere statistical sum of the parts. Nor is it something planned by a central authority. This type of system is characterized by the pattern of *interaction* activated by its component elements."—Magoroh Maruyama

Rembrandt van Ryn—A scholar in his study, watching a magic disc ("Dr Faustus"). Reproduced by permission of the National Gallery of Art, Washington, D.C.

CHAPTER 6

The Feasibility of an Integrative, Evolutionary Image of Man

We have postulated a set of characteristics that an emergent image of man-in-the-universe would need in order both to be adequate to the challenges of the future, and also to be compatible with our historical past. How feasible is it that such an image might come to dominate world society in the near future?

We propose to address this question here, in two parts. First we shall examine the *conceptual* feasibility. Mathematicians use what they term an "existence theorem"—it is enough to show that solutions can exist if you can find even one. In that spirit we discuss one sort of image of man that appears to meet the conditions laid down in the preceding chapter.

Then in the second section we shall examine the *operational* feasibility of replacing past images of man with a new and emergent one.

CONCEPTUAL FEASIBILITY OF A NEW IMAGE OF MAN

Thus the possible construction of a new image, and the testing for conceptual feasibility, will be examined first.

Elements of a New Image

It would be impossible to cite all the contributions that influenced the envisioning of the composite image described below. However, the ways of thinking or imaging contained in the following works stand out as having had particular significance in this exploration:

- General systems thinking (Laszlo, 1972; von Bertalanffy, 1967), but in particular the hierarchical relationships of ascending levels of "consciousness" (Polanyi, 1966; Weiss, 1969); and the process of "hierarchical restructuring" (Platt, 1970).
- Various past theories and images (e.g. Judeo-Christian, Darwinian, Freudian, behaviorist), reviewed in Chapter 3, that somehow must be incorporated.
- The metaphor of the human biocomputer (Lilly, 1972).

- The postulation of "state (of consciousness) specific" theories, needs, knowledge processes, and modes of explanation (Tart, 1972; Kantor, 1969; Maslow, 1962; Hubbard, 1954; Kohlberg, 1969).
- The vision of continuing evolution of man—social (Dunn, 1971), cultural (Mead, 1964), spiritual (Chardin, 1939), and integrative (Aurobindo, 1963; Assagioli, 1965).
- The "Perennial Philosophy" (Huxley, 1945) and various occult writings (e.g. Ouspensky, 1943).
- The process of transformational discovery, as in the "Monomyth" (J. Campbell, 1956), "cultural revitalization" (Wallace, 1956), and in the work of Toynbee, Jung, and Eliot, as described in *The Experiment in Depth* (Martin, 1955).

The Gradient

Figure 9 shows a number of theories about the nature of the human and their underlying images that we will attempt to show can be integrated into a more holistic image/theory of humankind. If this attempt proves successful, each composite part would come to be seen not as erroneous but rather as having its own validity (albeit a restricted one as seen from the perspective of the whole). First, it is useful to introduce the concept of gradient, and to see how it applies to the systemic properties of existence.

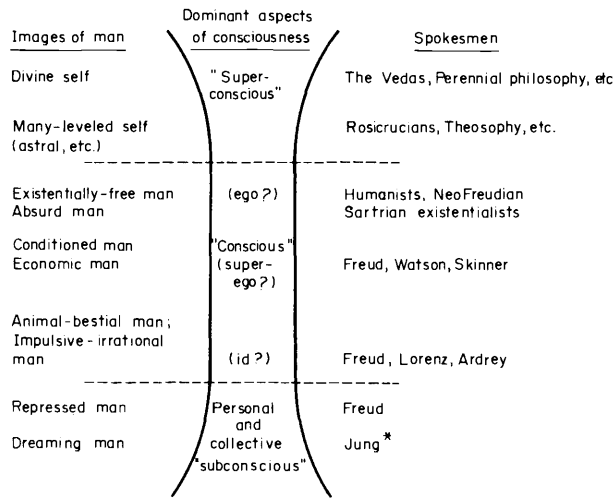


Fig. 9. Complementarity of various images as they might fit in a proposed composite image of the person.

* Jung's imagery of "dreaming man" is difficult to place in the model—precisely because this aspect of man partakes of "the center" (discussed on pages 137–138), which tends to integrate "the higher" and "the lower."

By "gradient" we mean, simply, "the grade or ascent . . . a series of transitional forms, states, or qualities connecting related extremes" (*Webster's*).

It is widely recognized that each succeeding level of biological and social evolution forms a hierarchical gradient of interacting levels of increasing complexity and order. The various scientific disciplines reflect this ordered series—from phylogenesis to ontogenesis to sociogenesis; from such disciplines as physics, chemistry, genetics, and physiology to ethology, psychology, sociology, and anthropology and to such newly emerging disciplines as systems theory and the policy sciences.

Some type of gradient should similarly be recognizable with regard to the higher aspects of human existence. In biological evolution, as each higher level system emerges, it brings with it the capacity to order chemical reactions in an increasingly coherent and purposive manner. Similarly with social and cultural evolution where, for example, ethical norms order or channel the energies associated with more primitive processes (such as anger) in keeping with higher needs, or where immediate gratification is postponed in order to obtain a greater gratification at some future time.

> Three principles are enunciated in this approach: one, the dimensions of existence form a hierarchy of lower and higher levels or dimensions; two, the higher dimension, although resting on the foundations of the lower ones, cannot be understood in terms of the principles governing the lower ones; it receives its meaning from the higher dimension which integrates the particulars of the lower dimension into a new emerging Gestalt. Three, the highest level is the realm of the normative, of the moral sense, of the standards of value.
>
> (Weisskopf, 1971, p. 186)

An analogy to computer programming may be a helpful illustration at this point.

The Gradient in the Human Biocomputer. The real power and flexibility of the modern computer is found not in its hardware, but in its software—the gradient series of ever more general symbolic programs that make it feasible to use the computer for vastly different functions. The basic functioning of a computer requires one instruction for each operation that is carried out, and while programming at this machine-language level is in principle very flexible, it requires too much time to prepare special purpose programs for different applications. Rather, it has been found useful to create a hierarchical series of macroprogramming languages, where a single instruction at one level generates a score or more detailed instructions at a more basic level.

The utility of the computer metaphor of human functioning is illustrated in Table 6 (a). At the lower (machine language) end of the

Table 6

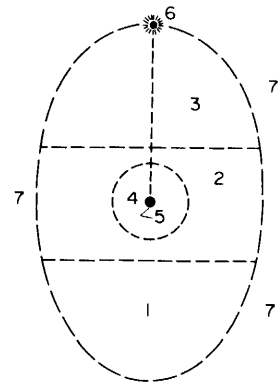
THREE DIMENSIONS ON A "GRADIENT OF AWARENESS"

(a) Hierarchical programs in the human biocomputer	(b) Hierarchy of needs (Maslow)	(c) Hierarchy of moral orientations (Kohlberg)
Higher levels of awareness and functioning, metaprograms, transcendence of time and space, aesthetic and creative sense, supra-mental functioning astral levels, contact with spiritual entities, etc.	5. Self-actualization	6. Universal ethical principle
		5. Social contact/shared understandings
	4. Esteem	4. Authoritarian law and order/doing duty
Normal levels of waking awareness and ego functioning	3. Belongingness and love	3. Other-directed—conformist
		2. Instrumental relativist
	2. Safety	1. Obedience and fear of punishment
Subconscious awareness, id functioning, semantic and cultural determinism; psychosomatic process; genetic inheritance	1. Physiological	

human biocomputer are such processes as genetic inheritance; instinctual, endocrine, and autonomic processes; semantic and cultural determinism—all of which we have some degree of subconscious awareness of; and as the experience of yoga, hypnosis, and biofeedback training suggests, all of which we can to some extent reprogram. At a higher level, that of normal waking awareness, the executive function of the human biocomputer manifests awareness of the self (*cogito, ergo sum*); and as part of that self-awareness, believes that it is constantly capable of choice and of reprogramming itself, i.e. that it has freedom. Just how much freedom of choice exists at this level is somewhat problematical, however, for as Lilly (1972) has pointed out, there are still higher level metaprograms to which the human biocomputer is subject.

If such metaprograms (the basic beliefs; images of self, others, and the universe; influence from subconscious and the superconscious aspects of self) determine the *criteria* for choice, then there is in fact very little true freedom of choice unless access to these levels can be obtained. We have only the most rudimentary maps for these aspects of the self, but they must be incorporated into any image of humankind adequate for the future. To the extent that a linear dimension of lower and higher is valid, however (and we will later discuss limitations of this approach), it would seem that it is the lower quasi-conscious or unconscious aspects of man that are operative through the functioning of instinctual energies (Freud) and operant conditioning (Skinner); and conversely, the higher levels are those to which esoteric wisdom refers and from which the intuitive sources of creativity most likely stem. The Italian psychiatrist Roberto Assagioli has formulated a map (reproduced here as Fig. 10) that depicts these various domains of consciousness in a useful way.

The Gradient of Human Needs. Maslow (1962) described a gradient that parallels the above as being manifest by persons with different levels of need-fulfillment. He noted that persons who have adequately fulfilled their basic physical and emotional needs act from a very different type of motivation than do those who have not. Very simply stated, "deficiency needs" are those which, if not fulfilled, will eventually lead to illness or to death. Their non-fulfillment causes the deprived person to act at lower levels of functioning, as we have portrayed on Table 6 (b). Growth/being/wisdom needs, on the other hand, are the needs whose fulfillment provides a sense of meaning for existence, aesthetic or spiritual delight; non-fulfillment brings, not illness, but rather a sense of boredom or apathy (assuming that the deficiency needs are



1. The lower unconscious
2. The middle unconscious
3. The higher unconscious or superconscious
4. The field of consciousness
5. The conscious self or "I"
6. The higher self
7. The collective unconscious

Fig. 10. Various aspects of consciousness/function in the personality. Source: Assagioli (1965). Assagioli presents a great deal more background, reservations, and qualifications with regard to this type of conception than can be presented in this report.

adequately met).* It was Maslow's hypothesis that most people move sequentially through a "hierarchy of needs." Such movement likely occurs in two rather different modes. As Maslow emphasized, it can occur quite spontaneously—as one modal need type is adequately fulfilled, there is a natural tendency to grow and seek further. On the other hand, as noted by Clare Graves (another theorist who has developed the needs hierarchy theme), it can also occur or be stimulated in crises—as one modal behavior style becomes dysfunctional there is a tendency to seek another level of need fulfillment.

The Gradient of Human Morality. Still another similar gradient series, this time having to do with ascending degrees of moral thinking and acting, has been derived by Kohlberg (1969). In both cross-cultural and domestic studies, Kohlberg found that the dominant form of morality tends, over time, to follow a definite, hierarchical progression. This is true both of whole cultures and of the individual within the culture (until he reaches or surpasses the dominant form in his culture). Like the hierarchy of needs, these stages also form a gradient, as depicted in

* "It is important to note that boredom and apathy (if not viewed from a dualistic mind-body bias) *does* lead to illness, non-productivity, and death in terms of the holistic concepts this paper is espousing."—Stanley Krippner

PRECONVENTIONAL LEVEL

At this level the child is responsive to such rules and labels as good or bad and right or wrong. He interprets these labels in purely physical or hedonistic terms: If he is bad, he is punished; if he is good, he is rewarded. He also interprets the labels in terms of the physical power of those who enunciate them—parents, teachers and other adults. The level comprises the following two stages:

Stage 1: *punishment and obedience orientation*. The physical consequences of action determine its goodness or badness regardless of the human meaning or value of these consequences. Avoidance of punishment and unquestioning deference to power are valued in their own right, not in terms of respect for an underlying moral order supported by punishment and authority, the latter being stage 4.

Stage 2: *instrumental relativist orientation*. Right action consists of that which instrumentally satisfies one's own needs and occasionally the needs of others. Human relations are viewed in terms similar to those of the marketplace. Elements of fairness, of reciprocity and equal sharing are present, but they are always interpreted in a pragmatic way. Reciprocity is a matter of "you scratch my back and I'll scratch yours," not of loyalty, gratitude or justice.

CONVENTIONAL LEVEL

At this level maintaining the expectations of the individual's family, group or nation is perceived as valuable in its own right, regardless of immediate and obvious consequences. The attitude is one not only of conformity to the social order but of loyalty to it, of actively maintaining, supporting and justifying the order, and of identifying with the persons or group involved in it. This level comprises the following two stages:

Stage 3: *interpersonal concordance or "good boy–nice girl" orientation*. Good behavior is that which pleases or helps others and is approved by them. There is much conformity to stereotypical images of what is majority or "natural" behavior. Behavior is frequently judged by intention: "He means well" becomes important, and one earns approval by "being nice."

Stage 4: *"law and order" orientation*. Authority, fixed rules and the maintenance of the social order are valued. Right behavior consists of doing one's duty, showing respect for authority and maintaining the social order for its own sake.

POSTCONVENTIONAL LEVEL

At this level there is a clear effort to reach a personal definition of moral values—to define principles that have validity and application apart from the authority of groups or persons and apart from the individual's own identification with these groups. This level again has two stages:

Stage 5: *social-contract legalistic orientation*. Generally, this stage has utilitarian overtones. Right action tends to be defined in terms of general individual rights and in terms of standards that have been critically examined and agreed upon by the whole society. There is a clear awareness of the importance of personal values and opinions and a corresponding emphasis on procedural rules for reaching consensus. Other than that which is constitutionally and democratically agreed upon, right is a matter of personal values and opinion. The result is an emphasis both upon the "legal point of view" and upon the possibility of making rational and socially desirable changes in the law, rather than freezing it as in the "law and order" stage 4. Outside the legal realm, free agreement is the binding element of obligation. This is the "official" morality of the U.S. government and the Constitution.

Stage 6: *universal ethical-principle orientation*. Right is defined by the conscience in accord with self-chosen ethical principles, which in turn are based on logical comprehensiveness, universality and consistency. These principles are abstract and ethical (the golden rule, the categorical imperative); they are not concrete moral rules like the Ten Commandments. At heart, these are universal principles of justice, of the reciprocity and equality of human rights, and of respect for the dignity of human beings as individual persons.

Fig. 11. Stages of moral development. (Source: Kohlberg and Whitten (1972). Reprinted by special permission from *Learning, The Magazine for Creative Teaching*, December 1972. © 1972 by Education Today Company Inc., 530 University Avenue, Palo Alto, California.)

Table 6 (c). (Descriptions of each of the stages are given in Fig. 11.)*

Hampden-Turner (1971) has suggested that each of the dominant social sciences has a "hidden morality" that can be located in one of Kohlberg's categories, and that although most social sciences claim to eschew metaphysics, they make unverifiable moral assumptions that significantly affect their choice of methodology and criteria of validation. Hampden-Turner concludes that only those social sciences that are consistent with Kohlberg's stage 6 have the demonstrated capacity to move from paradigm to paradigm (stressing congruence between and reconcilability of perspectives) despite dialectical tension.

The Relevance of a Gradient of Awareness for an Adequate Image. What is the common characteristic of the various gradients we have reviewed? Recalling the operational definition of consciousness (the organization of the biosystem; with awareness as the psychological equivalent or complementary aspect of that organization), it seems reasonable to cast the image of ascending stages of evolution in terms of a gradient of awareness. As we come to higher stages of evolution, the attribute of consciousness comes to the fore. By this we mean the discovery of relationships and the making of choices—both individually and collectively—on the basis of understanding, appreciation, and judgement; and being influenced by a relevant context with its past, present, and future rather than being determined by instinct, habit, or some authority from another time and place. In this sense we speak of the evolution of consciousness manifest in hierarchical restructuring of our conceptions; and the derivative systems of thought, institutions, etc., through which we achieve coherent integration at higher orders of differentiation and complexity.

We have only briefly sketched some of the thinking that leads to this conception. Other contributions which are in keeping with an ascending gradient of awareness in evolution we have postulated: "this worldly" (e.g. D. Campbell, 1966; Polanyi, 1966; Weiss, 1969; Land, 1973), "other worldly" (e.g. Cummins, 1952), and "trans worldly" (e.g. Hubbard, 1951; Aurobindo, 1963). (Land's book *Grow or Die: The Unifying Principle of Transformation* (1973), especially Chapter 10, elaborates this theme in more detail than we can do here.) Again, however, we are not here concerned whether these ways of thinking are right or wrong as judged by the methods of any one particular knowledge paradigm, but rather whether (1) they give us a vision of potential growth and further evolution beyond where we are now—a

* "To these dimensions, you might add Rollo May's five descending levels of power and five ascending kinds of power (*Power and Innocence*, Norton, 1972)."—Michael Marien

vision that accepts where (both as individuals and as a species) we are now, seeing ourselves now as being more highly evolved (in some ways, less in others) than was earlier man, and less highly evolved than we hope future man will be; and (2) they lay the conceptual beginnings of a general systems framework in which an integration of the various fragmented images of man—each of which can come to be seen as having a restricted validity—becomes possible. At this state of knowledge, then, we view the gradient of awareness more as useful metaphor than as proven theory. Indeed, as the review of limitations of sciences presented in Chapter 4 makes clear, it is likely not possible to *prove* whether or not such a view is valid. Rather we will have to estimate what results might flow from translating this—as opposed to some other image of humankind—into concrete policies for the resolution of societal problems and the fuller realization of the human potentialities. We attempt such an estimate in Chapter 8.

The Self

A second key element in our attempt to discover a more adequate, integrative image of man-in-the-universe concerns imagery regarding the nature of the self. In our culture, the dominant image which the person holds of himself is that of a separate and independent entity, as denoted by the very term "self"—defined by *Webster's* as "the person—having its own or a single nature or character." But even a cursory examination of the known facts of existence indicates that this is an unduly limited view, as explained below.

Transpersonal and Personal Imagery. The most basic aspects of our being which we have portrayed as being at the lower level (the machine language aspects of the human biocomputer) we share in common with all other persons. Indeed, because of this commonality, one suspects that it is only this level which is usually comprehended in the phrase "the nature of man." The next stage in developing an integrative image of humankind is explored in Fig. 12, which shows these aspects as being *trans*personal rather than idiosyncratic to each person. Jung's phrase "the collective unconscious" seems particularly appropriate for this level.

Coming up the gradient of awareness we observe the egoic and sensory level, where there is a valid perception of separateness between persons. The behaviors that are unique to this level, such as our use of sensory channels to communicate with other humans across the spatial distance that separates us, are typically perceived as manifesting freedom in the sense of their being freely chosen behavior under the unique control of each person as a separate entity.

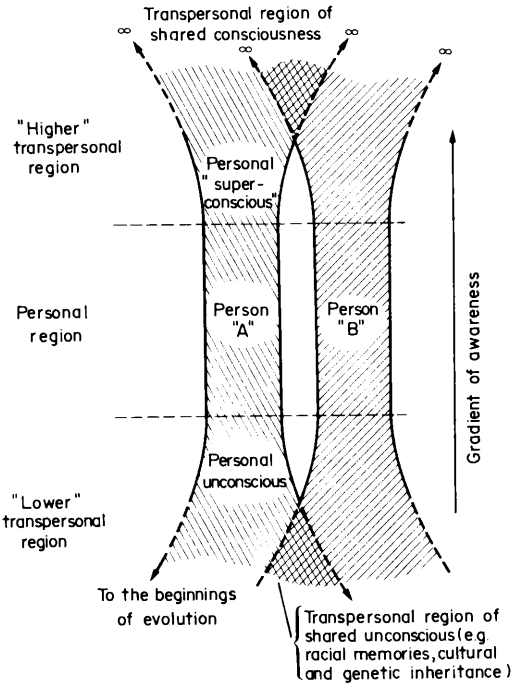


Fig. 12. A metaphorical image of the personal and transpersonal aspects of consciousness.

But coming still further up our gradient of so-called awareness we find—if the reports of yogis (Patanjali, Prabhavananda, and Isherwood, 1953), mystics (Reinhold, 1944), and some recent laboratory evidence (Tart, 1969; Backster, 1972) are to be believed—that things once again become transpersonal in nature. Perceptions become intuitive and "quasi-sensory" (to use the term coined by McBain, 1970), rather than stemming from the usual senses. And typically as higher levels are reached, subjective experiences of mind-sharing are often reported, as are experiences of a disconnectedness or transcendence from the usual constraints of time and space (see, for example, Tart, 1969, 1970). Indeed, it is likely that only when we are able to expand our scientific image of man to include phenomena at this level will we be able to develop adequate theories to account for the various psychic phenomena reviewed in Chapter 4.

The schematicized integrative image of the person shown on Fig. 9 is therefore cast in the shape of the hour glass, or cone, thus connoting the ways in which one's nature is properly seen as transpersonal at the lower and upper reaches of existence and personal or unique in

between. More speculatively (but based on anecdotal reports from various researchers in the phenomenology of consciousness) we might add the symbol of infinity for the uppermost reaches of the map, and the phrase "to the beginnings of evolution" for the lowermost: if the ancedotal reports are to be believed, infinity and the "beginnings of evolution" can be subjectively experienced, and when experienced, tend to merge. F. W. H. Myers has formulated a different but similar conception, shown below in Fig. 13.

Subsystem, System, and Supersystem Imagery. The ways in which a person is a separate and distinct *system* are but a small part of the ways in which he incorporates lower-level (sub) systems, and in which he is part of higher-order (super) systems. Displaying both the independent properties of wholes, and the dependent properties of parts, the person is a "holon." Other dimensions could be added as well, but as Fig. 14 shows, we now have the conceptual basis for a multi-dimensional systems-oriented image of person-in-the-universe that is indeed integrative in the ways desired.

Before completing this image, we might pause to ask the important question: If the experience of individuality is but a small slit in all there is to the totality of our existence, where is the essence of the human person, the being (as opposed to the class) to be found? Echoing Koestler (1967), where is the "ghost in the machine;" It is here that the image of humankind espoused in the Perennial Philosophy probably provides the best single answer:

> The *atma*, the Self, is never born and never dies. It is without a cause and is eternally changeless. It is beyond time, unborn, permanent, and eternal. It does not die when the body dies. Concealed in the heart of all beings lies the atma, the Spirit, the Self; smaller than the smallest atom, greater than the greatest spaces.
>
> (The Upanishads, 1000 B.C.)

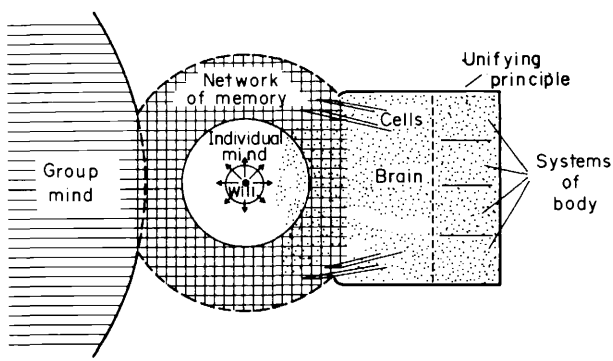


Fig. 13. A personal–transpersonal mind/body model. Source: F. W. H. Myers, in Johnson (1957).

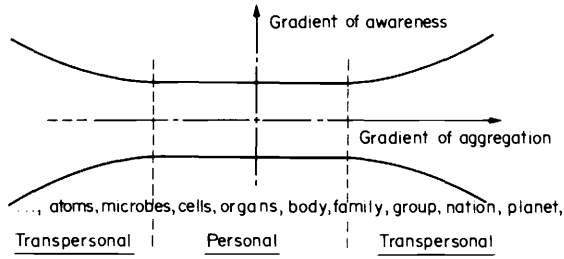


Fig. 14. Two of "N" possible dimensions of an integrative image of the person.

Finally then, to represent this self that is (in terms of space and time) a "not-thing," we complete the pictorial version of our proposed composite image of humankind by adding the center as in Fig. 15. It might be represented by another shape (e.g. as in Assagioli's model shown earlier), but the tubular shape is often reported as the "feel" of those who experience meditation, and we agree in principle with Wilson (in press) that any adequate image will not be *constructed*, but rather *seen* through experience.

Man as Process. If the vision of the Perennial Philosophy is at all valid, this Center is the only truly static image. All of the other images of the human which depict how the self manifests are but temporary, ever-

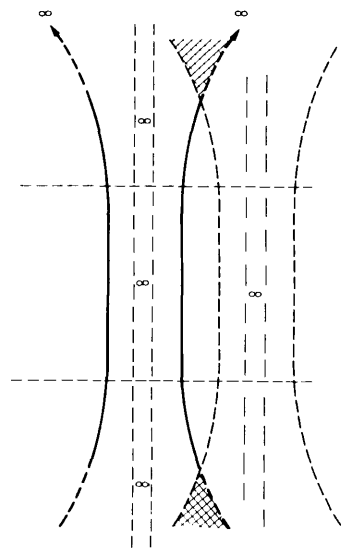


Fig. 15. Transcendent–immanent aspects added to the personal–transpersonal aspects of an integrative image of the person.

changing attributes of that self. As Norbert Wiener (1954) observed:

> We are not stuff that abides, but patterns that perpetuate themselves; whirlpools of water in an ever-flowing river.

How can the vision of the static self "hidden in all things" be usefully reconciled with the many visions of the quasi-static—but in reality, changing—visions of the visible self that we call a person? If the collective wisdom of the myths of various cultures is to be trusted, the way of reconciliation is illuminated by the Image of the Center (Eliade, 1952). The idea of "moving from where we are not to where we most truly are" (William James) is well expressed in a now archaic meaning of the word "weird" (Anglo-Saxon *wyrd*), which is a word related to the German *werden*, "to become." Standing in direct contrast to the Indian notion of *dharma* or the current Western notions of socialization or conditioning (both of which see the individual as necessarily subject to the law imposed by society), *weird* is an unfolding from within of what is potential. (Note that this is also the essential meaning of the root word *educere*, "to bring forth, as something latent," from which our word educate derives.) In this image of reality—as with Eliot's (1935) "still point of the turning world.... Where past and future are gathered"—the metaphysical ground of the person and what has brought him forth are one and the same. To realize this Center of

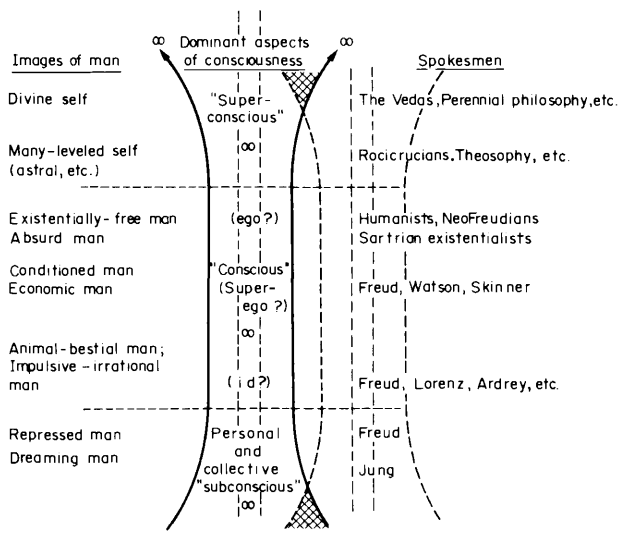


Fig. 16. Composite metaphor of an integrative, evolutionary image of the person for the future.

one's being is said to provide conceptual release from the tyranny of such polarities as creator and creature, good and evil, I and Thou, and freedom and determinism.

But as *all* outward manifestations (or partial images) partake equally of this Center (as Fig. 16 depicts), we find that we now have the conceptual framework for an image of humankind which, as we shall see, comes very close to satisfying the characteristics we earlier postulated.*

Examining the New Image for Conceptual Feasibility

If one agrees that the thrust of evolution seems to be toward greater "consciousness" (i.e. increasing organization of the bio-system, with "awareness" as the psychological equivalent or complementary aspect of that organization), the above framework provides the needed imagery for evolutionary growth, direction, and a holistic sense of meaning of life. It gives an open-ended and experimental sense of something to grow toward (both personally and culturally). Pursuit of higher states of awareness; increasing ability to integrate knowledge and to coordinate and balance the relative needs of the subsystem/system/supersystem relationships; and exploration of personal, interpersonal, and transpersonal aspects of existence—*each* of these contributes to the emergence of an "ecological ethic" and a "self-realization ethic"; to coordinated "satisficing"; and to goals of "ephemeralization" that are consistent with limits to growth of materialism. (The term "thrust" has been chosen to describe this progress toward greater complexity and consciousness, not to denote the goal of evolution, but rather the path it seems to take. Goal is a term which is associated with the conceptual paradigm of linear causality; it is this paradigm that somehow must be transcended, if only in part. It is for this reason also that we have singled out Dunn's term "process teleology," because it explicitly avoids the difficulties of the older concepts of vitalism and teleology.†)

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* See Note A, p. 160.

† "This is good, but instead of a linear hierarchy (instead of envisioning the system in terms of our old way of looking at things) how about something on the order of a circular model (uruborus like)—where the *dreaming man* of Jung would be circulatory, cyclicly linked to the superconscious man, in a visual system that implies ongoing progress?"—Stanley Krippner

"I find this model most interesting, especially the way it incorporates the 'absolutes' of existence at both of its extremes.... A good starting point for further work." [Paraphrased from]—Margaret Mead

To illustrate how the holistic image portrayed by this framework could adequately incorporate and reconcile the more specialized images of humankind at various levels of development, some additional discussion is necessary.

We postulate that each of the various specialized images presented in Chapter 2 and displayed in Figs. 9 and 16 is appropriate to a given context or situation that has repeatedly been in human experience—which is why they exist in the image repertory of our various cultures. We further observe that to the extent which the person *cannot* manifest in an appropriate situation any of the various "ways of being" connoted by the gradient of awareness, to that extent the person is deficient in ways that limit his flexibility in dealing with a changing environment—hence limit the survival potential of the race. The ability to fight effectively (physically or psychologically) when one's survival (physical or mental) is threatened; the ability to experience aesthetic pleasure, to marvel at the mystery of existence, and to transcend one's individuality in a direct sense of participation in that mystery when appropriate—each of these is a part of the human experience through which each of us should be able to flow in and out as fitting. The point is *not* that one should necessarily fight, cooperate, or meditate in any or in all circumstances (nor should one necessarily impugn others for so doing), but rather that one should be able to do (and accept others doing) any of these things when they fit. All partake of the Center.

Needless to say, trade-offs are involved and coordination of different behaviors is required. As Jonas Salk (1973) has observed:

> The conflict in the human realm is now between "self-expression" and "self-restraint" *within* the individual, as the effect of cultural evolutionary processes has reduced external restraint upon the individual.*

While easy mobility across the various levels portrayed by the gradient of awareness is clearly in the interests of the survival of the human race and of the fulfillment of each individual's potentialities, such freedom needs to be exercised by the restraint that can derive in our era only from a holistic perspective of life, growth, and evolution.

For these reasons we emphasize the need for development of imagery of person-as-(in)-process; for a vision of growth not as in getting above persons at one level after another (as some occultists are wont to do), but rather in the expansion of awareness in both more and less

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* "A reduction of external restraint upon the individual? Tell it to Amalrik, Solzhenitsyn, and Sakharov. For that matter, I would like to see the evidence for such a trend in this country."—Michael Marien

inclusive directions; in the gaining of choices of appropriate behaviors that partake of all levels but are coordinated by the more inclusive ones; and in learning to dissolve fixations at any given level, hence being more able continuously to flow from a predominant orientation at one level to one at another, according to the needs of the environment and in appropriately coordinated growth.

It is primarily in the above sense that we believe that a holistic image such as the framework depicts could adequately integrate the various aspects and past images of humankind without blurring or invalidating their uniqueness; for only in this way will we have an ontological basis for tolerance of difference and change.

There are some difficulties with the framework as presented above. The main one is that it is—in keeping with the dominant conceptual paradigm of Western culture—essentially hierarchical in nature. Thus not only is the conception somewhat culture-bound; it does not easily integrate newly emerging mutual-causal thoughts in science. Other cultures have dominant conceptual paradigms that are essentially non-hierarchical and are more mutualistic as regards knowledge, ecology, and human development.* As the anthropologist Maruyama has pointed out (1960, 1963, 1967, 1973) many functions of concern to a society are more usefully fulfilled by non-hierarchically structured paradigms. But Maruyama also notes that when a hierarchical/self-righteous and a mutualistic/symbiotic paradigm have come into intercultural contact, the self-righteous paradigm has an almost irresistible tendency to run over the mutualistic one.

A somewhat different but related problem arises in connection with the exclusivist interpretation the Judeo-Christian tradition has put on transcendental images of man. There appears to be a basic contradiction contained in this tradition between the exclusivist (as in "no man cometh to the Father but through me") and the universalist (God as omnipotent, omniscient, and omnipresent, therefore all that is, *is* God). The exclusivist is the tendency that has captured the popular imagination in the mainstream religious traditions of our culture. But this turns out to be not so much one side of a contradiction as one arm of a dialectic, one element of a paradox.

Better understood, these difficulties turn out to be based in misunderstandings (which is not to say that they will not be very real difficulties in a communication or political sense). They arise from having to use

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* "I fail to see how any non-hierarchical system of thought and organization can provide the needed coordination across different levels of aggregation. What *is* necessary, is that the coordination be from the 'inside out' as it were, and not from the top down, as the hierarchical notion is so often interpreted."—[Paraphrased from] Edgar Dunn, Jr.

traditional language to express what are essentially non-traditional, "non-paradigm" concepts.

Thus we have used words such as "gradient," "thrust," and "hierarchy" when describing the evolutionary trend toward greater complexity and consciousness. We have used diagrams and tables which may seem to imply progression from "primitive" to "sophisticated," or "lower" to "higher." This may seem to imply an elitist view of human evolution. It might have been helpful to adopt a circular model in which, for example, the dreaming man of Jung would be cyclicly linked to the superconscious man in a visional system that implied on-going process. But substituting one metaphor or visual image for another simply seemed to change the nature of the difficulty.

The problem appears to be primarily that reality is so much richer, so much more multidimensional than any metaphor, that all maps of reality lead to difficulties if they are mistakenly assumed to be literally true. Thus reality is hierarchical in one sense and not in another, and man is separate, seeking self-fulfillment and yet part of a unity in a sense that makes self-fulfillment illusory. The "higher" forms of consciousness may be similar to the psychic abilities of "lower" forms of life (for example, household pets, dolphins, plants) in a way that makes the latter as "sophisticated" as the highest transcendental characteristics evolving in the human species.

Thus it would appear that an emergent world-wide image of humankind, satisfying the conditions identified in Chapter 5, is *conceptually feasible*, providing we remain clear that it *is* an image, or a set of metaphors, and that its real function is to lead toward the direct experiencing of what it can only incompletely and inadequately express.

OPERATIONAL FEASIBILITY OF A NEW IMAGE OF MAN

We want now to examine the conditions under which such a new image of man might emerge to a commanding position in the society. One condition, inherent in the fundamental characteristics of Chapter 5, is that it probably cannot be engineered or manipulated into such a position. Safer, at any rate, is a process whereby the new image is fostered by some and resisted by others, such that the principles of checks and balances, and of creative synthesis of differences, are allowed to operate.

Essentially, we shall:

1. review the process through which both cultures and persons appear to evolve in response to crisis;

2. draw inferences as to how transformational discovery and the emergence of a new image of man can appropriately or inappropriately be fostered;
3. consider various indications that personal and institutional transformation, and the emergence of moral paradigms, are feasible without being *caused* to happen.

Evolutionary Transformation in Response to Crisis

It seems clear that today we are living in an ecological system in which higher-order systems coordinate the interactions of lower-order subsystems, an ecology in which there is an increasing ability of higher organisms to make symbolic maps of reality, to test and to improve those maps. Thus, in the evolutionary battle for survival, it may be possible "for our ideas to die in our stead" (Popper). In the evolution from *phylogenesis* (natural selection through mutation and genetic recombination) through *ontogenesis* (the ability of a highly developed organism to "reprogram" itself within limits and modify its behavior to suit environmental changes) to *sociogenesis* (the accumulation of acquired behavior through symbolic communication), the trend that stands out is the power and utility of consciousness. This manifests itself as the ability to map the various dimensions of existence, both physical and symbolic, and to use those maps for "behavior directed to changing behavior" (Dunn, 1972).

A crisis is often the catalyst for the redrawing of one's preferred "map." Inasmuch as this is precisely the direction in which our culture appears to be heading, it is useful to review the processes of crisis-oriented transformation in other cultures, in science, in mythology, in persons. All these may contain insights that could prove applicable to the resolution of our difficulties.

Cultural Transformations

What happens when, because of environmental changes, military defeat, or intercultural invasion (e.g. by a new technology), a culture no longer adequately serves its essential functions? If the degree of perceived crisis is not too great, the classic processes of cultural change (evolution, drift, diffusion, historical change, acculturation) take place; if, on the other hand, the degree of perceived crisis is acute, cultural transformation is likely to occur rapidly.

The anthropologist Anthony F. C. Wallace (1956) in a comparative study of the crisis-motivated type of cultural change derived a series of

idealized stages through which many such transformations—if successful—have passed. Especially relevant for our purposes are Wallace's findings on how images of the role of self and society have changed in other societies in response to crisis. He discovered that unlike classic culture change, the process of *revitalization requires explicit intent by members of the society and often takes place within one generation*:

> The structure of the revitalization process, in cases where the full course is run, consists of somewhat overlapping stages: 1. Steady State; 2. Period of Individual Stress; 3. Period of Cultural Distortion; 4. Period of Revitalization (in which occur the functions of mazeway reformulation, communication, organization, adaption, cultural transformation, and routinization); and finally 5. New Steady State. (p. 264)

The key element in the process of transformation is what Wallace terms the "mazeway," which the following shows is almost synonymous with our term "image of man-in-the-universe":

> It is . . . functionally necessary for every person in society to maintain a mental image of the society and its culture, as well as of his own body and its behavioral regularities, in order to act in ways which reduce stress at all levels of the system. The person does, in fact, maintain such an image. This mental image I have called "the mazeway," since as a model of the cell-body-personality-nature-culture-society system or field, organized by the individual's own experience, it includes perceptions of both the maze of physical objects in the environment (internal and external, human and nonhuman) and also of the ways in which this maze can be manipulated by the self and others in order to minimize stress. The mazeway is nature, society, culture, personality, and body image as seen by one person. . . . Changing the mazeway involves changing the total *Gestalt* of his image of self, society, and culture, of nature and body, and of ways of action. It may also be necessary to make changes in the "real" system in order to bring mazeway and "real" system into congruence. *The effort to work a change in mazeway and "real" system together so as to permit more effective stress reduction is the effort at revitalization*; and the collaboration of a number of persons in such an effort is called a revitalization movement. (pp. 266 ff. Emphasis added)

Whether the revitalization movement is religious or secular, the reformulation

> . . . seems to depend on a restructuring of elements and subsystems which have already attained currency in the society and may even be in use. . . . The occasion of their combination in a form which constitutes an internally consistent structure . . . and of their acceptance by the prophet as a guide to action, is abrupt and dramatic, *usually occurring as a moment of insight, a brief period of realization of relationships and opportunities.* The reformulation also seems normally to occur in its initial form in the mind of a single person rather than to grow directly out of group deliberations. (p. 270. Emphasis added)

After mazeway reformulation come adaption, cultural transformation, and routinization, during which the idealism of the original vision is modified in response to cultural feedback; it tends to be

preserved only in those areas where the movement "maintains responsibility for the preservation of doctrine and performance of ritual," in other words, it becomes a church, whether religious or secular.

Conceptual Revolutions in Science

Studying the history of science, Thomas S. Kuhn recognized a similar pattern. In his somewhat controversial *The Structure of Scientific Revolutions* (1962), Kuhn's use of the "knowledge paradigm" and the cycle through which knowledge paradigms are replaced is almost analogous to Wallace's use of the term "mazeway." The term knowledge paradigm is used to denote

> ... the collection of ideas within the confines of which scientific inquiry takes place, the assumed definition of what are legitimate problems and methods, the accepted practice and point of view with which the student prepared for membership in the scientific community, the criteria for choosing problems to attack, the rules and standards of scientific practice. (p. 11)

Such a knowledge paradigm has a well-understood set of exemplars or precedents that define a field of inquiry, determine the rules that govern the formulations of new problems, and specify acceptable forms of solutions. Thus, the paradigm can only exist if there is a shared commitment to certain beliefs, such as that the molecules of a gas behave like tiny elastic billiard balls, or that certain kinds of procedures should be used for experimentation, or that some topics are appropriate for scientific investigation and others not. Its communicants must also agree on the meaning of symbolic representations, as in mathematics. Finally, its communicants must share relevant values, such as the importance of making predictive versus non-predictive explanations, the appropriateness of imposing social concerns during problem formulation, and the degree of simplicity demanded in theories.

Such a knowledge paradigm bears the same relation to the laws and rules in a field of scientific inquiry as do the myths and rituals in a pre-scientific society. That is, they are considered by many to be the fundamental units influencing the scientific research process.*

The excitement generated by Kuhn's work rests not so much with his formulation of the knowledge paradigm, however, as with his potrayal of the dynamics with which such paradigms are created and replaced. Rather than aim at novelty, in Kuhn's view *normal* science attempts to

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* See Note B, p. 160

actualize the promise offered by the existing paradigm. But it results almost invariably in the exposure of anomalies between expectations based on the paradigm and fact. Thus, as noted in Chapter 4, as such anomalies grow more numerous, we see the recurring emergence of crises and the development of new paradigms which embrace both the old paradigms and the anomalous data that the old could not deal with adequately. Kuhn has noted that this transformational process typically passes through four stages: preparadigm research, normal science, crisis, and revolution.

Similarities between Scientific and Cultural Revitalization

Seeking as we are useful patterns from history to guide our thinking for the future, it is interesting to compare Kuhn's and Wallace's analyses.* In normal times (steady state :: normal science) the functioning of the dominant images and ways of doing (mazeway :: knowledge paradigm) are considered adequate. However, when these become inadequate (individual stress/cultural distortion :: crisis) the responses are many and varied, but take predictable forms. Some individuals avoid facing the difficulties (undergo chronic high level stress :: avoid the anomalies) and assume that a continuation of ordinary means of problem-solving will suffice; others call for a return to fundamentals. Expressions of discontent increase, however, and a "creative minority" (Martin, 1955) turns from searches for incremental ways of problem-solving to searches for fundamental reconceptualization of the facts. Inevitably the legitimacy of these searches is difficult to obtain from the established authorities, unless the perception of crisis becomes widespread.

Although the discovery and application of the new reconceptualization (revitalization : : revolution) is a complicated process and occurs over an extended period of time, the moment of discovery of the desired conceptual reformulation occurs not by deliberation and interpretation, but by a relatively sudden and unstructured conceptual event like the Gestalt reversal. Like the charismatic leaders of revitalization movements, scientists often speak of "scales falling from the eyes" or of a "lightning flash" that illuminates a previously obscure puzzle, enabling them to

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* "The use of Anthony Wallace's analysis of cargo cults as a parallel to Kuhn is very bad; [it is] an undiscriminating use of material."—Margaret Mead
"The citations from my writing on Revitalization Movements in Chapter 6 very well represented my views."—Anthony F. C. Wallace
"[The] basic concept that we need a new knowledge paradigm, and the use of Kuhn/Wallace is excellent."—Elise Boulding

see its components in a new way. Though such intuitions depend on experience, both anomalous and congruent, gained with the old paradigm, they are not logically linked to particular items of that experience as an interpretation would be. Instead, large portions of that experience are gathered and transformed into a "rather different bundle of experience" and "thereafter . . . linked piecemeal to the new paradigm but not to the old" (Kuhn, 1962, pp. 122 ff., also cited in Wirt, Lieberman, and Levien, 1971, p. 55).

A significant difference between the scientific revolutions and the cultural revitalization movements stems from the fact that scientific inquiry can incorporate a much wider range of difference than can the institutions of a culture—although Kuhn observes that established scientists often find it difficult if not impossible to convert to the newly emergent paradigm from the one in which they have invested their professional lives, so that the new paradigm is often fully accepted only with a new generation of scientists. Wallace observes that the transformation of an entire culture takes place only when and if the purity of the original vision is adapted (in response to resistance that is encountered) by "adding to, emphasizing, playing down, and eliminating selected elements of it" (1956, p. 274).

Other scholars (e.g. Toynbee, 1935; Quigley, 1961; Mumford, 1956) who have reviewed the rise and transformation (or fall) of civilizations have deduced similar series of stages that portray what we might call "the cycle of transformation." Before trying to deduce the implications of these findings for our own situation, it is useful to consider similar patterns that can be found in the literature of mythology and of psychotherapy.

Mythic Transformations

As various scholars have noted (e.g. Boisen, 1962; Erikson, 1958) often those individuals who bring the new reconceptualizations to society have had personal problems which were similar in form or which were significantly related to those of the larger society. In resolving their own problems they presented visible resolutions to the problems of their culture, and vice versa. This characteristic of the hero is in fact so common throughout the transformation myths of different times and places that Joseph Campbell (1956) has used the term "the monomyth" to describe it:

> The standard path of the mythological adventure of the hero is a magnification of the formula represented in the rites of passage: *separation—initiation—return*: which might be named the nuclear unity of the monomyth. . . . (p. 30)

> The composite hero of the monomyth . . . and/or the world in which he finds himself suffers from a symbolical deficiency. In fairy tales this might be as slight as the lack of a certain golden ring, whereas in apocalyptic vision the physical and spiritual life of the whole earth can be represented as fallen, or on the point of falling, into ruin.
>
> Typically the hero of the fairy tale achieves a domestic microcosmic triumph, and the hero of myth a world-historical, macrocosmic triumph. Whereas the former—the youngest or despised child who becomes the master of extraordinary powers—prevails over his personal oppressors, the latter brings back from his adventure the means for the regeneration of his society as a whole. (pp. 37 ff.)

The basic pattern is clear:

> Whether the hero be ridiculous or sublime, Greek or barbarian, Gentile or Jew, his journey varies little in essential plan. Popular tales represent the heroic action as physical; the higher religions show the deed to be moral; nevertheless, there will be found astonishingly little variation in the morphology of the adventure, the character roles involved, the victories gained. (p. 38)

Just as the mythological here often suffers from a defect that spurs him on to action, so many of the great men of history have not been typically the product of carefree, "well-adjusted" homes (Goertzel and Goertzel, 1962). Nor do such persons typically adjust in a conformist fashion to personal and social realities which to them seem filled with anomalies. Rather, they attempt to resolve the dissonant elements of their life in creative ways, which is the central goal of psychotherapy.

Personal Transformations

Although the literature of psychotherapy is so varied that it is difficult to make any clean and clear-cut generalizations, a pattern does emerge from writers who attempt to describe the process of crisis-motivated personal transformation. From the writings of Boisen (1936/1962), Martin (1955), Sullivan (1953), Fingarette (1963), and Kantor and Herron (1966) we derive the following series of stages that seem to typify this process:

1. Adequate mastery of one's life: reliance on defense mechanisms (e.g. denial, repression, sublimation).
2. Inadequate mastery of one's life: anxiety and disintegration.
3. Looking for causes: blame and guilt.
4. Finding causes: acceptance of responsibility.
5. Looking for new solutions: openness to seeing things anew both in the inner world and in the outer world.

6. Finding new solutions: insights that reformulate one's existential conceptions and reintegrate the personality.
7. Applying new solutions: learning new modes of behavior that test and apply the new perspective with increased mastery of one's life.
8. New level of adequacy: open-ended growth and learning as normal behavior.

Although there is insufficient space to discuss these stages here, it is useful to note their similarity to those in science and myth.

Synthesis and Inference

We now draw the various observations of personal, scientific, and cultural transformation together in order to draw any inferences that might increase the operational feasibility of a new, more adequate image of humankind. Table 7 summarizes the idealized stages of the "cycle of transformation" that has been formulated by different scholars.* Although numerous examples of creativity can be found which do not fit this cycle of transformation, the overall pattern seems typical of the *crisis-motivated* transformations that have occurred repeatedly in a wide variety of settings in place and time.

In the general creativity literature the common elements to this cycle have been termed preparation, incubation, illumination, and verification (G. Wallace, 1926).

First comes the testing of conventional approaches and finding them wanting ("preparation").

The next step ("incubation") often necessitates making what P. W. Martin (1955) has termed "the experiment in depth," the deliberate setting aside of assumptions that are conventionally made about reality, and engaging in techniques or activities that open up one's self to more primal and direct perceptions of reality which are less strongly filtered by convention. As these sources of creativity are not yet generally understood, access to them is for most persons a rather random and uncontrolled process. Hence the term "incubation," which suggests the

* "It should be pointed out that A. F. C. Wallace's theorizing is not conceptually independent of the psychotherapeutic schools of thought. Being an anthropologist of the 'culture and personality' emphasis, Wallace was very much influenced by psychoanalytic thought. Also it should not be thought that his work tells how crisis-oriented cultural change *actually* takes place; rather his work is an abstract *construction* of this process. Also his work was not based on his own field studies, but rather on literature sources. If it had been based on field studies, it is quite possible that his conclusions (especially about the charismatic leader) would have been very different."—Luther Gerlach

Table 7

STAGES OF CRISIS RESOLUTION IN MYTH, CULTURE, SCIENCE, PSYCHOTHERAPY, AND ESSENTIAL CREATIVITY

Monomyth (J. Campbell)	Cultural revitalization (A. Wallace)	Scientific resolution (T. Kuhn)	Psychotherapy (O. Markley)	General creativity (G. Wallace)
	1. Steady state	1. Normal science	1. Normal defence mechanisms	
	2. Period of individual stress	2. Growth of anomalies	2. Anxiety and disintegration	
1. Separation			3. Blame and guilt	1. Preparation
	3. Period of cultural distortion	3. Crisis	4. Acceptance of responsibility	
			5. Looking for new solutions	2. Incubation
2. Initiation	4. Period of revitalization – reformulation – communication – organization	4. Revolution	6. Insight/reformulation/reintegration	3. Illumination
3. Return	– adaption – cultural transformation – routinization		7. Testing and application	4. Verification
	5. New steady state	5. Normal science in new paradigm	8. Open-ended change and growth as "normal"	

cessation of deliberate attempts to *force* insight.* Two quotations describe the process:

> "Cease striving; then there will be self-transformation."
>
> (Chuang-Tse, Book XI)

> "Whosoever shall seek to gain his life shall lose it; but whosoever shall lose his life shall preserve it."
>
> (Luke 17:33)

The moment of insight (illumination), as we observed in connection with the cultural revitalization movements and creation of scientific paradigms, occurs with vivid clarity and suddenness, is abrupt and dramatic, "a brief period of realization of relationships" (A. Wallace, 1956, p. 270) that "inundates a previously obscure puzzle, enabling its components to be seen in a new way for the first time" (Kuhn, 1962, pp. 122 ff.). Thus, the moment of sudden insight seems to be an element common to radical discovery and transformation—both mythic and scientific. We might well apply to this type of reconceptualization of the Greek word for religious conversion, *metanoia*, that is, a fundamental transformation of mind (Pearce, 1971).

Finally there is the task of validating the knowledge (verification) and bringing it to fruition for self and society.

Such processes of discovery may be termed heroic not so much because they parallel the classic stages of separation, initiation, and return of the hero in the monomyth, but because they require inordinate courage in the face of fear. They involve not only the possibilities of failure, but require confronting the truly unknown; and confronting as well the sure knowledge that successful discovery will inevitably upset the established patterns of one's existence. It will likely mean drastic personal and psychic *change.* In this connection, Abraham Maslow (1962) has written eloquently about "the need to know and the fear of knowing."

What does all of this mean for our society today? Are we to conclude that the answer to our problems is to be found in the chance occurrence of a revelation or intuitive breakthrough by one or a few individuals who will then become the charismatic leaders of a true-believer revitalization movement? Such an occurrence is not at all unlikely if other approaches have not been developed *before* the problems of our late industrial era reach truly crisis proportions, and it

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* "[Regarding the] operational feasibility of transformation, Reza Arasteh's work should be included. Like Chuang-Tse, he calls for an 'existential moratorium' so that society can reintegrate at a higher level. Dabrowski also calls for what he calls 'positive disintegration' so that a higher level individual integration may take place."—Robert A. Smith, III.

would undoubtedly result in a high degree of disruption and chaos throughout society. But other approaches are possible.

We now know something about the nature of the creative person. For example, a study of research observations that were made during the process of scientific discovery found that scientists considered to be unusually creative in productive ways are:

> (1) of superior measured intelligence; (2) exceptionally independent in judgment and resistant to group-endorsed opinions; (3) marked by a strong need for order and for perceptual closure, combined with a resistance to premature closure and an interest in what may appear as disorder, contradiction, imbalance, or very complex balance whose ordering principle is not immediately apparent; (4) unusually appreciative of the intuitive and non-rational elements in their own nature; (5) distinguished by their profound commitment to the search for esthetic and philosophical meaning in all experience.
>
> (Barron, 1969, p. 102)

Additionally, it now appears possible to combine the insights of science, art, and religion so as systematically to reduce the fear of (yet) unknown discovery and to foster the abilities of normal persons to discover and apply more of their creative potential. Such approaches as Synectics (Gordon, 1961), group dynamics (Bradford, Gibb, and Benne, 1964), Psychosynthesis (Assagioli, 1965), Scientology (Hubbard, 1954), psychedelic drugs (Masters and Houston, 1966; Aaronson and Osmond, 1970), integral yoga (Chaudhuri, 1965), self-hypnosis (Krippner, 1969), biofeedback training (Rørvik, 1973), small conferencing (Mead and Byers, 1968), imagistic thinking (Krippner, 1967), specific educational programs (Barron, 1969), and others (Peterson, 1971) typify the diversity of ways in which one or a group of individuals, with an appropriate "set and setting,"* can be helped to make the type of conceptual breakthroughs here being discussed. If the emerging "science of consciousness" discussed in Chapter 4 is turned toward these ends, it seems obvious that even more effective approaches would result.†

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* "Set" refers to the expectations of the participant and "setting" to the physical, psychological, and spiritual context in which a given growth or therapeutic process is experienced. These two variables have been found to significantly affect the outcomes of creative processes. See Sherwood, J. N. *et al.*, "The psychedelic experience—A new concept in psychotherapy," *Journal of Neuropsychiatry*, Vol. 4 (December 1962), pp. 69–80.

† "All of these techniques are aimed at the individual, rather than his social setting. Until you can make institutions receptive if not promotive (see John Gardner, *Self-Renewal*—infinitely better than anything you mention here) to creativity, there will be a disjunction between individual and institution, creating greater frustration for the charged-up newly creative with no place to go. Incidentally, I would much prefer that emphasis be on the broader concept of excellence."—Michael Marien

Note: See also Elise Boulding's compelling statement of "The Spiritual Dimension of the Human Person" in Appendix A.

We are not simplistically advocating that society needs a great man to lead us to a new image of the nature of man. It may be that because of the new approaches for self-exploration, the communication flow which makes esoteric ideas and processes more available, and the exchange of shared and vicarious experience, many persons may find themselves on the path of the adventurer, reflecting first the stress and problems of the society, then opening themselves to new insights and direct perceptions of reality which are less strongly filtered by the current paradigms and myths, and finally emerging to see the world in new ways.

As Joseph Campbell (1968) has observed:

> For even in the sphere of Waking Consciousness, the fixed and the steadfast, there is nothing now that endures. The known God cannot endure. Whereas formerly, for generations, life so held to established norms that the lifetime of a deity could be reckoned in millenia, today all norms are in flux, so that the individual is thrown, willy-nilly, back upon himself, into the inward sphere of his own becoming, his forest adventurous without way or path, to come through his own integrity in experience to his own intelligible Castle of the Grail—integrity and courage in experience, in love, in loyalty, and in act. And to this end the guiding myths can no longer be of any ethnic norms. No sooner learned, these are outdated, out of place, washed away. There are today no mythogenetic zones. Or rather, the mythogenetic zone is the individual heart. Individualism and spontaneous pluralism—the free association of men and women of like spirit, under the protection of a secular, rational state with no pretensions to divinity—are in the modern world the only honest possibilities: each the creative center of authority for himself, in Cusanus's circle without circumference whose center is everywhere, and where each is the focus of God's gaze. (p. 677)

We would thus hope not for a handful, but for a thousand heroes, ten thousand heroes—who will create a future image of what humankind can be.

Institutional and Personal Change

The needed transformation cannot occur without both personal and institutional change. Institutional change depends on the actions of individuals, but it is unrealistic to expect personal illumination to become effective in any widespread way unless our institutions—which are locked into the mores of industrialism—are suitably modified. How can we break this cycle?

Imagining Makes It So

As a result of a career in psychotherapy and facilitation of personal growth, Frederik S. Perls, the originator of Gestalt Therapy, concluded

that "we cannot deliberately bring about changes in ourselves or in others," that people who try to do so end up typically "dedicating their lives to actualize a concept of what they *should* be like, rather than to actualize *themselves.* This difference between *self*-actualizing and self-*image* actualizing is very important" (Perls, 1969, p. 19). This is perhaps the essence of the difference between what Boulding (1964) termed the "scientific" approach and the "ideological" approach to progress. The contrast provides a needed precaution to overzealous attempts to proselytize on behalf of a new image of humankind for our society.

Although Perls' assertion may seem paradoxical to us, caught up as we are in the rational-manipulative paradigm of industrialism, it is a view that has been repeated through history. For example, from a variety of periods and disciplines come the following conclusions:

- Every idea which exclusively occupies the mind is transformed into an actual physical or mental state. (Brooks, 1022, p. 18)
- The efforts we make to conquer an idea by exerting the will only serve to make the idea more powerful. (Brooks, 1922, p. 19)
- So long as the imagination is adverse to the conscious mind, effort of the conscious will produces a contrary effect. We must think rightly, or rather must imagine rightly, before we can will rightly. In a word, our formula must not be "who wills can," but "*who imagines can.*" (Baudouin, 1922, p. 10)
- The most significant phenomena of autosuggestion occur in the domain of the unconscious. (Baudouin, 1922, p. 10)
- The basic law of autosuggestion is: Every idea which enters the conscious mind, *if it is accepted by the Unconscious,* is transformed by it into a reality and forms henceforth a permanent element in our life. (Brooks, 1922, pp. 54–55)
- "Merely to be attracted to any set of . . . ideas does not bring with it any realisation. . . . A mere mental activity will not bring a change of consciousness, it can only bring a change of mind. And if your mind is sufficiently mobile, it will go on changing from one thing to another till the end without arriving at any sure way or any spiritual harbour. The mind can think and doubt and question and accept and withdraw its acceptance, make formations and unmake them, pass decisions and revoke them, judging always on the surface and by surface indications and therefore never coming to any deep and firm experience of Truth, but by itself it can do no more. There are only three ways by which it can make itself a channel or instrument of Truth. Either it must fall silent in the Self and give room for a wider and greater consciousness; or it must make itself passive to an inner light and allow that light to use it as a means of expression; or else it must itself change from the questioning intellectual superficial mind it now is to an intuitive intelligence, a mind of vision fit for the direct perception of the divine Truth."—Sri Aurobindo (On Yoga: II, Tome One, p. 174).
- Underneath all the reasoning, inductions, deductions, calculations, demonstrations, methods, and logical apparatus of every sort, there is something animating them that is not understood, that is the work of that complex operation, the *constructive imagination.* (Ribot, *Essay on the Creative Imagination,* quoted in Johnson, 1957, p. 38)
- [In experiments using altered states of consciousness to increase creativity, we find that] people get into imagistic thinking. That is, pictorial thinking as opposed to sequential, verbal thinking. With imagistic thinking, there is a tendency to see whole constellations of information as a picture, a coded symbol, or a series of flowing symbolic forms . . . such free inter-space exploration was always blocked by religious dogma on the one hand or by scientific dogma on the other. . . . Visionary experience

> does tend to be heretical. It is a tuning in on the creative process, and so it will not obey the laws of any particular religion or political system.... And this imagistic thinking is often attended by an increase of enthusiasm. (Masters and Houston, quoted in Avorn, 1973, p. 17)
> - Man is made by his *belief*... as he believes, so he is. (Bhagavad Gita)
> - As man thinketh in his *heart*, so he is. (Proverbs 23:7 of the Bible)
> - In order to live wisely, men must have a sense of participation in a uniting purpose understandable to all, vital enough and noble enough to be the object of a common sense of dedication. (Andrea, *ca.* 1700, cited in Hall, 1958, p. 107)
> - The rise and fall of images of the future precede or accompany the rise and fall of cultures. (Polak, 1973, p. 19)

If these observations are at all valid (and their validity is essentially untestable within the presently dominant paradigms of science), they are important insights from which to draw social-policy implications.

First, it becomes imperative to note the likely consequences of the type of image that is portrayed in the various artistic media. If the future is portrayed in primarily dystopian terms, a dystopian image of humankind will prevail in the collective unconscious of the culture. But as Margaret Mead has noted (1957):

> ... all visions of heaven, in this world and in the next, have a curious tasteless, pale blue and pink quality.... Beside any picture of heaven above or heaven on earth, the pictures of hell and destruction stand out in vivid and compelling intensity, each detail strong enough to grip the imagination as the horrid creations of a Wells, an Orwell, or an Aldous Huxley unroll before our horrified eyes. Where positive utopias are insipid and a detailed heaven is unbearable to think of as a permanent abode, the creators of terror have no such problem. So, if utopian visions are the stuff by which men live, it would seem a legitimate subject of inquiry to ask what is the matter with them? Why is Hell always so much more vivid than Heaven? (p. 958)*

Or as Aldous Huxley once observed, "A dualistic perception of God may be bad metaphysics, but it makes good art."

These observations seem perfectly valid insofar as they apply to *static* conceptions of utopias or to static metaphysical views, but there appear to be no necessary limitations on artistic creativity to portray the excitement of constructive, positive images of continuing human evolution, and in that sense be able to create a vision of "more vivid utopias."

Second, these insights suggest that the most important component of planning is based not on the realm of the rational, but rather in those realms of consciousness that lie beyond the rational. In many if not

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* "Like so many quotes, the real point—the imagination of children—is omitted."—Margaret Mead

most cultures throughout history, the executive leaders maintained access to seers (shamans, prophets, "fools," medicine men, etc.).* In keeping with the seriousness of the problems our society faces and the resulting need for a more valid sense of the whole context in which we live, the opening up of these aspects of consciousness—not for the few but for the many—seems of vital importance.

Third, these insights suggest that "ordinary" attempts to shift the prevailing image of humankind by rational-manipulative means would likely prove ineffectual. Other evidence, however, suggests that such a strategy (if it uses "extraordinary" means) might well be effective, but ultimately dysfunctional: Kinser and Kleinman (1969) have written a provocative book, *The Dream That Was No More a Dream: A Search for Aesthetic Reality in Germany 1890–1945*, which contends that during this recent era, the German government undertook to deliberately shape the image of man, to create a "myth" that would resolve the German's identity crisis. Using all means at their disposal, some conventional (e.g. visual art, songs, slogans, and propaganda) and some unconventional (e.g. arm-in-arm rocking, goose-step marching, and other somewhat more esoteric ways of releasing primal energies in a structured form—some of which have appeared from time to time in the American human potential movement), Germany created for itself "a sense of national density in accord with the universe." Kinser and Kleinman assert that the central equation in this process was that:

> Myths shape perception. Perceptions produce policies, policies cause events and situations. And events require explanation. How *can* one separate the beginning of the circle from the end, the mythic invention from the archetypal situation, or the fabrication from the candid recognition of a geopolitical fact? The first feeds the last, and the last vindicates—and reinstates—the first. This cycle is what Freud meant by "self-fulfilling prophecy"—the manufactured statement that creates historical reality thereby validating itself.

The recent appearance of such writings as *The Image* (Boorstin, 1971), *The Selling of the President* (McGinnis, 1968), *Catch a Falling Flag* (Whalen, 1972), *The Image Makers* (Lawton and Trent, 1972), and "Friendly fascism" (Gross, 1970) would indicate that the German approach of image manipulation and myth creation is all too feasible in

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* "Today the seers are scientists and 'experts.' See Guy Benveniste, *The Politics of Expertise*, Glendessary Press, 1972."—Michael Marien

Agreed, which is why the necessary future emphasis is on holistic knowing as opposed to specialized knowing.

the United States.* Image manipulation *is* practiced in our society, but it has not yet reached the proportions that were practiced in Germany before World War II. As we note in the next chapter, however, an extrapolation of current trends makes this possibility seem almost expected. Martin, writing almost two decades ago, concluded that:

> The whole world is in imminent peril from the totalitarian technique.... The free peoples, because they are still free, have the means of making the withdrawal-and-return, of rediscovering the creative contact by rediscovering themselves. There can be no assurance that they will fully realize this peril or make use of these means. But if they do, a fundamental change can come over the world.... There is in this present age a possibility of greatness exceeding all that has gone before, the possibility that our time of troubles can become the timeless moment, the moment of vision and commitment. (1955, pp. 264 ff.)

And,

> In fairness to the reader, it should be emphasized that this creative contact is not an armchair pursuit. What is proposed is an experiment, an experiment involving risk, making heavy demands on those who undertake it, with no guarantee of results. *Mythos* meant originally the words spoken in a ritual, the means of approach to the God ... there are a variety of modern means of approach to the creative process working in and through man. And, as always, the creative is dangerous. (1955, p. 15)

Although not without danger, the democratic assumption is that pluralistic creativity is *always* more to be trusted than is fascistic manipulation (cf. Mead and Byers, 1968).

New Paradigms from Old

We spoke earlier of the need for what we termed a "moral science" and a "moral economics" denoting by the terms "moral" paradigms that would be consistent with what Dunn (1971) has termed a "process teleology"

> ... where human beings ... establish the process of human development as the goal of the process of social evolution, both the process and the goal being understood to be open to further transformation as we advance in the practice and understanding of them.

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* "While you note briefly the societal manipulations of the Third Reich under Hitler, you do not deal with the consequences of this tragedy. I would urge that Ernst Cassirer's work, *The Myth of the State*, be included in your review of relevant literature. I also suggest the tremendous impact of Mao should be included and that the classic of Edgar Snow, *Red Star Over China*, showing the transforming effect of the great march on a total population cannot be ignored. The image of the pilgrim remains important and its consequences dramatic."—Robert A. Smith, III

The translation of such a conception into operational terms seems especially crucial given the problems discussed earlier. As the economist Robert Heilbroner observed (1968),

> ... the central problem which is likely to confront the societies of tomorrow is nothing less than the creation of a new *relationship between the economic aspect of existence and human life in its totality.* (p. 631)

It seems evident that the characteristics we postulated for an adequate image cannot be fulfilled unless such a new type of policy paradigm comes into existence—a paradigm that provides a far closer reconciliation of C. P. Snow's "two cultures" (the sciences and the humanities) than has heretofore seemed feasible. Central in this pursuit would be the reconciliation of the objective inquiry methods found suitable for learning to manipulate the external/physical environment and the inquiry methods which are emerging to similarly explore the subjective/internal/psychical environment of our living.

Likely such an umbrella paradigm will not be possible without the emergence of other, somewhat more specialized but nevertheless holistic, paradigms to support it. An adequate policy-relevant paradigm for understanding the subtle complexities of ecology, for example, will likely require a creative synthesis of those disciplines we call biology, anthropology, ethology, and possibly even parapsychology. Similarly, an adequate new science of "internal states" (which would deal with topics as varied as psychosomatic medicine, creativity, quality of life, and so-called psychic abilities), if present trends are any indication, will require a synthesis of Eastern wisdom, Western psychology, electronic engineering, physics, physiology, etc.* Donald Michael's book *On the Social Psychology of Learning to Plan—and Planning to Learn* (1972) contains numerous insights on how this difficult task might more adequately be approached.

Considerations of Operational Feasibility

But what indications are there that pervasive personal and institutional transformation and a creative mushrooming of new paradigms are feasible without their being "caused"?

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* "You ... fail to indicate how these might merge. Perhaps if you update Assagioli, using Youngblood's *Expanded Cinema,* and suggest new musical and art forms for global audiences through the moog synthesizer, ballet and satellite communication, you could provide a world stage for Transformation."—Robert A. Smith, III

There can be no easy answer to this question, of course. The forces against fundamental conceptual change appear almost insuperable. Virtually every institutionalized aspect of our society, but especially the image-creating media (whose revenues, hence editorial policy, currently derive primarily from advertising), indirectly support the current industrial paradigm. The physical aspects of our culture (urban-centered factories, freeways, automobiles, etc.) all reinforce it by shaping our perceptions, incentives, and habits.

However, there appear sufficient indications of a new image emerging that continued work in this direction is indeed appropriate. We outlined in Chapter 4 an historical analogy between the present and the post-Medieval period that is suggestive of various forces at work which are creating the conditions for a transformation. Added to that line of argument are the following assessments of societal conditions that together indicate, with appropriate stimulation, the feasibility of a "new renaissance" which would have the characteristics set forth in Chapter 5.

- There is *need.* Societal problems (such as those described in Chapter II) are mounting that appear to be intrinsic to the very structure of the mature industrial society. Similarly there is growing evidence that a variety of goals cannot be adequately realized due to intrinsic limitations of the essentially objective and reductionistic paradigm of science that is currently dominant in our society.*
- There are *motivation* and *progress.* Although the societal trends that appear to be dominant (e.g. the "multifold trend" noted in Chapter 1) and the overall momentum of industrialism do *not* point to the emergence of a new and more adequate image of the human, there are various signs indicating increasing desire for the progress toward such an emergence. For example:

  1. Interest in cultural survival, in Eastern thought, in self-exploration, in holistic understanding of complex systems, in personal and cultural transformation is in the ascendant. Surveys and polls show this growing trend, most noticeably in the Yankelovitch data on the new naturalism among such groups as student elites and corporate executives who are increasingly turning away from economic values (Yankelovitch, 1972; Seligman, 1969). A survey of major public libraries made in connection with this study reveals an unusually strong demand for books on wholesome living (natural/organic foods, yoga for health, etc.); the occult (extrasensory processes, divination, esoteric wisdom, etc.); and Eastern practices (zen, yoga, meditation, etc.). While the more fundamentalist of the traditional churches are growing at a rate about equal to the decline of the more ecumunical

* "There is still a vast amount of support for the notion that a variety of goals *can* be adequately realized by more of the same type of science and technology that we have had. You are not providing an adequate counter-argument to Daniel Bell, Herman Kahn, the Nixon administration, and most of academia and the American people. Consonant with established cognitive systems is the fact that societal problems are not seen as severe enough to require the system break that would lead to the 'new renaissance.'"—Michael Marien

traditional churches (Kelley, 1972), other voluntary organizations, especially in what is called the "human potential movement," are growing far more rapidly.*

2. Population growth is declining, environmentalism is growing, new legislation is being considered that might promote more holistic understandings of societal problems—for example, Senator Humphrey's recent bill on national growth policy. Increasing numbers of technical symposia and *ad hoc* groups are being formed on the theme of survival-motivated transformation, e.g. the World Order Models Project, the Club of Rome, the Blueprint for Survival Project, The International Institute of Applied Systems Analysis, Projects of the National and World Council of Churches.

- There are recognizable processes of *transformational discovery*. The historical record of cultures and individuals which successfully coped with crisis-motivated change, the process of "new paradigm" discovery in science, and the process of general creativity show some remarkable parallels. Two characteristics which stand out from the record of such discoveries are:

  1. That they are *intuitively* rather than rationally based. In most descriptions of transformational discovery, the tapping of imagistic, intuitive, and supra-rational aspects of consciousness appears as a central element of discovery. Only before and after the new Gestalt is recognized do the more rational processes serve the useful functions of evaluation, planning, and so forth.
  2. That they *reformulate* rather than replace previous ideas. Although both types of creativity occur in times of crisis, the type of discovery that has led to revitalization of a culture is that in which the creative thrust was more a reformulation and combination of ideas already having good currency than a revolutionary change to radically different ideas. Thus cultural transformation seems feasible without revolutionary disruptions, to the extent that the transformed society can meet the unique and habitual needs of diverse groups while at the same time providing a unifying framework for the entire culture. Techniques exist with which transformational discovery can be fostered; others can be discovered.

- There is *timely stimulation of attempts*—both individual and collective—to foster an evolutionary transformation. The majority of the society do not perceive the need or have the motivation noted above. This is perhaps fortunate, for it gives time to create the needed ideas before charismatic leadership and/or simplistic attempts at reform are demanded. Although there is (among an increasing number of elites) a perceived need, motivation, some progress, and proper tools (yet small in proportion to the need), most funding understandably goes into work that fits within the present paradigms of our culture. The efficacy of transformational research and working toward more adequate paradigms has yet to be demonstrated to the mainstream institutions of society. Thus support of this kind of activity could prove to have "high leverage" in terms of building the kinds of knowledge and necessary experience that might turn cultural crisis into creative transformation.

We emphasize the stimulation of transformational thinking and experimentation not because we see it as necessary for the emergence of a new image of humankind and/or new "moral" paradigms, but because of urgency.† Although it is impossible to prove, we suspect that

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* See Note C, p. 161.

† "Again, I stress that the 'urgency' is not perceived by others; or, if perceived, there are totally different prescriptions."—Michael Marien

if either is to emerge at all, they will do so whether or not any given individual, group, foundation, or government agency chooses to deliberately support—or to fight—their emergence. To be sure, their emergence depends on the actions of individuals, but scientific and cultural transformation is a far bigger and more amorphous agenda that can be dealt with by rational/deliberate attempts to make it happen, as, one would say, a moon shot. The emergence of a new image and/or new paradigm *can*, however, be hastened or slowed by deliberate choice. Furthermore, and most importantly, the degree of social disruption accompanying such a change can be affected by the degree of understanding of the forces bringing it about.

Given the uncertainty as to the likely severity and the timing of the societal crisis that may be ahead, appropriate actions which prepare for the crisis need to be stimulated. Only if we have the necessary concepts and tools—both individually and collectively and in time—can we hope to ride at all smoothly through to a better society on the other side of the transition. Thus the fostering of conceptual reformulations which do not reject but rather reconcile previously dominant ideas into a higher-level integration appears most timely.

NOTES

Note A

"Two criticisms: one, that there have been a concomitant increase in consciousness together with the generally increasing complexity and differentiation of evolving biological systems does not mean that the thrust of evolution is toward greater consciousness (as the study infers); it could mean, for example, that consciousness is merely an epiphenomenon of complex organization. In my view it is more reasonable to assume that consciousness is a resultant of biological evolution. . . . I believe that the spectacle of evolution can give meaning to existence and a sense of holistic direction without embracing the controversial premise of a vitalistic–anthropomorphic thrust toward consciousness [see Chapter 14 in Laszlo (1972)], and it is more rational to place one's hopes for a new meaning in life on an objectively evolutionary, rather than an anthropomorphizing thesis.

"My second criticism is that the meaning of 'consciousness' is not made clear. . . . Consciousness as self-awareness can be explained without recourse to grand assumptions about evolutionary thrusts simply by noting the selective advantage it confers on systems that increasingly rely on computed–extrapolated strategies for their existence. Like a prehensive tail, it is an instrument of survival and a factor in . . . biological evolution."—Ervin Laszlo

Note B

"I believe many readers, especially those in the stricter sciences, will not appreciate the diffusive and wildly ambiguous qualities of the word paradigm, which is used excessively (even from the point of view of good prose!) in the latter parts of the document. My early classical training forces me to associate the word *paradigm* with the sober word *example.* Its main use is in grammar, where it is used as an example to illustrate a declension or a conjugation. It might also mean, more generally, an illustration. But it has none of the

far flung meanings you have assigned to it (following Kuhn). You have employed it as a synonym for general belief, tenet, hypothesis, dominant theory, prevalent view, prevailing philosophy, general understanding, accepted thesis, scientific world picture of the time, temporarily confirmed assumption.... Each phrase in this list is clearer than paradigm, and I suppose it might be well to choose from it on occasion."—Henry Margenau

Our usage of the word *paradigm* is indeed extended from its original meaning and is in keeping with our search for metaphors which catch the "sense" of our time. We use it to refer to a scientific (or generally held) world view, including any assumptions about reality and rules of operation. Kuhn (1962) describes his usage as referring to 'universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners' (p. x). This corresponds to the common meaning of paradigm as a model or pattern.

Note C

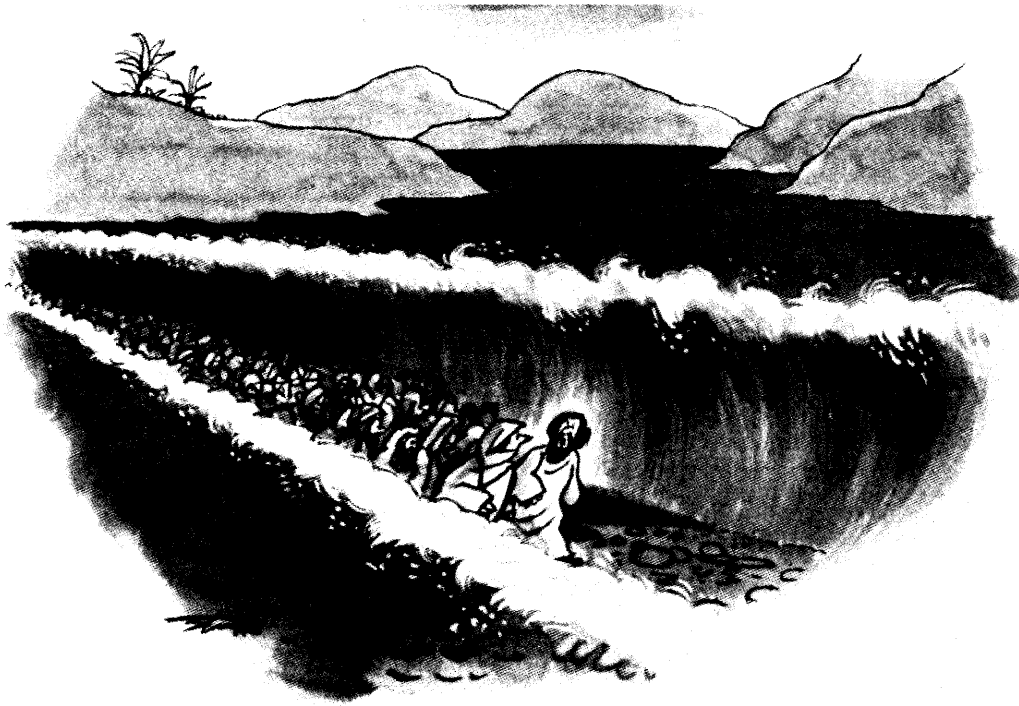
"Do you think that the cultural survival lobby, broadly defined, outnumbers the supporters of Maharaj Ji? The John Birch Society? Would you care to contrast the readership of any five new culture periodicals to the 160,000 subscribers to *Street Chopper Magazine*, or the 175,000 subscribers to *Off/Road Vehicles Magazine* (the latter group, I understand, is destroying the California desert).

"Also, I think it is very problematic as to whether environmentalism is growing, particularly with newly announced scarcities in electricity, natural gas, and gasoline. If it *is* growing, we need a sober head count: growth from 3% to 4% doesn't count for much, if 80% are ready to vote to maintain their comfort.

"In fact, I disagree with this entire section. I would *like* to see the signs of a positive emerging image, but I will not let my enthusiasm be confused with a sober analysis of the data around me. As is quite clear, students are turning away from 'The New Naturalism' toward quietude, fundamental Christianity, alcohol instead of drugs. Shows the hazards of extrapolating data and cheering when what we are watching is a cultural pendulum. As for the 'cultural indicators' you had best be more specific, e.g. what books read by whom and with what result? (As a quick indicator, look at the top ten non-fiction list for the last few years to see what is in fashion. Whereas *Future Shock* was big a couple of years go, there is nothing in the top ten today—other than *The Sovereign State of ITT*—that has anything to do with the new naturalism, public policy, or wholistic science. Rather, people are concerned with Dr. Atkins' diet, and the *Joy of Sex*.) Be precise about any interest in the growth of holistic science; I fail to see any good signs, such as the RANN budget in NSF or significant developments in SGSR. The control of internal states, books on wholesome living, the occult, etc., are to some degree current fads—and there is a great deal of balderdash mixed in with serious sentiments that you and I favor. Failure to distinguish between the serious and the rip-off is one of the quickest ways to weaken if not kill off the evolutionary transformationalist movement (or whatever we wish to call it—another problem being a profusion of titles).

"Finally, you should be very cautious about the 'humanistic capitalism' professed by the corporations (most notably in John Rockefeller's recent book, *The Second American Revolution*). Haven't you ever heard of co-optation? See Roszak's comments on 'suave technocracy' in *Where the Wasteland Ends*."—Michael Marien

We agree. See our "last work" (p. 268).



"Of course it's damp underfoot! That strikes me as a very petty complaint to make at a time like this."

CHAPTER 7

Societal Choices and Consequences of Changing Images

Massive and rapid change confronts virtually every person and sector of our society. Paradoxically, such rapid change—leading to "future shock" in the words of Toffler—seems to be the only constant of our time. This change has contributed to a contemporary feeling of purposelessness and meaninglessness:

- It creates uncertainty about the future and lessens the time "durability" of our images of humankind.
- Associated with this change has been the emergence of a societal structure of virtually incomprehensible size and complexity.
- Also corresponding to this rapid change has been a proliferation of segmented roles for the individual to play, supported by fragmented imagery.

Such rapid rates and magnitudes of change would be tolerable to many people if it seemed purposeful. Indeed, as Gerald Heard once noted, "Life does not need comfort, when it can be offered meaning, nor pleasure, when it can be shown purpose." Since a primary function of images is to provide meaning in life, our present alienation and loss of purpose is reflective of the inability of contemporary images to inspire within people a feeling of meaningfulness.

Our survival and our continued evolution depend upon our acting, soon and wisely. On what basis do we choose one societal trajectory over another?

Many of the different images that we have surveyed provided differing normative standards from which to evaluate ethical decisions. Precisely because different conceptual paradigms provide differing standards for evaluation, it is not possible to prove that one image of humankind is ultimately better or more valid than another.* It is therefore useful to compare the likely societal outcomes of the different images.

We choose to compare the societal consequences of two images, both of which seem feasible within the near-term future of the United

* "But you can prove that one is held more frequently than another through the use of survey research. An image of man survey of what is and what ought to be, parallel to Hopes and Fears of the American People (Universe, 1972), should be conducted."—Michael Marien

States, each of which would lead to a very different type of future. One of these is based on an extrapolation of the images that underlay the industrial state (i.e. it portends a post-industrial future with industrial images of the human); the other is based on a transformed image of the human similar to that we have postulated as being needed for a desirable post-industrial society.

In creating such an idealized polarity, or dialectic, we do not expect that either will come to pass in a pure form, but rather hope that a clear-cut contrast between possibilities will foster a continuing debate which will in itself help create a more responsible future society.

CONTRASTING FUTURE TRENDS AND IMAGES

The nature of a future based on continuing dominance of the industrial state mentality is aptly characterized by a distillation of the "multifold trend" developed at the Hudson Institute and described earlier. It envisions a society with the following developmental trends:

1. Increasingly empirical, secular, pragmatic, manipulative, explicitly rational, utilitarian.
2. Centralization and concentration of economic and political power.
3. Continued rapid accumulation of scientific and technical knowledge.
4. Increasing reliance upon specialists and "knowledge elites" despite anti-intellectual trends.
5. Increasing affluence and the institutionalization of leisure.
6. Increasing use of social, economic, political, and behavioral engineering.
7. Increasing urban concentration and the emergence of megapolitan/regional urban areas.

This trend set might well be termed a "technological extrapolationist" future. An image of humankind that is supportive of this future would likely have the following characteristics:

- The individual by nature is aggressive and competitive, largely determined in his behavior by hereditary and environmental forces.
- The group is emphasized, to the relative detriment of individualism.
- Sexuality, territoriality, materialism, rationalism, and secularism are emphasized.
- There is an increased demand for and implied reliance upon technological solutions to our societal problems, and upon centralized regulation of technology application to provide needed controls.

Contrasting rather sharply with the foregoing trends and supportive image is a cluster of trends that is compatible with the characteristics

postulated as desirable in Chapter 5. These trends and supportive image might lead to what could be termed an "evolutionary transformationalist" future. This future does not assume the logical extension of existing societal trends as does the technological extrapolationist view; rather it presumes a substantial departure from current trends, with the following trend characteristics resulting:

1. Increasingly balanced between dimensions such as empirical/intuitive, manipulative/pan-determined, rational/intuitive, utilitarian/aesthetic.
2. Stabilizing population; decentralization of urban areas so that population is distributed with greater balance; a greater diversity of living environments to express a larger range of life-style alternatives.
3. Increasing affluence for a time but then tending toward a steady-state society without substantial income/wealth differentials; a "do more with less" technology; more creative/participative leisure activities.
4. A decrease in the use of social, economic, political, and behavior engineering except where this was chosen by a group as the preferable mode of organizing and directing life-activities within their societal subsystem.
5. Increasing reliance upon specialized and general (holistic) skills of "knowledge elites" with greater legitimization and use of divergent thinking; also greater participation in the planning processes.
6. Continued accumulation of scientific and technical knowledge but of a sort which fits within the framework of a new "moral" paradigm.
7. Decentralization and deconcentration of economic and political power to allow "full valued participation" of people in their political and productive processes.

An image of humankind that would be supportive of this trend cluster would likely have the following characteristics:

- The individual's behavior is determined partly by hereditary (biological) and environmental (social) sources, which can be for either good or ill, but also there is a significant potential within the individual for behavior which is free from such deterministic influences.
- The individual has primacy but there are recognized needs of the societal system for its own maintenance as a supportive environment for individual growth/actualization.
- Thus, the self, along with societal structures, evolves toward higher states of awareness such that societal and individual diversity is hopefully integrated at a higher order of complexity and "self" becomes an experiential concept having transpersonal as well as individual aspects.

- An emphasis upon loving sexuality leading to a deemphasis of possessiveness.
- Rationalism and secularism are balanced by an equal regard for the significance of the intuitive and spiritual.
- An implied reliance is placed upon the individual's alteration of internal states for the solution of many societal problems.

Clearly, the technological extrapolationist and evolutionary transformationalist images present us with sharp contrasts—both direct, and in terms of the societal trends they support. The plausibility of each of these divergent images can be partially inferred from an examination of the potency of their historical roots—these are presented in Tables 8 and 9. Table 10 contrasts the ethical attributes that we might associate with these two images. With this as background, we now consider the societal consequences that would accrue in the technological extrapolationist and the evolutionary transformationalist futures.

Table 8

HISTORICAL ROOTS OF THE TECHNOLOGICAL EXTRAPOLATIONIST IMAGE

1. *Hobbesian Man*—Hobbes saw humankind as elaborate machines whose "vital motions" were determined by outward stimuli. One seeks the power to insure the continuation of favorable stimuli and in that egoistic concern one comes into strong conflict with other people acting in like manner. What is required to insure peace is a sovereign with absolute power over the citizenry.
2. *Economic Man*—Is rationalistic (able to calculate what will maximize one's utility), self-centered (acquisitiveness constrained only by the self-seeking of others), mechanistic (a factor in the production process), individualistic (responsible for taking care of one's self), and materialistic (with an overriding concern for one's own material welfare).
3. *Freudian Man*—Freud saw people as being driven by the dual instinctual forces of eros (the sex drive) and thanatos (the will to destruction of self or, when turned outward, the will to aggression). Civilization suppresses these potentially destructive instincts and in doing so it increases the individual's internal tensions. Therefore, civilization is bought at the price of an increase in personal frustration.
4. *Ethological Man*—An aggressive animal with a veneer of civilization holding this aggression back. Man is instinctually programmed from his hunter origins toward war, destruction, and territoriality, and this cannot be unlearned or outgrown but can only be sublimated, redirected, or repressed. This any civilized society must do.
5. *Behavioristic Man*—One's actions are completely determined by hereditary and environmental factors. A recent emphasis is upon behavior modification through a stimulus–reinforcement–response process. Freedom and dignity are thought to be the illusory constructs of an individual who views himself as having autonomy. The survival of a culture is likely dependent on the systematic "shaping" of human behavior.

SOCIETAL CONSEQUENCES OF A TECHNOLOGICAL EXTRAPOLATIONIST IMAGE

Assuming that the cluster of societal trends and images identified under the rubric of "technological extrapolation" becomes dominant in

Table 9

HISTORICAL ROOTS OF THE EVOLUTIONARY TRANSFORMATIONALIST IMAGE

1. *Lockean Man*—For Locke, the pre-social condition of the human being was not mutual hostility but mutual tolerance. Nor was man's social contract a surrender pact drawn up *between* the people and the sovereign; it was a limited agreement *among* the people to allow regulation of some natural rights so as to gain protection for the remaining ones. Innate ideas or instincts were not the source of knowledge and character, but rather experience and awareness.
2. *Emergent "Humanistic Capitalism"*—Would replace the economic growth ethic with self-realization and ecological ethics, and holds that the appropriate function of social institutions is to create environments conducive to that human-growth process which would ultimately transcend a materialistic orientation.
3. *Perennial Philosophy*—"... the metaphysic that recognizes a divine Reality substantial to the world of things and lives and minds" (Huxley, 1945). The individual can, under certain conditions, attain to a higher awareness, a "cosmic consciousness," in which state he has immediate knowledge of a reality underlying the phenomenal world. "Rudiments of the Perennial Philosophy may be found among the traditional lore of primitive peoples in every region of the world, and in its fully developed forms it has a place in every one of the higher religions." It is then, the *highest* common denominator among the religions and thereby has tremendous integrative potential while recognizing the diversity of peoples.
4. *The "Other" Ethology*—From this perspective, aggression is not inherent in human nature. The environment more than instincts is the source of aggression. To the extent that aggression, territoriality, etc., are learned rather than innate attributes, then they can be unlearned.
5. *Systems Theory*—The person is an interdependent part of the progressive differentiation and higher-order reintegration of bio-social systems; the next phase in this evolutionary process is for the person to become conscious of his own evolution and to make the process purposeful so that there can be reconciliation of subsystems into large systems without loss of uniqueness. The underlying goal is the enhancement of individual fulfillment through the actualization of the best potentials there are within the person.

our society, what might be the likely consequences? Our society suffers from fundamental problems which are intrinsic to the very structure of mature industrialism. The cluster of multifold trends embodied in the extrapolationist perspective will likely exacerbate these problems. Indeed, given the present nature of our societal problems, we can expect:

- Continued acceleration of industrial development through massive transnational corporations which, because they transcend national boundaries, will be difficult or impossible to regulate adequately.
- Intensification of ecological problems, and of marathon competition to exploit vanishing resources.
- Increasing discrepancies in the distribution of affluence;
- Intensification of "revolutions of rising expectations" and of strife among interest groups.
- Increasing danger of sabotage, and increasing concern for personal and institutional security; development of new "security technologies."
- A shift from basic research to applied research and development.
- Increasingly unwieldy urban agglomerations whose political, financial, and total-systemic stability becomes uncertain.

Table 10

ILLUSTRATIVE CONTRASTS BETWEEN ALTERNATIVE IMAGES

	Technological extrapolationist image	Evolutionary transformationalist image
1. *Mind and Matter*: Is the human essentially a complex and sophisticated but physical machine, or is his essence that of mind or consciousness?	The human is definitely viewed as mechanistic, rationalistic, materialistic.	Both mind and matter are embraced as interdependent and interactive components of an evolving system which includes the person and his society. While some tend to emphasize the human as being essentially mind or spirit, the evolutionary thrust is toward increasing consciousness.
2. *Freedom and Determinism*: To what extent is the human free in his choices and actions?	The human is viewed as being more or less determined in his behavior patterns—either by instinctual forces or by the behavior-shaping forces of his external environment.	The human is potentially more or less free. Although he has a genetic inheritance which has stronger influence at the "lower levels" of his functioning, he is somewhat determined by the social environment learning process, and to the extent that he is the creator of his social/cultural learning environment, then he is relatively free to foster his own evolution.
3. *Good and Evil*: Is the human's nature essentially good or evil?	The person tends to be viewed as innately antisocial—aggressive in the ethological perspective, competitive/acquisitive in the economic point of view	The person is essentially neither good nor evil but conditioned by his environment, unless or until he wakes up and sees how things are or can be at a more profound level of awareness.
4. *Individual and Collective*: Does ultimate significance rest with the individual or the societal collective? Is the individual more subject to the collective, or vice versa?	In spite of the strongly individualistic roots of this composite image, the collective aspects of human existence are emphasized to the virtual exclusion of the individual aspects. (Behaviorism denies individuality.) A collectivist response is necessary to control the antisocial aspects of behavior.	Individuality and wisely chosen autonomy are paramount concerns, although there is utility in the collective aspect of existence—particularly in the ways it can be supportive of evolutionary development.

- Increasing dominance of institutional needs over human needs.
- Increasingly questioned legitimacy of the entire socioeconomic system.

What kind of society might emerge? On the one hand, our wisdom and good luck could combine with ineptitude and misfortune in such a way as to cause our nation to just about break even in our efforts to deal with the growing problems. There may be (though it appears unlikely) neither disastrous failures nor remarkable successes. Our shortcomings could be offset by the traditional poultice of an increasing income for the majority, a greater amount of time for leisure pursuits, and the certainty of a greater quantity and variety of goods and services to be consumed.

On the other hand, it seems entirely plausible that these trends could exacerbate our societal problems and bring demands for immediate and drastic solutions to ensure the stability and survival of the society. Methods of regulation that severely reduce individual freedoms could be welcomed in the face of severe disruptions. We could quickly or, more likely, gradually emerge into the kind of society that Bertram Gross (1970) has termed "friendly fascism." This is a fascism that "will come under the slogans of democracy and 100 percent Americanism . . . in the form of an advanced technological society, supported by its techniques—a techno-urban fascism, American style" (p. 44). Gross describes it as:

> . . . a new form of garrison state, or totalitarianism, built by older elites to resolve the growing conflicts of post-industrialism. More specifically: a managed society [which] rules by a faceless and widely dispersed complex of warfare–welfare–industrial–communications–police bureaucracies caught up in developing a new-style empire based on a technocratic ideology, a culture of alienation, multiple scapegoats, and competing control networks . . . . Pluralistic in nature, techno-urban fascism would need no charismatic dictator, no one-party rule, no mass fascist party, no glorification of the state, no dissolution of legislatures, no discontinuation of elections, no distrust of reason . . . this style of management and planning would not be limited to the economy; it would deal with the political, social, cultural, and technological aspects of society as well . . . . The key theme, therefore, would not be the managed economy, but rather, the *managed society.** (pp. 46 ff. Some emphases omitted)

What conditions would be required for such a pernicious future to emerge out of the extrapolation of the present? We think the fol-

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* "A somewhat later and considerably more scholarly piece by Gross, contrasting techno-urban fascism vs. humanist reconstruction, is offered in a lengthy essay, 'Planning in an Era of Social Revolution,' *Public Administration Review*, May/June 1971, pp. 259–297. Gross is also writing a book on friendly fascism, to be published in late 1974."—Michael Marien

The book finally appeared in 1980 and is a most sobering appraisal of (now) current trends.

lowing:

- *The need*—Our societal problems might combine with the multifold trend to create the need for such a friendly sort of totalitarianism. Perhaps this feeling of benign need was presaged in a recent statement by the White House Chief of Telecommunications: "A great many people in '1984' like what Big Brother was doing because he was doing it in their interest and concern" (Whitehead, 1973).
- *The ability*—Although one may fault the metaphysical implications of behavior modification, one cannot deny that it works. Today we are seeing the rapid emergence of "psycho-technologies" which could efficiently shape and modify patterns of behavior as well as motivational and emotional states. This could take the form of directed emotional conditioning in childhood; objectively constructed reinforcement patterns in adult life; the use of a wide variety of drugs; electrical brain implants; the modification of genetic makeup to activate different human potentials; the use of sophisticated electronic surveillance mechanisms to detect "aberrant" behavior patterns.
- *A supportive image of man*—The use of and dependence upon such psycho-technologies might well lead gradually to a pernicious form of the extrapolationist image of man. This is plausible in a self-validating way, since many aspects of the current form of the extrapolationist image seem supportive of the increasing use and dependence upon these technologies. Man is viewed as a sophisticated machine (therefore, master human nature as we have mastered physical nature); man is thought to be largely determined in his behavior (therefore, objectively shape his behavior in the most efficient way); man is innately antisocial (therefore, restrain antisocial tendencies with the aid of new technologies); individual man is subordinate to the needs of the collective (therefore, impose upon the individual whatever is to the benefit of the larger society).
- *The acquiescence*—Many psycho-technologies are already in limited use in our society and they would appear to be quite palatable to the general public if they were assimilated gradually while being couched in the appropriate language; e.g. rather than discuss the control of emotional and motivational states, we can talk of insuring peace and harmony by modifying the behavior of those "irrational" persons who threaten the stability and security of our society.

Quarton (1967) examined the plausibility of widespread use of such processes and concluded:

> If these protective and avoidance patterns are greatly extended in the future, one can imagine a society that allows widespread use of drugs to prevent pain and anxiety, brain surgery to prevent both suffering and any aggressive actions by individuals, and extensive use of monitoring equipment to restrict individual behavior with a destructive potential. (p. 850)

There are already signs of the emergence of key elements in Gross's "friendly fascist" scenario:

- Application of military surveillance technologies to urban police problems.
- Utilization of behavior-changing drugs and operant conditioning in schools.
- Government attempts at management of news.
- "Personality screening" and maintenance of files on "pre-delinquent" children, through cooperation between elementary school administrations and local, state, and federal authorities.

- The cross-correlation of computer-based files containing personal data (e.g. credit, employment records, tax status, insurance, criminal record, education).
- The introduction of legislation to control access to techniques for self-initiated alteration of consciousness (both non-drug and drug induced).

Although the above pictures an extreme outcome from the technological extrapolationist image and trend, nonetheless it is an alternative future for the United States that is even now proving its feasibility by its growing emergence. This future would seem unintended to most people; yet, by not "rocking the boat" and by pursuing what is a familiar societal path, it seems clear that we could reach a societal future which was quite different and far worse than was originally anticipated. This future is by no means inevitable but it does confront us with profoundly important choices—both individual and collective.*

SOCIETAL CONSEQUENCES OF AN EVOLUTIONARY TRANSFORMATIONALIST IMAGE

Whereas the technological extrapolationist response represents the logical extension of currently dominant societal trends, the evolutionary transformationalist response presumes a qualitative and quantitative departure from them. However, in the early stages at least, the transition to an evolutionary transformationalist post-industrial society would create some degree of disruption and disorientation.

Assume for a moment that the industrial state does have problems that are fundamentally unresolvable within the context of the present, and further assume that the evolutionary transformationalist image points the way to a resolution of the difficulties engendered by the industrial era. It might seem that our society would welcome the coming of such a transition with open arms. More likely, we would welcome such a societal change no more than the Middle Ages welcomed Galilean science, no more than the neurotic welcomes the changes in perception and behavior necessary to extricate himself from his unhappy condition. Such a new image and the societal consequences it implies would be viewed as a real threat to the established order. The emphasis on inner exploration would look like escapism, and the new interest in psychic phenomena and spiritual experience would be put down as a return to the superstitions of a less scientific and more gullible age. The increased reliance on intuitive processes

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* See Note A, p. 179.

would be interpreted as an abandonment of rationalism. The shift in priorities away from material and toward spiritual values would appear as a weakening of the work ethic and as a turning away from economic goals—imperiling both the state of the economy and the stability of economic institutions. The ethic of love and community would seem subversive to the national defense. Such interpretations would not be totally unrealistic, since the world in general is far from ready for such drastic value-changes, and partial moves in these directions would likely be interpreted as weakness.

At a more fundamental level, the implied responsibility of the individual for his own growth and development, in the evolutionary transformationalist view, can by itself evoke a resistance to entertaining this new image of humankind. Maslow (1962) described this phenomenon succinctly in a chapter entitled "The Need to Know and the Fear of Knowing":

> The great cause of much psychological illness is the fear of knowledge of oneself .... We tend to be afraid of any knowledge that could cause us to despise ourselves or make us feel inferior, weak, worthless, evil, shameful. We protect ourselves and our ideal image of ourselves by repression and similar defenses, which are essentially techniques by which we avoid becoming conscious of unpleasant or dangerous truths .... But there is another kind of truth we tend to evade. Not only do we hang on to our psychopathology, but also we tend to evade personal growth because this, too, can bring another kind of fear, of awe, of feelings of weakness and inadequacy. And so we find another kind of resistance, a denying of our best side, of our talents, of our finest impulses, of our highest potentialities, of our creativeness .... It is precisely the god-like in ourselves that we are ambivalent about, fascinated by the fearful of, motivated to and defensive against. (pp. 60–61)

Thus, at both the individual and societal levels, the implications of an evolutionary transformationalist image are bound to engender strong resistance. This would contribute to the disruption that inevitably accompanies a period of rapid societal change, such as the present transition from an industrial to some type of a post-industrial society. A paradoxical situation thus arises: even if the evolutionary transformationalist image is essential to a satisfactory resolution of the problems of advanced industrialism, actions designed to force the emergence of such a transformation could be socially disruptive.*

Let us turn now to a longer time perspective and the plausible characteristics of a society in which this image of humankind had become established. These must be considered tentative and incomplete speculations; but they do provide a basis for further discussion.

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* See Note B, p. 179.

Individual and Social Goals

The evolutionary transformationalist image must begin with the relatively deterministic confines of our socio-economic system. This is simply a recognition that, to a substantial degree, people's general pattern of behavior, perception, and motivation is conditioned by the imprinting force of our urban–industrial living environment:

> Instead of the economy being embedded in social relations, social relations are embedded in the economic system .... For once the economic system is organized in separate institutions, based on specific motives and conferring a special status, society must be shaped in such a manner as to allow that system to function according to its own laws.
>
> (Polanyi, 1944, p. 57)

Rather than accept and adapt to this societal context, the evolutionary transformationalist response would affirm the relative primacy and existential autonomy of the individual while still recognizing the deterministic socialization and stringent demands made by a highly developed society. Given the power of the industrial dynamic, the nature of the transformationalist task is substantial, and it seems not unfeasible that a variety of social and psychotechnologies would be embraced—but not in the mode of control. Thus, for example, behaviors consistent with operant conditioning might become commonplace not as the linear control (which most people fear), but as reciprocal influence (which is what it seems Skinner is talking about).*

Taking precedence over the dominant economic goals of growth and efficiency would be two complementary guiding ethics, the ecological ethic and the self-realization ethic. The ecological ethic expresses a concern for all peoples and life on the planet (a geographic dimension), for future generations of life (a time dimension), and for the interrelations of peoples, their states of consciousness, cultures, and institutions over time (a societal dimension). The self-realization ethic would highly value "life, liberty, and the pursuit of self-actualization."

A central activity of the self-realization ethic is the pursuit of one's vocation, which would include work–play–learning, all intertwined. A central societal goal, then, should be the full participation in this expanded vocation so that all individuals have access to one or more satisfying work–play–learning ways of life. This expanded sense of vocation would vastly increase the activities in which persons could receive affirmation by society and thereby develop and hold a healthy

* "I am not sure that 'reciprocal influence' is exactly what I am talking about. I am very much concerned about the future and certainly adopt what you call the ecological ethic rather than the self-realization ethic, which I regard as a rationalization of selfishness."—B. F. Skinner

self-image. It would also legitimate the purposeful thrust of sociocultural revolution to include individual self-evolution-of-consciousness.

For such an expanded sense of vocation to become a reality, material goals would have to be deemphasized, we would tend toward a steady-state economy, routine work tasks would become increasingly cybernated, and only a fraction of the work–play–learning force would be required to pursue activities directed at supplying material goods and services to society. The many other activities in individualistic combination should be meaningful, non-stultifying, and non-polluting. There is one area of activity which in particular might meet these conditions—learning—which in the broad sense includes personal exploration and research as well as social learning activity. Robert Hutchins (1968) describes "the learning society" as one that will have transformed:

> ... its values in such a way that learning, fulfillment, becoming human, had become its aims *and all its institutions were directed to this end.* This is what the Athenians did .... They made their society one designed to bring all its members to the fullest development of their highest powers ... Education was not a segregated activity, conducted for certain hours, in certain places, at a certain time of life. It was the aim of the society .... The Athenian was educated by the culture, by Paidea.

The central educational task fostered by Paidea was "the search for the Divine Center" (Jaeger, 1965). But the post-industrial society would differ from that of Athens in important respects. Its slaves will be machines, with the Faustian powers of its technology introduced to a new level of responsibility. It thus must become not only a social-learning society but a social-planning society. Helping to choose the future, then, would be a primary responsibility of citizens.

Another important area of change would be in the goals of corporations and particularly multinational corporations. As the latter become more powerful than most nation-states, it becomes essential that their operative goals shift to resemble those of public institutions. This means, specifically, that the priority in corporate goals would become something like the following: (1) to carry on activities that will contribute to the self-fulfillment of the persons involved, (2) to carry on activities that contribute directly to satisfaction of social needs and accomplishment of societal goals, and (3) to earn a fair profit on investment, not so much as a goal in itself (as at present) but as a control signal which monitors effectiveness. How might such a utopian-sounding situation come about? Does it not sound impractical and preposterous that corporations would be willing to relegate profitmaking to third priority? The social force that might bring about such a revolutionary change in operative goals is the subtle but powerful (and

poorly understood) influence of granting or withholding legitimacy. Governments have often felt the potency of legitimacy withdrawal. In mid-eighteenth century, as we have already noted, the suggestion would have seemed preposterous that a monarchy would soon be declared not legitimate by contrast with governments "deriving their just powers from the consent of the governed." Giant corporations today are feeling the challenge put to the divine right of kings two centuries ago. It assumes many forms—movements of consumers and environmentalists; civil rights and women's liberation; truth-in-advertising pressures; worker demands for improved quality of work environment; stockholder revolts. Awareness is growing that the largest corporations, at least, are in an important sense public institutions. Directly or indirectly (through life insurance policies, annuities, mutual funds, etc.) they are owned by a large fraction of the public and employ a large portion of the people; the public uses the goods and services they produce, and suffers the environmental degradation they produce. The wave of public challenge is forming.

Institutions

Many of our institutions seem to have inadvertently reached a critical size beyond which they are virtually uncontrollable in any coherent fashion. This fact of life was aptly described by Richard Bellman, in accepting the first Norbert Wiener prize for applied mathematics (1970):

> I think it's beginning to be realized that our systems are falling apart. We don't know how to administer them. We don't know how to control them. And it isn't at all obvious that we can control a large system in such a way that it remains stable. It may very well be that there is a critical mass—that when a system gets too large, it just gets automatically unstable.

We see these problems in our educational systems, in our legal systems, in our bureaucratic systems, in our transportation systems, in our garbage-collection systems, and so on. The inability to *sustain* stable subsystems (let alone the macro-system) suggests that a strong thrust toward decentralization would be a plausible concomitant to the transformationalist image of humankind.* Relatively autonomous subsystems would enhance diversity in our society, which is increasingly confronted with an underlying (and, at times, overriding) homogeneity

* See Note C, p. 179.

of physical structures, life-styles, and living environments generally. Relatively autonomous subsystems (whether in government, business, education, or elsewhere) that are oriented toward human growth would give many more citizens a greater sense of significance and meaning in a more approachable institutional environment.

As the social system becomes increasingly interdependent and complex, the need for accurate information becomes greater. Such accuracy presumes a fairly high degree of trust, honesty, and openness. Highly complex task operations, such as putting men in space or resolving the impending energy crisis, require a high level of honesty and trust; so too would building a humane society. For quite practical—as contrasted with moralistic—reasons, then, the demanded level of honesty and openness in an evolutionary transformationalist type of post-industrial era could be expected to increase, especially affecting such activities as advertising and merchandising.*

Similarly, as the complexity of societal operations increases, autocratically and hierarchically organized bureaucratic structures (whether business, education, government) tend to develop communication overloads near the top and discouragements to entrepreneurship and responsibility lower down. In order to sustain our complex societal system, we may systematically reconstitute massive bureaucratic structures into organizations with relatively autonomous subsystems (in effect, decentralization). This adaptive form of organization would seem better suited both to cope with complex tasks and to provide more satisfying work for the people involved.†

Another societal consequence might be the growth of the family from an atomistic unit of refuge to an extended unit, a larger source of meaning and significance. Experiments with a variety of family structures would be a legitimate endeavor in a society that encourages individual and interpersonal exploration of human-growth processes. In an extended context, the family might regain some of its traditional meaning as a source of education, broadly defined, and as a unit for work.

Given a relative deemphasis of economic growth and efficiency, and an enhanced concern for social, psychological, political and environ-

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* "If honesty and openness are correlated with an evolutionary transformationalist era, the possibilities for such an era would seem bleak if, as I fear, trust is eroding. We must still hope, but we must accurately assess the strength of the enemy amongst us."—Michael Marien

† "I believe you could make a real case for computer conferencing à la Murray Turoff, and electronic consensus taking, à la Etzioni, as means for decentralizing or making more democratic what could become a terrifying 'robopathic' way of life in affluent bureaucracy."—Robert A. Smith, III

mental matters, it seems plausible to think that the trend toward huge urban agglomerations would be reversed and populations would be redistributed with greater balance. There would likely be experiments with a diversity of living environments to allow people a greater range of trade-offs in selecting a community. In such a context, there may emerge increasingly sophisticated communal types of living environments which experiment with new institutional forms.

The societal changes we have discussed under the rubric of the "evolutionary transformationalist" may appear at first to be too radical. On the contrary, they are probably too conservative. Our task is the equivalent of standing in the Middle Ages and attempting to describe the culture and institutions after the Industrial Revolution.

We can hardly claim to have demonstrated that a shift toward the evolutionary transformationalist image of human-in-the-universe is well underway—especially since such a fundamental shift is historically so improbable. We may simply have made the hypothesis plausible. If so, then the questions raised here about the characteristics of a society dominated by the new image are of extreme importance. The greatest hazard in such a transition is that the anxiety level can raise to where the society responds with irrational and self-destructive behavior. The best safeguards are widespread understanding of the need for transformation and reassurance that there is someplace good to get to on the other side.*

SUMMARY

Winston Churchill stated that, "We shape our buildings and then our buildings shape us." Similarly, but in a larger and more pervasive sense, we are being irrevocably shaped by our unprecedented urban–industrial environment which is premised upon images of humankind whose historical origins are far removed from contemporary reality.

The decision to suppress image change or to allow societal and image transformation confronts us with an important branch point in our history. The consequences of our decisions in the next few decades will

* "Well, I agree with that! I find the 'hazard' almost inevitable, and the 'safeguard-widespread understanding' very unlikely! I do not want to be naively 'super-sophisticated' or on the side of those saying 'I told you so' when western civ. or mankind collapses . . . in fact I find the 'someplace good to get to' both in the present and in the future Image you postulate . . . but I do feel that your presentation of the 'evolutionary transformationalist' imagery suffers (as does Reich's 'Greening') from a one-sided optimistic or romanticized Imagery that undermines its credence."—David Cahoon.

endure long into the future:

> The environment men create through their wants becomes a mirror that reflects their civilization; more importantly it also constitutes a book in which is written the formula of life that they communicate to others and transmit to succeeding generations.
>
> (Dubos, 1968, p. 171)

Human beings can become adapted to almost anything and, since our physical and psychological endowments give us a wide range of adaptive potentialities, it is crucial to distinguish between those images that foster a short-term *tolerable* living environment and those that foster a long-term *desirable* living environment. The dynamic character of adaptability is illustrated by a laboratory demonstration in which a frog was placed in a beaker of boiling water and immediately jumped out; when the frog was placed in a beaker of cold water that was slowly warmed to boiling temperature, however, the temperature change was gradual and the frog adapted in increments, making no attempt to escape until he finally died. Analogously, the mere fact that a society can generate an image of the human and, for a time, adapt to it does not necessarily ensure that it would be a desirable thing to do. We can make errors and inadvertently accept images which may prove lethal both to our existence as being seeking to unfold our potentials, and to our physical existence as an evolving species. Given our capacity to adapt—even to the point of virtual self-destruction—it is difficult to know whether or not we may have already gone too far with our industrial images. Given the apparent momentum of the industrial dynamic, it is difficult to know whether we could turn back even if it seemed we had gone too far.

Nonetheless, we are still confronted with the existential choice: "... in matters of life ... it does not matter whether the chance for cure is 51 percent or 5 percent. Life is precarious and unpredictable, and the only way to live is to make every effort to save it as long as there is a possibility of doing so" (Fromm, 1968, p. 141). We can either involve ourselves in the recreative self and societal discovery of an image of humankind appropriate for our future, with attendant societal and personal consequences, or we can choose not to make any choice and, instead, adapt to whatever fate, and the choices of others, bring along.

> Life is occupied both in perpetuating itself and in surpassing itself; if all it does is maintain itself, then living is only not dying.
>
> (Simone de Beauvoir)

> To a significant extent, society is waiting, hoping that the impulse for change will settle around certain fundamental attributes of the American ethic. At the present

time, however, no consensus about the nature of these fundamentals exists. We are all looking for values that have deep roots as we attempt to sort out the durable from the ephemeral.

(*Wall Street Journal*)

NOTES

Note A

"Given my own pre-paranoid selective-perception 'set', the most convincing discussion of all is the drift into the Gross 'friendly fascism'! It is comforting to hear you affirm that this is 'an extreme outcome from the technological extrapolationist image and trend', and 'unintended to most people' but it seems to me we are well into it! The very crisis nature of our future seems to me to most likely increase the garrison-state dynamic:

- dissent, repression; more dissent, more repression;
- complexity-breakdown, engineered solution; more complexity-breakdown, more engineered solution;
- fear, surveillance; more fear, more surveillance . . . etc., *etc.*, ETC.!!.

"I wish I could see this whole thing more positively and creatively, but so far I can't, and your discussion just seems to reinforce my pessimism, though I'm certain the opposite is your intent!"—David Cahoon

Note B

"The 'genius' of the industrial-state paradigm is that it *did appeal to and unify the three levels of the self* (unconscious, conscious, super-conscious) you identify in Ch. 6. This was not a rational, conscious, intentional event, but what Tillich calls a 'kairos' historical form of a God–Destiny–Evolution consciousness-transformation ('an idea whose time has come'). Our 'transition' period in history and evolution consists in this; that the old kairos paradigm image is tarnished and dysfunctional, has lost its 'spirit' in the sense that it doesn't unify and inspire, and no longer 'points beyond itself to Being-Itself' consciously or unconsciously (Tillich's language in *The Courage To Be*, 'The Religious Symbol'). The new unifying 'kairos' imagery and vision of the post-industrial era has not yet coalesced, been evoked, been created, germinated.

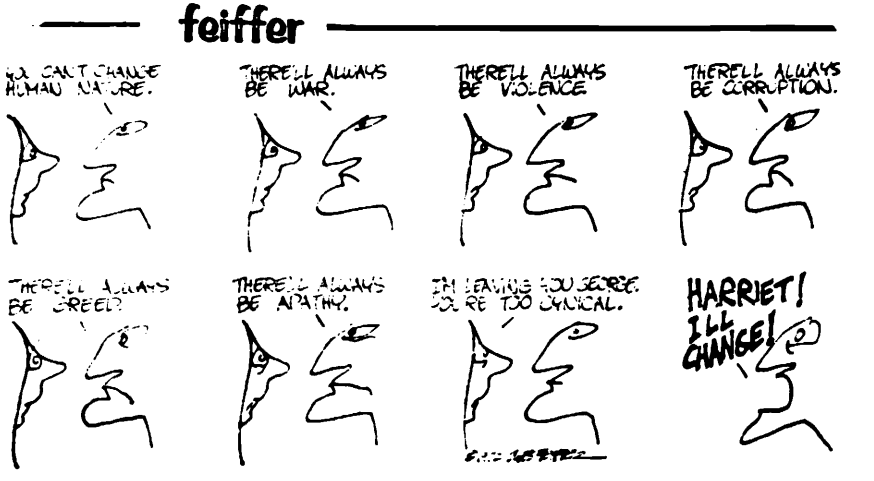
"Now, what seems *right* to me in your analysis is that the 'evolutionary-transformationalist' symbols, metaphors, images, etc. . . . catch up the *conscious* and *superconscious* components of the new emerging 'kairos' imagery; what seems weak or missing is the unconscious component, and as you rightly emphasize in this beautiful paragraph this cannot be consciously engineered or speeded up."—David Cahoon

Note C

"There are a couple of places in the text where you use language and make assertions that are not fully consistent with your general system theory concepts, [e.g.] the necessity for organizational decentralization. I am afraid that in the minds of most people this language evokes the classical centralization–decentralization dichotomy. The work of Lawrence and Lorsch at the Harvard Business School makes clear how misleading this image can be (see Lawrence, Paul R., and Lorsch, Jay W., *Organization and Environment*, Irwin, 1969). In a similar vein [below] you speak of the communication overload that attends hierarchical organization. This would be true only in the case of a linear nested hierarchy that seeks to maintain direct point-by-point control. General systems theory makes plain that it is the partial decoupling of information processing systems that yields

precisely that hierarchical form of organization necessary to the conservation of information and the regulation of complexity. But this is a far cry from simple decentralization as conceived by classical organizational concepts. I'm afraid that the 'New Federalism' suffers from this same defect. There is an essentially valid principle here that founders because the conventional expression fails to understand the epistemology of social processes.

"In general, the principal weakness of [your report] reflects the principal weaknesses of the literature that it synthesizes. There is no real understanding or expression of the nature of the very difficult problems of organizational transformation that must attend the transformation processes advanced as essential for the survival and evolution of an 'open society.' My Wiley book deals partially with these issues."—Edgar S. Dunn, Jr.



CHAPTER 8

Guidelines and Strategies for Transformation

In this final chapter we approach the difficult question from the practical person—what is to be done? What sorts of actions and programs do the foregoing arguments suggest? What could be accomplished by corporations, foundations, political agencies, voluntary associations?

We have not found it possible to respond satisfactorily without casting this discussion at a more personal level than the material of the first seven chapters. This is mainly because the actions that appear appropriate depend upon how one interprets the substance of the preceding discussion. One of the more frequent responses we received to an earlier version of this report was a request for candor, for a forthright statement of the conclusions we reached after immersing ourselves for some months in this material. This chapter starts with such a statement. The discussion reflects hope. It is an affirmation that what *could* be is worth examining even if the likelihood of its coming to pass seems small. Our honest observation is that our society is traveling full speed down the technological extrapolationist path described in Chapter 7, and that by the time the danger lights begin to glow brightly, it will be terribly late.

No blueprint will emerge from this examination, no specific set of research programs and institutional changes. If there are forces pushing toward an evolutionary transformation of the sort described in Chapter 7, they are firmly rooted in the past and their present momentums will have a major shaping effect on the future. Thus, a successful strategy probably needs to be an incremental and an adaptive one.

SOME PREMISES FOR THE PRESENT DISCUSSION

We start with five premises that grow out of the preceding discussions.

1. *An interrelating set of fundamental dilemmas, growing apparently ever more pressing, seem to demand for their ultimate resolution a drastically changed image of man-on-earth.* We seem able to tolerate neither the ecological consequences of continued material growth nor the economic effects of a sudden stoppage. We fear the implications of

greatly increased control of technological development and application, yet sense that such control is imperative. We recognize the fatal instability of economic nationalism and a growing gap between rich and poor nations, yet seem unable to turn the trend around. We seem unable to resolve the discrepancy between man's apparent need for creative meaningful work and the economic imperatives that cause much human labor to become superfluous or reduce it to makework. A massive challenge is growing to the legitimacy of a business–government system wherein pursuit of economic ends results in such counteracting of other human ends. We face a cultural crisis of meaning—it is not clear who is at the helm, how the ship is steered, nor what distant shores we should be aiming for. In a way it is a crisis of awareness, a set of situations which with less awareness might seem more tolerable.

A serviceable image of humankind must reflect interdependence of the Nature that modern man once misguidedly sought to "control," and with the social-technological systems on which his survival has come to depend, and whose complexity he is yet unable to comprehend. It must provide humanity with a meaning for its struggles, above and beyond that involved in learning to manipulate the physical environment. It must enable humankind to appreciate and deal with the peril which its unbridled Faustian powers of technology have brought upon it.

2. *There are increasingly evident signs of the imminent emergence of new "image of man."* It is a new image in the sense of being very much a challenger to the dominant scientific world view as that has evolved over the past few centuries, and also to the image of materialistic "economic man" that become enshrined in the institutions and economic theories of the industrial era. Yet it is not new, since traces of it can be found, going back for thousands of years, in the core experiences underlying the world's many religious doctrines, as reported through myths and symbols, holy writings, and esoteric teachings. The staying power of the new image is suggested by the facts that it reactivates the cultural myths whose meaning had become forgotten, and it seems to be substantiated by the further advances of the science which earlier played a role in seemingly discrediting it (see Chapter 4).

Chapter 6 described some characteristics of the "image of man" which is at once compatible with the reemergent "Perennial Philosophy" and is well adapted for dealing with humankind's contemporary dilemmas. Of special interest to the Western world is that Freemasonry tradition which played such a significant role in the birth of the United States of America, attested to by the symbolism of the Great Seal (on the back of the dollar bill).

Fig. 17. U.S. one-dollar bill.

In this version of the transcendental image, the central emphasis is on the role of creative work in the life of the individual. (In "true Freemasonry" there is one lodge, the universe—and one brotherhood, everything that exists. Each person has the "privilege of labor," of joining with the "Great Architect" in building more noble structures and thus serving in the divine plan.) Thus this version of the "new transcendentalism" (perhaps more than other versions imported from the East more recently) has the potentiality of reactivating the American symbols, reinterpreting the work ethic, supporting the basic concepts of a free-enterprise democratic society, and providing new meanings for the technological–industrial thrust. At the same time, it is compatible with other versions more indigenous to other parts of the globe.

3. *There is a serious mismatch between modern industrial-state culture and institutions and the emerging new image of man.* This mismatch produces such reactions as the growing challenge to the legitimacy of business institutions whose primary allegiance appears to be to their stockholders and managers, the growing disenchantment with the technocratic elite, the decreasing trust and confidence in governments, all revealed in recent survey data. The mismatch could result in serious social disruptions, economic decline, runaway inflation, and even institutional collapse. On the other hand, institutions can modify themselves and adapt to a new cultural paradigm, though probably not without a relatively traumatic transition period.

4. *There is, and will continue to be, deep psychological resistance to both the new image and to its implications.* No aspect of a person's total belief-and-value system is so unyielding to change as his basic sense of identity, his

self-image. It is a well-known phenomenon in psychotherapy that the client will resist and evade the very knowledge he most needs to resolve his problems. A similar situation probably exists in society and there is suggestive evidence both in anthropology and in history that a society tends to hide from itself knowledge which is deeply threatening to the *status quo* but may in fact be badly needed for resolution of the society's most fundamental problems. The reason contemporary societal problems appear so perplexing may well be not so much their essential abstruseness and complexity as the collective resistance to perceiving the problems in a different way.

5. *The degree to which the needed characteristics described in Chapter* 5 *are realized may well determine the degree to which highly undesirable future outcomes* (*economic collapse, a garrison-police state*) *can be avoided.* The emerging image of humankind has increasingly widespread acceptance and long historical roots. It can be opposed and suppressed, but probably at great social cost. The necessary condition for a stable society in the medium-term future (say 1990) is that the behavior patterns and institutions of the society shall have transformed themselves to be compatible with the new image.

These five premises are in their essence not demonstrable. Thus, we make no pretense of having proven them in any sense. They are in general supported, however, by the evidence and arguments presented in the previous chapters. They can be checked against new information as it becomes available, to verify whether or not they receive further support. Thus, it is appropriate to explore what sorts of actions would be indicated *if* these propositions were to be accepted.

COMPARISON OF BASIC STRATEGIES

In the following analysis we concentrate on strategies for the United States. They would be similar, but with important differences, for other parts of the industrialized world, especially the nations with planned economies. Significantly different strategies would be appropriate for those Third-World nations with resources valued by the industrialized world (mainly fossil fuels and minerals). The situation is still more different for that residual "fourth world" of nations that have no resources other than poor land and poor people.

Furthermore, we emphasize the roles of the powerful political and economic institutions of the technologically advanced world because it appears to be there that the main decisions will be made which will determine the smoothness or disruptiveness of the transformation. It is

our purpose not to list specific tactics, other than as exemplars, but rather to indicate guiding criteria for decisions and actions.

It will be useful to contrast five different basic strategies through which a desired transformation might be fostered. These are *restorative, stimulative, manipulative, persuasive,* and *facilitative.*

The fundamental goal of a *restorative* strategy would be to restore the vitality and meaning of past images, symbols, institutions, and approaches to problems, which are believed to have worked successfully in some prior period and hence are judged to be appropriate in the present. Wallace, in his study of cultural revitalization movements (1956), found that this strategy has particular appeal during the beginning stages of the revitalization cycle, when the extent of the crisis has not yet been recognized. In later stages, however, attempts to revert to earlier forms come to be seen as clearly inadequate; hence, other strategies are then adopted.

A *stimulative* strategy has as its fundamental goal the emergence of new images, approaches, or actions that are desired but that are "premature"—they do not fit the prevailing paradigm and hence would not be very likely to attract support from mainstream institutions in the society. The foci of stimulative strategies would tend to be actions that anticipate a new paradigm, but do not yet have much visibility or legitimacy. Such a strategy is especially appropriate when it is becoming clear that a crisis exists and the inadequacies of the old structures and concepts in a society (or a science) are being revealed. (Wallace calls this "cultural distortion" and Kuhn terms it a "crisis" involving a breakdown of the old paradigm.)

While a stimulative strategy seeks to alter the institutions, values, and behavior patterns of society in such a way as to honor or increase the freedom of choice of individuals in the society, a *manipulative* strategy attempts to accomplish a similar result through overtly or covertly reducing individual freedoms. Some manipulative tactics may be direct (as with the passage of a law); others may be more indirect (as with editorial policies in the media, or "confrontation politics" in the counter-culture). This approach is more likely to be used by well-established interests that are challenged by newer ones. As we saw, however, it was effectively used in Germany to bring about dominance of a new image of man and of the Fatherland, and it could be so used again.

A *persuasive* or propagandistic strategy has as its goal persuading others of the rightness, utility, and attractiveness of a given image, conception, or way of acting. This strategy is an essential part of the political process, whether in the governmental activities of pluralistic democracies and totalitarian states alike, or in the deciding between competing scientific theories.

A *facilitative* strategy seeks to foster the growth of new images and patterns that are visibly emerging. The main purpose of the support may be less to hasten or ensure the development than to help bring it about with lowered likelihood of social disruption.

If we examine these five approaches in the context of the five premises listed earlier, some seem appropriate and others much less so to the transformation under consideration (from the industrial-era image to the emergent transcendental–ecological one). The manipulative type of strategy, for instance, is in such direct conflict with the self-realization ethic that it could not be used without risking severe distortion of the state it seeks to bring about.

Restorative strategies can play an important role in the present transformation because of the fact that the new, emerging image is essentially that of the Freemasonry influence which was of such importance in the shaping of the nation's foundations. The activities of the "Heritage" segment of the American Revolution Bicentennial are mainly an attempt to recapture a waning American spirit, although they could serve to promote the new image by reminding us of the transcendental bases of the nation's founding (e.g. the all-seeing eye as the capstone of the pyramidal structure in the Great Seal).

It is relatively easy to generate stimulative strategies from the discussions of earlier chapters. For example, practically all the areas of scientific research listed in Chapter 4 would furnish likely candidates—altered states of consciousness and psychic research to name a couple. Also, various educational and institutional-change strategies come to mind. Appendix E lists a number of such stimulative strategies. There is a caution to be kept in mind, however. Once a societal transformation is underway, as this one appears to be, social stability becomes a central problem. It is essential to have as accurate a picture as possible of the total state of affairs, so that research related to anticipating the nature and characteristics of the transformation rightly assumes high priority. Widespread anxiety and the hazard of inappropriate and irrational responses can be kept lower with accurate information. On the other hand, stimulative actions that result in too rapid a change could be overly disruptive. It is even conceivable that once into the transition period, actions contributing to social cohesion might be much more constructive than actions to increase the polarization between the transformation enthusiasts and the conservatives.

Other than in the passage of laws, manipulative strategies, insofar as the five initial premises hold up, would appear to be incompatible with the emerging image. No doubt existing consciousness-changing, behavior-shaping, subliminal persuasion, and other conditioning techniques could be used to accomplish some sort of transformation of

sobering proportions (we ought to be able to be more effective than Nazi Germany). However, the use of manipulative techniques for this particular transformation conflicts fundamentally with the goals implicit in the transformation. Thus, they would probably in the end be disruptive and counterproductive.

Persuasive techniques that fall short of manipulation are unlikely to be very effective. The reason is that one characteristic of such a transition period as we seem to be entering is low faith in, disenchantment with, and cynicism regarding both scientific and political leadership.

The most appropriate strategies, *if* the initial premises are accepted, would appear to be *facilitative* ones. The transformation has its own dynamic; it can probably not be slowed down or speeded up very much by political action, once it has enough momentum to be visible. But the trauma of the transition, the amount of social disruption, economic weakening, and political confusion can probably be affected a great deal by the degree of understanding of what the transformation process is, why it is necessary, and what the inherent goals are. To use a biological metaphor, the woman beginning to experience labor pains and associated physiological changes is much more likely to approach the birth experience with low anxiety, and hence to avoid tensing up and doing the wrong things, if she understands the nature of pregnancy and its inherent goal, than if she had no idea of the process or where it leads.

Perhaps another comparison is even more pertinent. We have earlier noted that societies in transformation bear a certain resemblance to individual behaviors accompanying a psychological crisis. The dislocation known as a psychotic break is sometimes brought on by the total unworkability of the person's life pattern and belief system, such that the whole structure seems to collapse and need rebuilding. Prior to the crisis the person, to a disinterested observer, is seen to be engaging in all sorts of irrational behavior in his frantic attempts to keep from himself the awareness that his personal belief, value, and behavior system was on a collision course with reality. Under favorable circumstances the individual goes through the crisis, uncomfortably to be sure, and restructures his life in a more constructive way. In an unfavorable environment, of course, the episode can escalate into a catastrophe. In the case of a society a parallel condition to the psychotic break can occur, with a relatively sharp break in long-term trends and patterns. The analogues of irrational individual behavior may appear (social disruptions, violent crime, alienation symptoms, extremes of hedonism, appearance of bizarre religious cults, etc.). Massive denial of realities may occur (e.g. with regard to exponential increases in popu-

lation or energy use). The society may go to extreme measures to hide from itself the unworkability of the old order and the need for transformation. The transformation itself, like the psychotic break, may come almost ineluctably—and as with the individual, favorable and unfavorable outcomes are both possibilities. What we have termed facilitative strategies can be likened to the sort of care that may help bring about a favorable outcome.

SALIENT CHARACTERISTICS OF THE TRANSFORMATION

Assuming, then, that primary emphasis should be placed on strategies to *facilitate* a non-disruptive transformation, it follows that those strategies will be incremental ones, dynamically adapting to a rapidly changing situation, and guided by an understanding of the nature and necessity of the transformation and of the essential conditions for a favorable outcome from a traumatic transition period. We need, therefore, to examine the salient characteristics of the tranformation.*

Nature of the Fundamental Anomaly

The central feature of the hypothesized transformation is that its ineluctability comes about, as indicated in Chapter 3, because of a major and growing discrepancy between the cultural and social products of industrialization, on the one hand, and generally desirable human ends on the other. A fundamental anomaly exists of the following sort:

- The basic system goals that have dominated the industrial era (material progress, private ownership of capital, maximum return on capital investment, freedom of enterprise, etc.),
- and that have been approached through a set of intermediate goals that include efficiency, economic productivity, continued growth of technological-manipulative power, and continued growth of production and consumption,
- have resulted in processes and states (e.g. extreme division of labor and specialization, compulsive replacement of men by machines, stimulated consumption, planned obsolescence, exploitation of common resources, environmental degradation, worsening world poverty) which
- culminate in a counteracting of human ends (e.g. enriching work roles, self-determination, conservation, wholesome environment, humanitarian concerns, world stability).

Put another way, the fundamental anomaly is that "good" micro-decisions, i.e. local decisions made in accordance with prevailing rules and customs, currently do not add up to socially good macro-decisions.

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* Anthropologist Virginia H. Hine's thinking about "The Basic Paradigm of a Future Socio-cultural System" (reprinted in Appendix F) is relevant to this discussion.

Individuals, corporations, government agencies in the course of their activities make micro-decisions (e.g. to buy a certain product, to employ a person for a particular task, to develop and market a new technology, to enact a minimum-wage law) that are guided by a web of cultural and habitual behavior patterns, common values and beliefs. These micro-decisions interact to constitute a set of macro-decisions of the overall society (e.g. a 4 percent annual growth rate in energy usage, degradation of the environment, depletion of non-renewable resources) which, if Adam Smith's "invisible hand" were working properly, would be compatible with the cultural aims and objectives of the society. The degree of compatibility has for some time been visibly deteriorating.

The response to this fundamental anomaly is a massive and intensifying challenge from consumers, environmentalists, minorities, workers, civil libertarians, youth, and others, to be the legitimacy of basic system goals and institutions. If economic and business goals do not appear to be congruent with social goals, if "good" business decisions lead to "bad" social decisions, this suggests the need for fundamental changes in dominant institutions and social paradigms, to bring the functioning of the society into harmonious relationship with the dominant cultural image of human life. To this end some have proposed one and another form of "new socialism" to increase the governmental regulatory responsibilities over the micro-decision-making of the citizenry and private-sector institutions.

It is important to note, in this connection, that the fundamental anomaly described above is essentially a characteristic of technological and industrial success, not of a particular form of government. Thus, although its form is somewhat different, a similar sort of fundamental dilemma is found in industrially advanced collectivist nations with centralized social planning.

Essential Conditions for Resolution of the Fundamental Anomaly

This is not the place for an exhaustive discussion of the changes necessary for society to resolve this basic dilemma. It is important to our aims, however, to understand some of the conditions that will have to be met as we muddle or plan our way through to a satisfactory resolution.

In the first place, there will have to be some satisfactory coming to terms with the "new scarcity." Scarcity (of food, potable water, construction materials, etc.) has always been an aspect of the condition of human life. It has in the past rather successfully been considered as remediable by advancing frontiers and adequate technology. In some sense it has thus been all but eliminated in the advanced nations. The

"new scarcity" is of a different sort. It arises from approaching the finite planetary limits (1) natural storehouses of fossil fuels and strategic materials, (2) the ability of the natural environment to absorb the waste products of industrialized society, (3) fresh water, (4) arable land, (5) habitable surface area, and (6) the ability of natural ecological systems to absorb interventions without risking ecological catastrophes that threaten human life. (In speaking of "finite limits" we recognize that the limits are not rigid constraints, and are interdependent. Were "clean" fossil fuels available in unlimited supply, for example, limits in the other categories would be altered.) There has to be a reconciliation of the "new scarcity" and of a culture of frugality with the conditions for a healthy economy. To the extent that this can be accomplished through institutional and cultural changes guided by a new image of "man-on-earth," fewer constraints will be placed on enterprise and individual liberties.

A second essential condition is the provision of sufficient opportunities for full and valued participation in the society. In other words, there has to be a solution to the psychological-cultural problem of the growing group of persons in an industrialized society who are defined as out of the mainstream, as having little or nothing to offer in what are taken to be the primary activities of the society, and who come to accept for themselves the damning self-image of superfluousness. In a modern society where productiveness comes from position in a productive organism, the individual without the organization is unproductive and ineffective; unemployment and underemployment endanger self-respect and effective citizenship. Because of the deep individual need for productive and significant work, none of the current welfare and job-creation approaches offers much hope of reaching to the roots of the unemployment problem. Treating work opportunity as a scarce commodity (e.g. raising work-entry age and lowering retirement age, inflating entry criteria, refraining from cybernation of routine operations, maintaining disguised featherbedding and makework) is in the end an unsound approach. Adequate resolution would offer full and valued participation in the ongoing societal evolution to all who want it.

These two basic conditions imply a third, namely, a satisfactory resolution of the control dilemma. On the one hand, to deal with the problems of the "new scarcity," with the cultural (as distinguished from the economic) goal of full employment, and with the growing powers of technology to change any and all aspects of the total environment (physical, social, political, psychological), there is a demonstrated need for some form of effective societal planning and control. On the other hand, there are well-founded fears of the consequences of opting for

more governmental control. It remains to be shown that a democratic society can deal with the "new scarcity," provide sufficient and suitable social roles, anticipate and guide technological impacts, and protect the interests of the overall society, and yet preserve the basic characteristics of a free-enterprise system.

Fourth, the problem of obtaining more equitability in distribution of the earth's resources will have to be dealt with. Inequities and maldistributions are not new in human history, but with the appearance of the "new scarcity" they present a new face. The achievement of a level of life in accord with fundamental dignity for the world's nearly three billion poor does not appear possible without continued economic growth in both developing and developed nations. And yet economic growth on the pattern of the past poses an undeniable threat to stocks of non-renewable resources, to the environment, and to the health of man. Furthermore, the expectations and demands of the lesser developed world may well come at such a pace that they can be met only by a lowering of the standard of living in the rich nations.

Thus, in the process of resolving the fundamental anomaly of the industrial-state system, all four of the critical problem areas enumerated above will have to be dealt with. An essential precondition is an image of man-on-earth something like that described in Chapter 6, or at least meeting the conditions laid down in Chapter 5.

Two additional characteristics of the "necessary transformation" deserve mention. Both have to do with the ways in which the changes are stimulated and guided. The first relates to Adolph Lowe's observation (1965) that the state of an economic system depends upon behaviors, which in turn depend upon motivations, which depend upon images, beliefs, and values—and thus interventions for change could be contemplated at any of these levels. Behavior patterns can be altered by authoritarian controls, motivations can be affected by psychological conditioning, and beliefs and values are modified by education. Because of the images implicit in this particular historical transformation, it would seem that at least in the long term, authoritarian measures and manipulative conditioning approaches would be incompatible with the emergent state and hence of doubtful effectiveness. The possible exception to this might be a temporary measure to help hold things together during a disruptive transition period, but even here the society would be well advised to use such approaches with caution.

A second and related characteristic has to do with contrasting responses to the challenge of the four key problems above. As Galbraith and others have noted, when the thousand largest (mainly multinational) corporations in the world attained such size and power that

their incomes are larger than the majority of nation-state incomes, their role in contributing to societal macro-decisions is significantly altered. No longer are they simply subject to market forces; in an important sense they exert control over the market. No longer are they simply subject to the controls imposed by national governments; in an important sense they exert control over national governments. Thus, there arises a demand that the largest corporations assume a social responsibility toward all those (a worldwide group) whose lives they affect. One way in which this might come about is represented in arguments for a "new socialism" in which important industries might be nationalized (e.g. energy supply) and business would be subjected to more control by government to ensure that society's macro-decisions would be strongly influenced by elected representatives of the people affected. An alternative response might be termed "new privatism" by contrast. This response would involve recognition that legitimacy is conferred or withdrawn in various ways besides elected representation, and it would entail modifications to the operative goals of corporations such that they include, on a par with earned return to stockholders, the two additional goals of providing opportunities for meaningful work (as output, in addition to goods and services) and providing tangible benefits to society. Stockholders, after all, represent only one group who have an investment in the corporations—employees invest some portion of their lives, and the society invests its trust toward the shaping of the future.

Difficulty of Achieving a Non-disruptive Transition

To restate the premises with which we began this chapter, we can see two important dynamics bringing about a major historical transformation, from the industrial era as we have known it to some sort of "post-industrial" society (though not in the sense in which Daniel Bell has used the term, which is much more the technological–extrapolationist future of the preceding chapter). One of these dynamics is the growing espousal of a new image of humankind, as described earlier in this volume. The other is the progressive awareness of the ultimate unworkability of the industrial paradigm as we have known it thus far.

It daily grows more abundantly clear that the Industrial Age is running into trouble. The cultural premises and images that fostered scientific, technological, industrial, and economic growth are proving to be maladapted to the humane use of the products of that growth. The emergent "image of man," with its implicit ecological ethic and self-realization ethic, points the way to resolution of the contradictions of

the industrial era. On the other hand, as was pointed out in Chapter 7, institutional changes may already be lagging behind basic changes in the culturally dominant images, and actions taken to further hasten emergence of the new image could be socially disruptive. (Something like this seems to have taken place during the psychedelic period when Timothy Leary's advice to the young to "tune in, turn on, and drop out" added its bit to the disorder of the times.)

Thus, the appropriate question may be not so much how to bring about a transformation (even if one is quite convinced the situation is exigent), but rather how to facilitate a non-catastrophic transition when the dynamics for transformation are already there.

ELEMENTS OF A STRATEGY FOR A NON-CATASTROPHIC TRANSITION

Based on the foregoing considerations, six elements of an overall strategy for a minimally disruptive transition are discussed below. It is a provisional strategy, in the sense that we assume events of the next few years will continue to support the five initial premises. But we offer no apology for strongly recommending the strategy, as long as this is coupled with the recommendation to continue testing the premises.

1. *Promote awareness of the unavoidability of the transformation,* as a first essential element of the strategy. Pulled by the emergence of a "new transcendentalism" and pushed by the demonstrated inability of the industrial-state paradigm to resolve the dilemmas its successes have engendered, the fact and the shape of the necessary transformation are predetermined. Growing signs of economic and political instability indicate that the time is at hand. No more than the pregnant woman approaching the time of her delivery can we now stop and reconsider whether we really want to go through with it. The time is ripe for a great dialogue on the national and world stage regarding how we shall pass through the transformation, and toward what ends.

2. *Construct a guiding version of a workable society,* built around a new positive image of humankind and corresponding vision of a suitable social paradigm. As the old order shows increasing signs of falling apart, some adequate vision of what may be simultaneously building is urgently needed for mobilization of constructive effort.

Perhaps the most crucial need of our time is to foster the dialogue about, and participatively construct, such a shared vision. (It is almost self-evident that an effective image of a humane high-technology

society, congenial to the new image of humankind, would have to be participatively constructed—not designed by a technocratic elite nor revealed by a charismatic leader.) Chapter 7 describes some of the broad characteristics of an evolutionary-transformation future. But the guiding vision must be more specific than this. In particular, the four dilemmas of the "new scarcity," the changing role of work, control of technology, and more equitable sharing of the earth's resources must be satisfactorily "re-visioned."

There must be a new economics, if not steadystate in a strict sense, at least compatible with the constraints of the "new scarcity." An economic theory and practice always implies a psychology or, more particularly, a set of assumptions about human motivation. If motivations change, because the basic picture of man-on-earth and man-in-the-cosmos has altered, then economics must change. If the old economics required steady material growth as a necessary condition for a healthy economy, it does not follow that the new economics will likewise. Similarly, the definitions of good corporate behavior and good business policy depend upon tacit social agreements about the bases for legitimation, and change when those bases change. It may seem wildly utopian in 1974 to think of the multinational corporations as potentially among our most effective mechanisms for husbanding the earth's resources and optimizing their use for human benefit—the current popular image of the corporation tends to be more that of the spoiler and the exploiter. But the power of legitimation is strong, as discussed in Chapter 7, and the concept is growing that business must "derive its just powers from the consent of those affected by its actions." The vision of a workable future must include a resolution of the present unsatisfactory situation where what is apparently sound business practice and good economics is often very unwise when viewed in the light of the "new scarcity."

Second, the guiding vision has to include some way of providing for full and valued participation in the economic and social affairs of the community and society, especially for those who are physically and mentally able to contribute but find themselves in a state of unwilling idleness and deterioration of spirit. Here too there seems to be a fundamental wrongheadedness in the conventional way of formulating our economics. It is implicit in that formulation that laboring is something man tends to avoid. The outputs of the private sectors are considered to be goods and services, which persons produce for pay. But according to the emergent image of man this calculus is based on faulty premises. Human beings seek creative work, and find it is the means of their own self-realization. Thus, the outputs of the private sector should be goods, services, *and* opportunities for meaningful

work. The new society will have to provide for significant expansion of social-learning and social-planning roles, as discussed in Chapter 7, and also for expansion of productive roles for those whose capabilities are more modest.

The control dilemma requires for its resolution an effective network for participative planning at local, regional, national, and world levels, and again modifications to the economic incentives which at present make it good business to do violence to the environment, squander natural resources of all sorts, and treat persons as manipulable objects.

The fourth dilemma, the need for more equitable distribution of resources, may prove to be the most difficult of all to resolve, considering the exploding numbers of the earth's human beings. We have found it comfortable to believe, for some time, that the solution to the problem of the world's poor is not redistribution of wealth but helping the poor become productive. But the constraints of the "new scarcity" preclude solving the problem this way. At any rate, the poor of the world cannot become productive as America did, by exploiting cheap energy and institutionalizing waste as a way of life.

3. *Foster a period of experimentation and tolerance for diverse alternatives,* both in life styles and in social institutions. Experimentation is needed to find out what works, but there is a more important reason for trying to maintain an experimental climate. That is to reduce hostile tensions between those who are actively promoting the new and those who are desperately attempting to hold on to the old. In public education, for instance, it is equally important that new experimental curricula be tried and that the traditional subjects be available for those who resist moving precipitously into the new.

4. *Encourage a politics of righteousness, and a heightened sense of public responsibilities in the private sector.* Surveys and polls display drastically lowered faith of the American people in both business and government. At the same time, an atmosphere of trust is needed for the tasks ahead, the emergent image of man supports a moral perspective, and private lapses from moral and ethical behavior are harder to conceal. A politics of righteousness might have been laudable in any generation; it may be indispensable for safe passage through the times just ahead. A greatly heightened sense of stewardship and public responsibilities for powerful institutions in the private sector is the appropriate response to rising challenges to the legitimacy of large profit-seeking industrial corporations and financial institutions. If these are to be more than merely pious statements, changes in institutional arrangements and

economic incentives will need to be instituted so that individuals and institutions can *afford* to behave in these commendable ways.

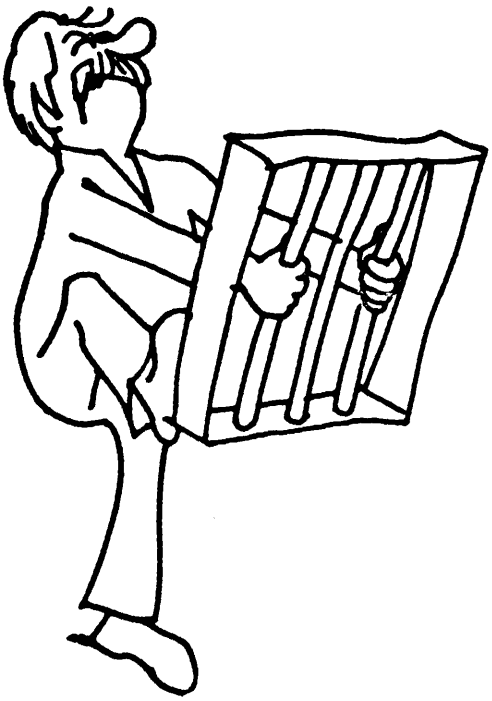
5. *Promote systematic exploration of, and foster education regarding, man's inner life.* At the end of Chapter 4 we postulated an emergent scientific paradigm placing far more emphasis than in the past on explorations of subjective experience—of those realms that have heretofore been left to the humanities and religion, and to some extent to clinical psychology. The present situation leaves far too much of this societally important research to informal and illicit activities. Interested persons, not all young, resort to cultish associations, bizarre experimentation, and illegal drug use because they find legitimated opportunities for guided exploration in the society's religious, educational, scientific, and psychotherapeutic institutions to be inadequate, inappropriate, or inaccessible. This nation's guarantees of religious freedom have been in a curious way subverted by the preponderating orthodoxy of a materialistic scientific paradigm.

6. *Accept the necessity of social controls for the transition period while safeguarding against longer-term losses of freedom.* The transformation that is underway has a paradoxical aspect, according to the five initial premises. In considerable measure it has been brought about by the success of material progress (through better nutrition, higher standard of living, education, and the media) in raising more persons above excessive concern with subsistence needs. On the other hand, as the transition-related economic decline and social disruptions set in, they will tend to accentuate materialistic security needs. Political tensions will rise, and disunity will characterize social affairs. Regulation and restraint of behavior will be necessary in order to hold the society together while it goes around a difficult corner. The more there can be general understanding of the transitory but inescapable nature of this need, the higher will be the likelihood that a more permanent authoritarian regime can be avoided.

This is no strategy of "business as usual," if these six elements are taken seriously. They can contribute to a more orderly transformation, with fewer social wounds to be healed, than would be otherwise the case. Appendix E lists some exemplary specific actions that might be part of implementing such a strategy.

One last word. The general tone of this work has been optimistic, which is fitting since there does indeed appear to be a path—through a profound transformation of society, the dynamics for which may already be in place—to a situation where the present major dilemmas of the late-industrial era appear at least resolvable. That optimism,

however, relates to the potentialities only. It should not be mistaken for optimism that industrial civilization will develop the requisite understanding, early enough, to enable it to navigate these troubled waters without nearly wrecking itself in the process. In hoping this, some of us would be less sanguine.



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Summary

Images of humankind which are dominant in a culture are of fundamental importance because they underlie the ways in which the society shapes its institutions, educates its young, and goes about whatever it perceives its business to be. Changes in these images are of particular concern at the present time because our industrial society may be on the threshold of a transformation as profound as that which came to Europe when the Medieval Age gave way to the rise of science and the Industrial Revolution.

In this study we have attempted to:

1. illuminate significant ways our society has been shaped by myths and images or the past;
2. explore key deficiencies of current images of man and identify characteristics needed in future images; and
3. derive guidelines for actions to facilitate the emergence of more adequate images of humankind, and of a better society.

We have concentrated particularly on an analysis of images which derive from industrialism and science, exploring ways in which these might be transformed so as to further both personal and cultural evolution.

The recent industrial-state era can be typified by a number of almost certainly obsolescent premises, such as:

- That progress is synonymous with economic growth and increasing consumption.
- That mankind is separate from nature, and that it is the human destiny to conquer nature.
- That economic efficiency and scientific reductionism are the most trustworthy approaches to fulfillment of the goals of humanity.

Such premises were very appropriate for the transition from a world made up of low-technology agrarian endeavors and city-states to one dominated by high-technology nation-states; they helped provide a seemingly ideal way to increase humankind's standard of living and to bring problems of physical survival under control. But their successful realization has resulted in an interconnected set of urgent societal problems which likely cannot be resolved if we continue to accept those premises; they now appear ill-suited for the further transition to a planetary society that would distribute its affluence equitably, regulate

itself humanely, and embody appropriate images of the further future.

If the post-industrial era of the future is dominated by the industrial-era premises, images, and policies of the past, the control of deviant behavior needed to make societal regulation possible would in all likelihood require the application of powerful socio- and psycho-technologies. The result could well be akin to what has been termed "friendly fascism—a managed society which rules by a faceless and widely dispersed complex of warfare–welfare–industrial–communications–police bureaucracies with a technocratic ideology." Evidence exists that this sort of future is already nascent.

In contrast to such a "technological extrapolationist" future, this report envisions an "evolutionary transformation" for society as a more hopeful possibility.

Some characteristics of an adequate image of humankind for the post-industrial future were derived by: (1) noting the direction in which premises underlying the industrial present would have to change in order to bring about a more "workable" society; (2) from examination of the ways in which images of humankind have shaped societies in the past; and (3) from observation of some significant new directions in scientific research. A future "image of man" meeting these conditions would:

1. convey a *holistic sense* of perspective or understanding of life;
2. entail an *ecological ethic*, emphasizing the total community of life-in-nature and the oneness of the human race;
3. entail a *self-realization ethic*, placing the highest value on development of selfhood and declaring that an appropriate function of all social institutions is the fostering of human development;
4. be *multi-leveled*, *multi-faceted*, and *integrative*, accommodating various culture and personality types;
5. involve *balancing* and *coordination* of *satisfactions* along many dimensions rather than the maximizing of concerns along one narrowly defined dimension (e.g. economic); and
6. be *experimental*, *open-ended*, and *evolutionary*.

It appears to be at least conceptually feasible that a future image of humankind having these characteristics could "work." Further, specific steps can be undertaken through which the facilitation and promulgation of such an image might be accomplished. By comparing the conclusions drawn by investigators in fields ranging from mythology to the history of science, a number of stages in a seemingly universal "cycle of transformation" are presented to help formulate such next steps.

But there exists little evidence to suggest that a change in the dominant image could be accomplished by rational deliberation, planning, and organized activity—or that the results of such manipulative rationality would necessarily be benign. On the other hand, whether by fortunate circumstance or creative unconscious processes, an emerging image with many of the needed characteristics does seem to have made its (re)appearance.

This emerging image reinstates the transcendental, spiritual side of humankind, so long ignored or denied by that official truth-seeking institution of modern society, science. The new image denies none of the conclusions of science in its contemporary form, but rather expands its boundaries. In a manner reminiscent of the well-worn wave-particle example from physics, the new image reconciles such pairs of "opposites" as body/spirit, determinism/free will, and science/religion. It includes the inner subjective as well as the outer objective world as valid areas of human experience from which knowledge can be obtained. It restores, in a way, the balance between the Middle Ages' preoccupation with the noumenal and the industrial era's preoccupation with the phenomenal. It brings with it the possibility of a new science of consciousness and ecological systems not limited by the manipulative rationality that dominates the science and technology of the present era.

The issues raised in this report are crucial ones. Indeed if the analysis is accurate, our society may be experiencing the beginning of an institutional transformation as profound in its consequences as the Industrial Revolution, and simultaneously a conceptual revolution as shaking as the Copernican Revolution.

History gives us little reason to take comfort in the prospect of fundamental and rapid social change—little reason to think we can escape without the accompanying threat of economic decline and social disruption considerably greater than anything we have experienced or care to imagine. If in fact a fundamental and rapid change in basic perceptions and values does occur, such a chaotic period seems inevitable as the powerful momentum of the industrial era is turned in a new direction, and as the different members and institutions of the society respond with different speeds. Thus, a great deal depends upon a correct understanding of the nature of, and the need for, the transformation which is upon us.

While actions and policies in keeping with the "technological extrapolationist" image would involve no great wrenching in the near term, they could lead to catastrophe or to "friendly fascism" in the longer term. Actions and policies in keeping with an "evolutionary transformationalist" image, on the other hand, might increase the level

of seeming disorder and chaos during a transition period in the near term but later lead to a more desirable society. While the choice is not necessarily one that our society as a whole will or should make consciously and deliberately at this time, it is one that confronts each individual who is willing to accept responsibility for the future—rather than simply adapt to whatever the future may bring.

Glossary

Conscious, consciousness—the state or fact of awareness applied either to one's self-existence or to one or more external objects, states, or facts—characterized by sensation, emotion, volition, and thought.

Economic image of man—the image of humankind as "cogs in the industrial machine," valued chiefly for their roles as producers and consumers, and motivated primarily by those roles.

Entropy—in thermodynamics, the degree to which the energy of a system has ceased to be available for doing work (as when the temperature of a heat source and a heat sink has become equalized). As expressed by the second law of thermodynamics, when a closed physical system is left alone, its entropy increases as the available energy decreases with the passage of time (leading to speculations that the universe is "running down"). In information theory, entropy is a measure of the uncertainty or disorder of knowledge in a system.

Evolution, evolutionary—the process of continuous or step-wise change in form, structure, or function from lower, simpler or less desirable system states to those that are higher, more complex, or better—i.e. from higher to lower states of entropy.

Evolutionary transformationalist image—a view of the future essentially involving transformation of the "industrial state paradigm" such that key dilemmas within it are resolved and human evolution is accelerated.

Gradient—a sequence of transitional forms, states, or qualities connecting related extremes.

Image—(n.) a mental picture, description or conception (often held in common by persons of a particular culture) of reality symbolic of basic attitudes and orientation; (v.t.) to imagine or evoke a mental image picture.

Industrial state paradigm—the particular set of attitudes, premises, ethics, and laws that dominate highly industrialized societies (see Paradigm below).

Paradigm—the total pattern of perceiving, conceptualizing, acting, validating, and valuing associated with a particular image of reality that prevails in a science, a branch of science, a society or subculture.

Spiritual—relating to or consisting of spirit, i.e. non-material levels

of reality available to conscious and superconscious experience, often in imagistic thought.

Subconscious—existing in the mind, but not available to consciousness.

Superconscious, superconsciousness—the state or fact of awareness manifesting in ways that transcend the ordinary egocentric experience of existence (such as unitive consciousness with others, oceanic or "cosmic" consciousness involving heightened intuition, extrasensory or so-called transpersonal processes, "direct perception," etc.).

Technological extrapolist image—a view of the future essentially involving a continuation of the dominant premises, procedures, and trends that characterize highly industrial societies.

Transformation—a type of change process in which the "shape" and the character of many or most interactions of a system suddenly change (as in the transformation from laminar to turbulent flow in a fluid; from unbelief to commitment in a religious conversion; or from pluralistic tolerance to xenophobic ("in-group solidarity due to out-group threat") isolationism in a society). In contrast with incremental or revolutionary change (as the latter terms are customarily used), transformation here refers to a "top-down/inside-out" change of the dominant social paradigm, as an organic process.

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APPENDIX A

An Alternative View of History, The Spiritual Dimension of the Human Person, and a Third Alternative Image of Humanness

ELISE BOULDING

An Alternative Interpretation of History

Your image of psychically evolving man is, I think, incorrect. A study of the papers from The University of Chicago Symposium on Hunting and Gathering Societies held in the late 1960s, plus examination of the anthropologist Paul Rodin's work (and lots more!), has led me to a different hypothesis: humans have had the intellectual–analytic and spiritual–intuitive skills at about the same capacity level for at least 12,000 years. I see a history as a series of thresholds: (1) the agricultural, village-based threshold of 10,000 B.C. when humans reached village-type densities; (2) the first urban-based kingdoms, 3500 B.C.; (3) the first attempts to weave moral teachings into large-scale political organization with the availability of the teachings of Buddha, Lao Tse, Confucius, and Vedic teachings, 500 to 200 B.C. with a flowering in Asoka's Empire; (4) Joachim de Fiore's vision of the post-bureaucratic age in the late 1100s, and the whole concept of the demise of ecclesiastical structures of society and the rule of the Holy Spirit in the hearts of men, which together with the great inflow of Islamic science and culture and Islamic translations of Greek manuscripts, and the rise of the Dominicans and Franciscans (post-bureaucratic religious orders) and the development of schools, research laboratories and workshops within the craft guilds, created a fantastic threshold and a sense of new possibilities beyond what twentieth-century visionaries now conceive. Thresholds (1) to (3) you also at least identify, but you skip over Islam and the thirteenth century entirely. My view is that while each of these thresholds represents a new level of societal *complexity*, it does not represent a new level of spiritual evolution. Rather, at each new level of complexity we stand again before the possibility of *blending* of our

cognitive and spiritual–intuitive capacities, with a new set of supporting tools and social technology, and each time we have slid away from the threshold. My IRADES conference paper for September 1973 in Rome on Religious Potentials and Societal Complexity spells this out as I cannot here. I think it is important not to fall into the trap of thinking we have some new potentials to draw on because it will make us underestimate the difficulty of the task. I am fearful of a "mindless Teilhardism."

The Spiritual Dimension of the Human Person

Your conception of the spiritual dimension is thin because you have said nothing at all about the Christian mystic tradition, only yoga and a bit of Confucius and a hint of Zen and Sufism. I have spent a whole year developing a model of the linking of cognitive and spiritual–intuitive faculties drawing on learning theory and the practices of the Christian mystics, also taking account of Zen and Yoga. It comes out rather differently than what you present, and I cannot possibly give the model in a short space here. Some indicators, however: you confuse transpersonal and transcendental. They are different. Also, writing of the passive will without a knowledge of Meister Eckhart and the Rhineland mystics makes it inadequate. Evelyn Underhill's *mysticism* gives the classic treatment of the kind of reworking of the human person involved in the mystical path. She points out that the *astral realm*, which is the one you are primarily dealing with when you write of techniques for inducing altered states of consciousness and heightening our powers of ESP, precognition, psychokinesis, etc., is one that the saints all recognize and move *through* as quickly as possible. Self-realization as you conceive it is very much an astral-realm concept, and while no one can deny that these are fascinating phenomena and are certainly amenable to currently developing techniques of analysis and training, I predict that we are in for at least a 10,000-year period of wallowing in the astral realm before we have "used it up" as we are now "using up" the potentialities of the scientific approach. Maybe that is necessary, but let no one think that those 10,000 years will be any better than the 12,000 we have behind us, in terms of human goodness and welfare. We are in for a long, bad spell of demonism and are bound to have periodic eruptions of witchcraft scares—we are beginning to have them already. Read Masters and Houston's *Mind Games*, taking time to induce self-hypnosis and do each exercise as you go along (as I did), and then start evaluating the new mind-control institutes—like Arica. We have some difficult times ahead. The point is

we can do all this, but it will not "save us" because it does not transform the will or direct the heart. Jean Houston is herself getting very worried about all this, I understand, and her approach is to democratize mind control by teaching everyone to do it. I do not think it will work.

While I like your emphasis on wisdom, and the ecological ethic, your emphasis on self-realization makes me sad. What is the self, that we should realize it? You treat charism as some kind of social poison—which I understand well enough when you are thinking in contexts like Cohn's *Pursuit of the Millennium,* but charism, eruptions of grace or spirit into the prepared or unprepared human heart, is a hint of something else that lies before us besides merely self-realization.

A Third Alternative Image of Humanness
(contrasting with the two presented in your Chapter 8)

This would be another way to conceptualize *new image,* counterpart statements:

1. In genetic substrate, consider findings of Eibl-Eibesfeldt and Hass on genetic substrate for nurturant behavior, not just aggression; also take account of whole Kropotkin tradition—Clyde Allee, etc.—on cooperative tendencies in animal and human.

2. Development of a sense of the creator as something more than the other end of a divine human continuum. Respect for the Cloud of Unknowing.

3. The evolving self and evolving social structures also recognize a "beyond" self and "beyond" social structure.

4. Deemphasis of sensuality, discovery of family as training ground for how to be human, overcoming of pathological fear of family intimacy; family as base for ever-expanding circles of friendship, extended family a growth reality, but intimate enduring pair relationships basis for all other loving and caring. (Israel Charny's *Marital Love and Hate* has an important concept here on family as training ground. My own fairly extensive observations on multiple love relationships is that they are costly and disastrous for adults and children. Also family is an important source of images of the future—see my "Familism and Creation of Futures.") Discover tenderness outside of sexuality, widen bases for human friendships.

5. Balance of rational and intuitive—same as in [your evolutionary transformationalist image].

6. Growth of spiritual life beyond concept of altered states of con-

sciousness, in practices of contemplative prayer that enrich capacities for social interactions in new dimensions.

7. Beyond ephemeralization, the ethic of frugality itself, joy of doing with less.

I realize all this needs much more explaining:

Things I miss in manuscript, not already mentioned:

1. Recognition of growth value of pain and conflict. Pain is a teacher we probably cannot do without.

2. As alternative to hierarchical model, Anthony Judge's non-hierarchical "solar-system model" which he uses for international relations but can be used at any level. Publications in *Journal of Union of International Associations.*

3. Not enough emphasis on practical aspects of the planetary person, the new person at home in all kinds of transnational identities and networks. Nation state, "America" too important in manuscript—these are fast becoming irrelevant. Too little emphasis on multinational business corporations (just one kind of network, must not be overemphasized). Cultural initiatives from elsewhere. Assumption is that we choose to "use" what we like from the East. It will not happen that way. West will soon be by-passed, at least very possibly—ought to be put in perspective.

4. You have Sri Aurobindo in your image but left Gandhi out entirely. His concepts of sanodya—not wanting what others cannot have—and a loving concern for the welfare of others that enhances, rather than devalues, the self are badly needed. Your image is more a-social and self-centered than it needs to be because this emphasis is lacking.

The manuscript is also a bit pale and lacks a sense of the tremendous dynamic of love. Self-actualization is but the shadow of self-overflowing love.

APPENDIX B

Information Systems and Social Ethics

GEOFFREY VICKERS

On Information Systems

In [earlier chapters] you almost omit reference to what I regard as the most revolutionary scientific image change of our time (although you rely on it in later chapters). And insofar as you do refer to it in Chapter 4, you do not distinguish it from other later and still pending changes. I refer to the revolutionary impact of the distinction which science has learned to draw in the last 30 years between energy and information. This, more than anything else (in my view), has changed the scientific image of reality by negating reductionism and substituting a hierarchic concept of levels of organization, each dependent on but not explicable in terms of the level below (thus confirming what Michael Polanyi has been saying) [without its aid].

It has also legitimized the scientific study of human communication (which you barely mention) and thus introduced a new scientific image of man as communicating social man and of the hierarchic development of both persons and societies by attaining different levels of communication. D. M. Mackay, for example, has tried to show why and how dialogue differs from attempts at mutual manipulation by words. I once heard Professor Ham at Toronto interrupt a similar demonstration to show how far the diagram he had drawn fell short of the kind of mutual communication described by Martin Buber in *I and Thou.* Saul Gorn writes, "We spend the first year of our lives learning that we end at our skin, and all the rest of our lives learning that we don't." These men are a physicist, an engineer, and a designer of computer languages.

Note that this huge change results not at all (as yet) from studying ESP and all that. It comes from studying those familiar powers at which science had declined to look, even when it took them for granted. Science itself has always developed far more by listening, talking, and reflecting than by observing, experimenting, and reasoning. Know-

ledge of (not merely about) other human beings depends even more on social communication. Our main input comes neither from our five accepted senses, nor from our more esoteric ones, but from the activity of our own minds in intimate linguistic communication with others. This fact, emerging from scientific tabu, makes the human dimension respectable.

Brief references to this revolution are to be found in Chapter 4 (e.g. the reference to hierarchy). I would like to see them developed, separated and put earlier.... The revolution is itself both earlier in time and distinct in character from those to which you look forward. It has already taken place. It is a shift in scientific categories as important as the distinction of energy from matter which marked the previous 250 years. And, incidentally, it is essential to understanding how any kind of ethic arises.

Let me expand a little on the revolution. (I have written about this in many papers, e.g. in "Science and the Regulation of Society.") When Driesch in the 1890s asserted that his divided sea-urchin embryos could not grow into complete sea urchins unless they somehow knew where they were going, he wrongly postulated a goal-seeking *force* (entelechy) and was reviled, because forces must not be thought of as seeking goals. If he had advanced the *much more daring*, but more correct, hypothesis that every cell was saturated with *information* about the future shape of the whole, he would have been ignored because information was not then a scientific concept. It became a scientific concept half a century later—and within another decade Crick and Watson had identified (not broken) the genetic code. Three centuries earlier Descartes had had to postulate a special kind of matter (res cogitans) to account for mind, just as Driesch had to postulate a special kind of energy to account for form-making. Both men lacked an acceptable universe or discourse adequate to express their insights.

Similarly Freud, trying to describe form in terms of energy, was driven into difficulties which would simply not have arisen if he had been born a few decades later. His successors are beginning to fill out his concept of the ego as a creator of form, rather than a resultant of forces.

If this view is acceptable to you, I hope you will be able to squeeze it in, partly as an example of prematurity and tabu, but chiefly as the most important conceptual revolution of our time—hardly a debt to science (non-scientists have always known that men lived in a conceptual world of their own making) but the withdrawal of a scientific tabu which legitimizes human communication as the means by which men humanize themselves and their children and build a human world hierarchically distinct from the biological organ with which they build

it. Every computer engineer knows that there is a category difference between a program and a computer. An un-programmed computer cannot compute. And even the activities of a programmed computer, if described in physical terms, give no clue at all to what the program is all about. Some psychologists and biologists may still think it a scandal to distinguish mind from brain as complementary categories hierarchically ordered. But such distinctions are common assumptions to programmers and electronic engineers.

So even if there were no other states of consciousness, we should be in for a major revolution by being allowed to think about the ones we know we have.

I am most interested in all Chapter 4 has to say about research into different states of consciousness and about psi phenomena. I find all this much more relevant and important than I expected. But I think it will greatly gain if you can separate it from this other element. This would also enable you to deal more adequately with general systems theory which owes its development on the psycho-social side to the concept of information. It would be well, in doing so, to mark the distinction between systems open only to the exchange of energy and those open *also* to the exchange of *information.* This is an important distinction in general systems theory as I understand it, and an essential ingredient in the building of hierarchies of organization.

On Social Ethics

This lacuna (as I see it) in your presentation seems to me also to weaken Chapter 5.... Ethics appear as something we need but we have been told virtually nothing about how they originate except that they are influenced by images of man. Now whatever their origin, ethics can only be understood (by me at least) as standards of what to expect from each other and from ourselves in concrete situations. They are possible only because we can engage through communication in these social and inter-personal transactions.

You rightly stress that these standards reflect images of man current in the culture. But because you understress (in my view) the *specifically social* nature of man (humanized by membership of a specific society), you leave the reader to assume that the cogency of an ethic in your view derives directly from belief in a metaphysic, i.e. that the "ought" is derived directly from the "is." Apart from the fact that this is generally regarded as very imperfectly true, it leaves a weakness which becomes apparent in Chapter 5 when we are invited to plan the development of an ecological ethic and self-realization ethic. From then

on we search, almost in vain, for an indication that the new image of man is to imply any sense of responsibility towards his neighbour next door.

Now it seems to me self-evident that a world such as you describe would have to pay for being de-politicized and decentralized by a huge increase in social responsibility and that this would greatly limit all this self-actualization except insofar as it became (as it should) a main channel through which individuals actualize themselves. A more human world will be a more socially responsible world and this responsibility will have costs as well as benefits, limitations as well as enlargements in terms of "self-actualization." This verity is the great tabu of the counter-culture. It seems to me to have infected you also. The resolution or containment of *conflict* is not explained, but simply assumed.

Everyone knows that I do not further my neighbour's self-actualization by seeking my own any more (or less) than I further his wealth by seeking my own. On the other hand, to find one's own self-actualization simply in helping others to find theirs has always been one definition of a saint. Yet your summary of "an adequate image of man," suddenly replete with ethics, seems to have no room for social ethics at all. A duty to the ecosphere is the only duty expected of this abstract Man—except the duty to "actualize himself." It does not expressly deny that no one can actualize his potential in one way without denying its actualization in another, or actualize it in any way in isolation from his neighbour. But it makes no reference to the social demands and constraints within which this personal artistry is to be performed, and which are inseparable from its value.

So my basic question (if not yours) remains unanswered. An adequate image of man for the U.S.A. in A.D. 2000 would find a jointly acceptable position for the negro, assure integrity in the White House and produce a markedly different distribution of wealth, earnings, and incomes (I could produce a similar catalogue for Britain). It is not clear to me how these would flow merely from the changed images of man described in Chapter 5.

This comment is the residue of my original objection that changing images of man will not of itself change social ethics and cannot even be convincingly described without including an account of social ethics and the reciprocal effect of social ethics on it. In other words, it complains that all this thinking lacks an adequate sociological dimension. (Philosophical thinking nearly always does. I regard Man with a capital letter as a danger signal.) You cannot fully meet this point even if you wanted to, but I think it would help if you were to give more importance to the emergence of human communication as a subject for

study at its familiar levels and not only at the higher levels which most interest you and thus to the current change in the image of communicating, social man, member, creator, and creation of a specific social group.

APPENDIX C

A View of Modified Reductionism

(excerpted from *The Method of Science and the Meaning of Reality*)

HENRY MARGENAU

The problem of "levels of explanation" recurs frequently ... and it merits attention.

It needs to be faced ... because it involves the question whether all phenomena in this world, including the most complex, can find their ultimate explanation in the constructs of the simpler sciences. The answer is not an unqualified Yes or No.

First of all, it is necessary to draw a clear distinction between levels of explanation and levels of organization. The term levels of *explanation* refers, strictly speaking, to degrees of abstractness of the explanatory scheme, to what one might call metaphorically the distance of the constructs of explanation from the protocol plane of experience. Levels of *organization*, on the other hand, designate stages of complexity of phenomena. Theories which postulate the need of *different types of law*, i.e. of different modes of explanation at different levels of complexity, are also characterized as theories of different levels of explanation. In the present context the sense of this phrase will be thus construed.

The problem of levels appears also as the problem of reducibility of phenomena. It asks whether observations on a plane of high complexity are reducible to the laws active on a lower plane, for instance whether biological phenomena such as growth, cellular organization, teleological function, etc., are ultimately explicable by reference to the laws of physics and chemistry. Every question about levels can therefore be transformed to one with respect to reducibility.

Two essential resolutions of the problems of reducibility have been proposed. One is the radical negative one which claims that different laws act at different levels of complexity and that these laws may well be logically unrelated or even contradictory. According to this view, there is no continuity of explanation between levels. The other thesis insists upon a continuous connection between explanatory modes at different stages of complexity. This latter view may take two forms:

(a) The laws at the lowest level and sufficient to explain phenomena on all levels. These basis laws, to be sure, may not be fully known at the present time, but it is expected that when they are at hand they will explain all possible observations in the entire universe.

(b) The second view is milder. It does not claim, for example, that the laws of physics and chemistry are necessarily sufficient to account for happenings in the biological realm, but it insists that the laws in the more complex biological field, while not identical with those of physics and chemistry, are nevertheless logically compatible with them. This last view, (b), which asserts limited reducibility will be espoused in this discussion and in this book we proceed to describe it now in more explicit terms.

Perhaps at the lowest level of scientific interest is the mechanics of particles. Here the physicist is able to operate with simple theories involving Newton's laws and the idea of forces. The state of a small system of particles is fully described in terms of the *positions* and *velocities* of the particles and the *forces* that act between them.

Greater complexity is met at the level of large aggregates of particles such as gases and liquids. Here it is useless to describe conditions in terms of positions and velocities of all individual molecules. Higher level concepts like temperature, pressure, phase, entropy, etc., are needed. These concepts, while perfectly clear in their reference to aggregates, have no meaning with respect to a single molecule; a single molecule has no temperature, no pressure, no entropy, etc. Yet there is no logical contradiction at all between the assumption that a gas has temperature and a single one of its constituents has not. Furthermore, knowledge of the positions and velocities of each individual molecule permits an inference (through well-known theorems of statistical mechanics of all the collective properties of the gas. The reverse, however, is not true: knowing the temperature, pressure, entropy, etc., of a gas one cannot infer the positions and velocities of the individual molecules. This state of affairs is best characterized by saying that there is *continuity of explanation from below*, but not from above. One can go continually toward an understanding of matters on the higher plane if one starts with knowledge on the lower plane, though not in the reverse direction. But in this ascent, knowledge on the lower plane becomes irrelevant because new concepts like temperature, etc., *emerge*, and these have no direct reference to particles.

Another example may further clarify the situation. Many problems of atomic physics can be understood on the basis of so-called dynamical laws, the laws which control the behavior of individual electrons, protons, and other so-called elementary particles. These are regulated by the Schrödinger equation (or some other "wave" equation) which is, in a certain sense, the equivalent of Newton's second law in classical

mechanics. If, however, several electrons or several other particles of the same kind are present, another, more important law supervenes upon the Schrödinger equation; this is Pauli's Exclusion Principle which rules that no two electrons can be in the same state. It is this remarkable principle, dealt with more fully in the next chapter, which makes possible all so-called cooperative effects in inorganic matter: the unique regularities of atomic structure, chemical binding, crystal shapes, magnetism, electrical conductivity, and many others. This principle, on the other hand, has absolutely no relevance for single electrons; its significance arises only in connection with collectives. Once more, explanation is continuous from below but discontinuous from above.

There is at present no road toward a full explanation of biological effects from the domains of physics and chemistry. In accordance with the present interpretation of level theory, however, higher level "organizational" laws which will be discovered in researches on biological phenomena are likely to be *sui generis*, not derivable from what is known at present in the physical realm. Yet when discovered they are expected to be compatible with what is known on this lower level.

It is this cautious view of reducibility, this modern version of the theory of levels of explanation, that is being held in this book when reference is made to the problems of reducibility, or of levels of explanation. Many aspects of these levels are clarified and used extensively by Taylor (Chapter 5); they play an important role in our understanding of social organization.

APPENDIX D

Scientific Images of Man and the Man in the Street

Comment by René Dubos

I do not share the common belief that the images of man have been profoundly influenced by science. But I realize that the report is organized precisely around this assumption. To quote your own words, "The focus of the study is directed at images that are largely derivative from industrialism and science...." It is obvious, of course, that technology has influenced somewhat the attitude of the man in the street but I am much more skeptical concerning the effects of theoretical science. I suspect that a learned and sophisticated man of Greece or of China 2500 years ago would have had an image of himself and of his relation to the cosmos not very different from that of academic people in America today. As to the man in the street, I doubt that he is more concerned with this problem than was an average citizen anywhere in the Western world a few hundred years ago.

Comment by David Cahoon

I will share with you a line of rumination that the chapters evoked in me, a "fear" that I have seen given little attention (except by Donald Michael in *The Unprepared Society* and his recent book on *Planning for Change*). What "hits" me from your perspective on "Images" is that there seems to be a growing gap between a generalized "popular mind" and perhaps a "professional mind" regarding "Image of Man." For example,... it seems to me that the "popular mind" is rather unaffected by what you call the "industrial era images" that might be in conflict or alternatives to the "Am. Creed" Image (man as "beast," man as "mechanism," man as "holon," "Perennial Phil." image).

The "professional mind," on the contrary, is strongly troubled by these conflicting "images." In other words, the religious and political heritage seems dominant for the "popular mind," while increasingly the scientific heritage is dominant for the "professional mind." True, the "popular mind" buys materialism and technology, an offshoot of science and "economic man," but as William Thompson has recently

emphasized (in *The Edge of History*) this seems to be more "pragmatic" than empirical-positivistic, and the surge toward Edgar Cayce and Jesse Stern-type "spiritualism" would seem to reflect an *old* "soul" image more than a *new* para-psychic scientific image. Thus the "popular mind" image is probably much less aware of or threatened by such trends as "friendly fascism," Ellul's technological out-of-human-control dynamism, Roger MaGowan Mechanized Cy-Borg phantasies, or a Kafka-esque diffused paranoia.

Also, it seems likely that the "popular mind" will react to Toffler's "future shock" increased pace of change, confusion, uncertainty, etc., by over-stimulation threat, retreat, regression, etc., while more of the "professional mind" will respond with stimulation, challenge, adaptation.

So *if*, as you argue, science "images of man" will increasingly displace the religious heritage as formative in the culture, I wonder if this will not be differentially true with these two "publics," and possibly not very true at all with the "popular mind"? *If* this is so, we face a dangerously "elitist" planning or social engineering gap in the culture, where the democratic heritage would operate increasingly without power or impact on the directions of change. It seems to me that this "Images" gap from the heritage of science will only get much larger as the "professional mind" is strongly influenced by the new astronomy, DNA-RNA life-tampering, para-psychic and meditative disciplines, biogenetics, systems analysis, anti-matter worlds and "flying torches," etc.! I oversimplify, of course, and there are great diversities within the two categories "popular mind" and "professional mind"... but some differential "Images" impact seems strongly inevitable and elitist—especially so, since the intellectual community of communications–math–cybernation–etc. will surely be the new priesthood of the post-industrial society?

APPENDIX E

Some Projects Suited to Government or Foundation Support

Without claiming that they have been, or could be, demonstrated, Chapter 8 laid our five premises that are at least plausible on the basis of the arguments presented therein. In summary, they are:

1. There are increasingly evident signs of the imminent emergence of a new image of man.
2. An interrelating set of fundamental dilemmas, growing apparently ever more pressing, seem to demand for their ultimate resolution a drastically changed image of man-on-earth.
3. There is a serious mismatch between modern industrial-state culture and institutions and the emerging new image of man.
4. There is, and will continue to be, deep psychological resistance to both the new image and its implications.
5. The evolutionary transformation described in Chapter 7 is desirable, indeed necessary, if highly undesirable future outcomes are to be avoided.

Based on these premises six elements of an overall strategy for a non-disruptive transition were derived. In summary form these are:

1. Promote awareness of the unavoidability of the transformation.
2. Foster construction of a guiding vision of a workable society built around the new image of man and new social paradigm.
3. Foster a period of experimentation and tolerance for diverse alternatives.
4. Encourage a politics of righteousness and a heightened sense of public responsibilities of the private sector.
5. Promote systematic exploration of, and foster education regarding, man's inner life, his subjective experience.
6. Plan adequate social controls for the transition period while safeguarding against longer-term losses of freedom.

Following are some exemplary projects that derive from or are compatible with this overall strategy.

Promoting National and World Awareness

- Generate dialogue, possibly in connection with the American Issues Forum to be conducted during the U.S. Bicentennial year, relating to the nature, necessity, and

timing of the transformation, and the definition of a more workable post-industrial society.

- Prepare dialogue-focusing materials (pamphlets, videotapes, etc.) relating to the broad characteristics of the transformation, the challenge of the "new scarcity," the future of work, economic incentives to foster ecologically sound behavior, alternate fates of the poor nations, possibilities of a "steady-state" economy, etc.

Addressing Global and Large-scale Problems

- Following Platt (1969), initiate and support coordinating councils to focus and legitimate research on solutions to our major future systemic crises.
- Support projects to generate images of post-industrial social organization and global community, test for resolution of key dilemmas of high-technology society, deduce norms of human behavior which would permit these images to be realized.
- Develop a multi-level planning network to provide coordinated participative planning in such areas as economic development, land use, education, environment, transportation, family assistance, communications. (A model for the national-level portion of such a network is delineated in Senator Humphrey's Balanced National Growth and Development Policy Bill, S-3050.)
- Develop the capability to carry out *anticipatory* planning for future crises (as contrasted with *reactive* planning after the crisis has occurred).
- Fund research to develop the application of systems analysis to the global environment, to allow more rapid assessment of interconnectivity of global systems, the nature of the relationships among them, and the varying contribution of major regions of the world to perturbations of the systems.
- Develop simulation and general systems-analysis tools for application to complex environmental systems, management of organizations, ecological simulation, etc.
- Map the major global systems, indicating nations/corporations responsible for their management plus assessment of the minimum conditions necessary for their maintenance.
- Study ways of making complex social systems less vulnerable to system breakdown (either accidental or deliberately caused), e.g. development of system-independent alternative technologies for continued life-support during breakdown.
- Explore the possibility of a general-systems anthropological–sociological–biological paradigm of human ecology, taking into account cultural images, biological rhythms, relations with nature, rapid environmental changes, etc.

Fostering Social and Institutional Experimentation

- Promote experiments with steady-state economics, new forms of "general-benefit" corporations, new life styles, etc.
- Fund experimental communities to test various alternative future scenarios.
- Develop "Blueprint for Survival" types of projects.
- Promote experiments to improve communications and reconciliation of differences between groups holding different conceptual paradigms.

Studies of Ethics and Values

- Carry out research on changing ethics and values in advanced societies, focusing particularly on implications for the future of the advanced world.
- Study historical examples of relative amounts of competitive versus cooperative

behavior as affected by stress conditions, with particular emphasis on the cultural factors influencing the balance.
- Explore uses of mass media to alert populations to the social macro-problem and to behaviors essential to its ultimate resolution.

Research on the Nature of Man

- Research into the broadest possible range of conscious processes via drug research, hypnosis, biofeedback, etc., to actively investigate the state-specific nature of science and to break loose from present limitations on the current technological paradigm.
- Investigation of man's perception of time: the sense of emergency is directly related to the temporal sense of the individual. What are the factors controlling this? What are the possibilities in modulation of time sense so that we become alert to potential crises with a longer lead time?
- Active research into alternate problem-solving modes, employing methods of stimulating creativity, inventive states of mind, etc.
- Research into the training and use of paranormal perception (possibly via behavioral techniques) to accentuate the evolution of certain essential aspects of man's consciousness.
- Investigation of the sensitivity of the human organism to the changes wrought in the environment by industrial activities—e.g. electromagnetic pollution, noise pollution—and techniques for the lowering of these. What are the effects of population density of image-of-man concerns? What kinds of characteristics in environmental design are essential to the overall health of the human being? This latter is crucial as man spends more and more total time in completely artificial spaces.
- Investigation of the effects of biological entrainment, biological rhythms, etc.
- Research on the effects of one's thoughts (attitudes, emotional states) on the lower microorganisms in the body—which together form essential symbiotic sybsystems on which the functioning of the larger human system depends; relationship to psychosomatic illness.
- Research into how to develop capacity to use seven new "senses of the mind" (proposed by Teilhard de Chardin in *The Phenomenon of Man*, suggested to us by Professor Jonis A. Roze) that would allow an expanded evolutionary picture to become comprehensible:
  1. *A sense of spatial immensity*, recognizing everything, from the subatomic to the supergalactic and all that is in between, as an immensity within which we can follow in our minds the lines and radii that lead toward us from every object, however far away and however close or within.
  2. *A sense of depth*, or a sense of *time*, breaking out from the narrow confines of the immediate past events and known histories that condition the perception of our whole life. This would enable us to sense endless sequences in time going far beyond the immediate human time-reference scale, even for humanity as a whole, and to encompass sequences and events of billions of years of duration and flow.
  3. *A sense of number*, denoting the profound interdependence and interaction that every movement and change, however slight, demonstrates "the bewildering multitude of material or living elements." This is akin to the expression that one cannot pluck a blade of grass without the trembling of a star, i.e. the simplest act reverberates and touches myriads of things around it.
  4. *A sense of proportion*, acknowledging in our mind levels upon levels of organization of the universe, each expressing its own unique reality: the world of quarks and atoms with its lawfulness and interaction, the world of minerals and crystals, the world of animals and plants, the world of man with its unique laws and interactions, and so on, spreading from microcosms to macrocosms.
  5. *A sense of quality*, recognizing certain new stages of evolutionary growth and perfection and the excellence of their expression that is complete in itself, yet

without isolating them or stopping the process or "breaking the physical unity of the world."

6. *A sense of movement,* perceiving within the seeming immobility, slowness and repetitiousness of the world the underlying and ongoing development and recognizing the inner push and explosive power impulsing an irresistible move toward creating the evolutionary newness.
7. *A sense of the organic,* "discovering physical links and structural unity under the juxtaposition of successions and collectivities" by which the natural development of any process and structure is seen as an organic or authentic phenomenon, part of the natural ecology of the universe.

APPENDIX F

*The Basic Paradigm of a Future Socio-cultural System**

VIRGINIA H. HINE

Center member Virginia Hine is an anthropologist at the University of Miami. She has been collaborating with anthropologist Luther P. Gerlach of the University of Minnesota on studies of "movements"—political, social, religious, self-help, and others. Hine and Gerlach characterize these structures as "segmented polycephalous networks." In the following paper written for World Issues *Hine draws an analogy between these non-hierarchical groups and multinational corporations.*

Futurists of various persuasions extrapolate trends, create scenarios, design global cultures and computerize utopias. Unwilling to accept the apparently haphazard trial-and-error process by which evolutionary changes have occurred in the past, many who were trained in the man-in-control-of-nature myth are now heroically attempting to fill the role of man-in-control-of-evolution. As various schools of futurists compete for funds, influence, and a crack at the global controls, evolution has been bumbling along in its accustomed way, caroming off the walls of resistance to change, picking up a viable mutant here and there, and spawning even more glorious variations. Even the rational plans of the futurists are grist for its multi-faceted mill.

Perhaps the time has come when we can penetrate the mists and see the shape of things to come, not as we might have planned them, but as they are in fact emerging. Piecing together a range of observations by anthropologists, sociologists, it is possible to suggest that the basic paradigm of a future socio-cultural system is already born—muling and puking in its infantile state, but here.

Most futurists assume the bureaucratic mode to be the only mechanism by which large numbers of people can be organized. Therefore, in contemplating the emergence of a global society they take it for granted that a global bureaucracy of some sort is inevitable. They argue only about whether it can be democratic in nature or will, of necessity, be a "Leviathan," costing large sums of individual freedoms. Others, often considered impractical idealists, talk of

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* *World Issues* (published by the Center for Democratic Institutions), April/May 1977.

debureaucratization and decentralization, but offer few ideas as to how this state of affairs could come about. The assumption is made that those in positions of economic and political power are unlikely to voluntarily change their mode of operation because the source of their power is the bureaucratic structure.

In the past fifteen years there has been an intensification of effort by the powerless in nations around the world to organize themselves to effect social structural change. During the last ten of these years, Luther P. Gerlach of the University of Minnesota and I have been doing research in a wide range of these so-called "movements." We have found that no matter what the "cause," the goals, or the beliefs, and no matter what type of movement it is—political, social, religious—there is the same basic structural form and mode of functioning. Wherever people organize themselves to change some aspect of society, a non-bureaucratic but very effective form of organizational structure seems to emerge.

We called the type of structure we were observing a "segmented polycephalous network," a clumsy phrase that led to an acronym SPN, pronounced "spin." For reasons which will become clear as the discussion unfolds, it will henceforth be written as SP(I)N.

Conventional organization charts usually involve boxes arranged in a hierarchical order with the controlling box either at the top or the bottom. An organization chart of a SP(I)N would look like a badly knotted fishnet with a multitude of nodes or cells of varying sizes, each linked to all the others either directly or indirectly. Some of those cells within the network would, in themselves, be hierarchically organized bureaucracies recognized by the public as regional, national, or even international organizations. Examples from the environmental movement were the Audubon Society or the Sierra Club. Counterparts in Black Liberation would be the NAACP, the Urban League or CORE. Feminism has its NOW and Red Power its National Congress of American Indians. But in all these movement networks, the majority of cells are local groups of varying sizes from a handful of members to several hundreds, some organized according to the conventional mode, many *ad hoc*, egalitarian, face-to-face groups that are here today and gone or reorganized tomorrow. The multitude of nodes or cells within a movement structure can be loosely lumped into segments which hang together ideologically or in terms of preferred tactics. This factionalism functions to escalate the speed with which the movement grows and to bring about changed responses from the "establishment" more effectively than any one segment could do alone. In addition, factionalism prevents takeover by any one segment through the mechanism of temporary coalitions between other segments to offset attempted control by one.

While a bureaucracy is segmented in the sense that it has divisions and departments, it is an organic whole in that its parts are designed to perform specialized tasks necessary to the functioning of the whole. Decapitate it, or destroy a vital organ, and the social organism ceases to function effectively. A SP(I)N, on the other hand, is composed of autonomous segments which are organizationally self-sufficient, any of which could survive the elimination of all of the others. The biological analogy of the bureaucratic mode of organization is the vertebrate, that of a SP(I)N, an earthworm. This is the feature of movement organization that is so frustrating to those who would like to suppress one or gain control of it.

The second characteristic of the SP(I)N mode of organization is decentralization. Movements do not have a single paramount leader who can control or even speak for the entire movement. Each cell has its own cell or segment and may not be recognized as a leader by members of other segments of the movement. Leaders are often charismatic individuals who collect circles of devoted followers. Often, however as his segment grows, unsung organizational leaders rise to promote the functioning of the local groups identified with him, and the linked segments survive the death or jailing of the charismatic individual very well. Frequently a leader is no more than *primus inter pares*, or first among equals, who speaks for the group only on certain occasions and can influence consensus decision-making rather than make decisions for the group. Those who have tried to suppress a movement by silencing its most visible leaders find that they are coping with a hydra-headed monster where new leadership seems to pop up out of nowhere. In addition, any one leader has influence only within his own cell or segment and may not be known to active participants in other groups identified with the movement.

The real key to understanding the power of a SP(I)N is recognizing the nature of the unifying forces that keep the structure from disintegrating. One of the forces that integrates a SP(I)N is a range of horizontal organizational linkages; the other is ideological.

Non-vertical organizational linkages are of several types. First, there is overlapping membership. When numbers of people mobilize to effect social change, the segmented organizational pattern that emerges involves individual participation in more than one segment. Participants in any movement characteristically belong to, support, or interact with several different nodes in the network—sometimes nodes that are very differently organized and have apparently conflicting goals and ideological variations. Frequently the schismatic tendencies characteristic of the segmentary mode of organization result in a split within one node, like the well-publicized split within the Sierra Club leadership during the height of the environmental movement. This resulted

in the formation of another organization, the Friends of the Earth, by the ousted faction. Many Sierra Club members, unscathed by the soul-searing eruption and at the core, cheerfully joined FOE while continuing to be active in the Sierra Club, forming linkages between the two groups in spite of their differences.

There is a great deal of interaction between leaders of cells in a movement structure which may link a few local groups into a close association or connect hundreds of groups across the country in loose and indirect ways. Frequently the leader of one group will be a follower-member in another. Often the linkage is maintained by periodic visits by the leader of one group who speaks to or works with another's for a time. These types of ties tend to cement groups of similar ideology into large interacting segments, or may operate across segment lines linking groups with quite disparate forms of organization or ideological approach.

Still another type of linkage is the "ritual activity"—the rallies, demonstrations, marches, conferences, revival meetings, joint activities of one sort or another. The temporary collaboration between disparate groups within the movement required by these types of activities cut across segment cleavages and bind the autonomous cells in significant, unifying events.

Perhaps the most significant aspect of the segmentary mode of organization is the role of the ideological bond. The real glue of a SP(I)N is represented by the I in the parenthesis. The S, the P, and the N represent organizational factors which can be handled at the sociological level of analysis. But the power of a unifying idea adds a qualitatively different element to the equation. The power lies in a deep commitment to a very few basic tenets shared by all. Agreement on all of the ideological variations would be non-functional for the segmentary form of organization. It is the passionate argument about these conflicting variations and about conflicting concepts of how to implement movement goals that keep the segments separate and in enough opposition to prevent an attempted takeover by any one segment.

The segmentary mode of organization is not a recent innovation, nor has it been useful only to those who want change. Many pre-industrial societies in Africa and the Middle East were organized according to the segmentary principle. It provided an efficient mode of organization for groups of several hundreds of thousands of people and tended to remain relatively stable over tens of thousands of years. This is in contrast to the hierarchical, stratified modes of organization which are notable for their inherent instability, in what has come to be known as the rise and fall of civilizations. In those societies structured on the

segmentary principle, unifying ideology was usually that of common ancestry. The classic example is the desert tribes in Arabia who were in continual fratricidal conflict but who always surprised their would-be conquerors by an incredible capacity to coalesce, apparently overnight, into a unified fighting force.

It is impossible to explore properly, in this space, why the SP(I)N might be an adaptive pattern of social organization for the global society of the future. Suffice it to say that it is precisely the sort of pattern consistent with a vision of "the global village," "debureaucratization," "decentralization," and "re-humanization." In very practical terms, our research data suggest that the SP(I)N type of structure does several things: it encourages full utilization of individual and small-group innovation while minimizing the results of failure; it promotes maximum penetration of ideas across socio-economic and cultural barriers while preserving cultural and sub-cultural diversity; it is flexible enough to adapt quickly to changing conditions; and it puts a structural premium on egalitarian, personalistic relationship skills in contrast to the impersonalistic mode of interaction suited to the bureaucratic paradigm.

How about the picture seen from the top down? It is suggested that we do indeed now have what "one-worlders" have been demanding for decades—a supra-national level of organization capable of reducing international conflict and assuming the task of global resource management. Rational attempts to invent such a structure—the League of Nations and then the United Nations—have failed, it is said, because they were built upon the very form of social organization they were designed to supersede—the nation state. I would suggest that these attempts also failed because their creators were unable to break out of the cultural assumption of the inevitability of the bureaucratic mode of organization.

What has, in fact, emerged is a qualitatively different form of organization, a novel mechanism of global management that is already functioning to make large-scale warfare impractical, therefore obsolete, and is in fact allocating global resources and managing global productivity. Just as participants in grass roots movements often fail to recognize the organizational genius of the SP(I)N within which they are operating, and call for more centralized control, so many individuals who are participants in the global management SP(I)N also fail to recognize it as an organizational structure.

Academicians from a variety of disciplines use a variety of terms to describe the actors in this supranational network. Many speak of an "oligarchy." Others use terms like "global power elites," "managerial elites," and "global managers." Most of these discussions, of course,

center around the phenomenal growth of the multinational corporations since World War II. Many are pointing out that this new level of organization is already beyond the capacity of the nation states to control it, as if the power of the multinational corporation and the authority of the nation state represented opposing forces.

The most penetrating insight into the true nature of this emergent, supra-national level of social organization has come from anthropologist Alvin Wolfe who began to catch the outlines of it during his study of the mining industry in South Africa. He suggests that it is a new level of socio-cultural integration, a new system of social control "somewhat independent of the currently troublesome units, the nation states," though these are components. Wolfe calls it an "imperfectly bounded network" which "binds groups that are different both structurally and functionally." The segmentary nature of this global organizational structure becomes clearer as one pieces together the work of scholars like Wolfe, the Center's Neil Jacoby, G. William Domhoff, Richard N. Goodwin in his *The American Condition*, and Richard Barnet's and Ronald Muller's *Global Reach.*

The four major segments of the global management network are upper level decision-makers in the multi-national corporations, in international financial institutions, in the governments of both industrialized and underdeveloped "host" countries, and representatives of powerful families in Europe, the Americas, the Middle East, South Africa, the Philippines and Asia.

In our analysis of the SP(I)Ns at the grass roots level, we noted that some of the component segments within the network are hierarchically organized and centrally controlled but that the network as a whole was polycentric, no one component able to exert control over the rest. Wolfe and others note the same characteristic of the supra-national network. Multinational corporations are organized according to different modes, some using a decentralized mode of operation transnationally and some maintaining highly centralized control in the international headquarters. Nation states also vary in the degree of centralization. In any case, the internal structure of any one component in a SP(I)N is irrelevant to the structure of the network as a whole. As Wolfe points out, at the global level of operation, even the most bureaucratic segments "lose their hierarchical/centralized/pyramidal structure" and interact with the upper echelons of other corporations, governments, financial institutions and family representatives in an "interlocking/overlapping structure." He stresses the lack of absolute power in the hands of any of the components. Even though this relatively small group of global decision-makers may have absolute power *within* their own segments, the conflicting goals and interests of

different segments prevent permanent structural unity, and therefore centralized control by any one group.

Examining the types of linkages that bind the segments of the global network, we find some remarkable parallels with the types of linkages we observed in the grass roots SP(I)Ns. Where we saw patterns of overlapping memberships and personal ties between leaders in a movement, students of the global power structure note such linking mechanisms as interlocking directorships, common shareholdings, shared subsidiaries (often by a multinational corporation and the government of a "host" country), and the well-documented phenomenon of interchangeability of personnel.

The rise of a "managerial elite" provides another linking mechanism. Networks of personal ties are formed as corporate executives move from one hierarchy to another in their ascent to positions of global influence.

The temporary coalition of segments in a grass roots movement for a specific activity has parallels in the global power structure in the phenomenon of the "project team." The rise of temporary, special-task organizations leads to what Alvin Toffler calls "adhocracy," sets of horizontal linkages that cut across bureaucratic hierarchies. It involves flexible formation, dissolution and reformation of teams drawn from different levels within a bureaucratic hierarchy and from comparable levels in other corporate or governmental hierarchies, and requires a type of interaction that is more characteristic of network interchange than formal hierarchy.

The linking function of the revival meeting, the demonstration, the rally, and the "ritual activities" of the grass roots SP(I)Ns is paralleled in the global managerial network by a variety of overlapping social clubs and policy organizations. G. William Dumhoff has documented the role of social clubs in cementing personal ties and creating ideological consensus among corporate executives, financial leaders, high level government officials, and members of powerful families under such irreverent titles as "How the Fat Cats Keep in Touch." The powerful meet not only in exclusive playgrounds among the California redwoods, but in policy-making groups like the Business Council, the Council of Foreign Relations, the Committee for Economic Development which supply personnel for a wide range of special commissions and important government appointments.

The power of ideology to unify an organizationally segmented structure is the key to understanding the emerging paradigm. This unifying force has very little to do with external "agreement." The outside observer of any SP(I)N sees mostly conflicting ideological stances and divergent goals. The binding force, as noted earlier, is in the commit-

ment to a few basic and shared assumptions. The ideological conflict between *variations* on these basic themes, manifested in the structural diversity, produced what some have called the "fission–fusion" tension. Components within the global SP(I)N shift patterns of alliances—antagonists on one set of issues or problems and "bedfellows" in tackling the next. Individual participants in the global SP(I)N seem to have a remarkable capacity for shifting loyalties. They can function at the upper level of a number of types of organization—governmental or corporate—even though the functions of the different organizations may be conflicting. It is the power of a shared conceptual framework that keeps a SP(I)N unified and makes it possible for individuals to shift allegiances within it. It is the conflicting concepts of goals-means that prevent any one segment from taking permanent control over all the others.

The point here is to recognize the power of a few basic assumptions to unify organizationally disparate groups. It is the key to recognizing this qualitatively different mode of organization—one so alien to the bureaucratically minded that it appears to be either non-existent or is interpreted as a "conspiracy." Many observers of the protest movements during the Sixties fell into both traps. The first trap is now catching people who press for legislation requiring dismantling of large corporations or tighter control over multinationals by nation states. This is to misunderstand the organizational structure binding the upper levels of the corporate giants and the nation states into a network of shared and conflicting interests. The "conspiracy" trap catches many particularly in discussions of the oil crisis. As Goodwin points out, there is no need for conspiracy. It is only necessary that managers, corporate or governmental, understand and follow the "rules of behavior dictated by the structure that binds them" and the "set of stable assumptions," often unspoken, that inform decision-making. Decisions made by people who share assumptions, even though there has been no discussion between them, will produce actions so similar that there appears to be collusion even though the actors themselves feel they occupy conflicting positions.

We would argue that the SP(I)N mode of organization is not only a viable one for a global society, more functional than the bureaucratic mode of the passing era, but that it is in fact the one that is emerging whether we choose it or not. Both the powerless and the powerful have utilized it as they have tried to meet the changing conditions. The powerless find it functional in fighting inequities. The powerful have found it workable as they expanded their sphere of activity beyond national boundaries to the global scene. Though it is beyond the scope of this paper, there is increasing evidence of many middle-range

regional and transnational networks cutting across traditional vertical lines of power. The principle of "horizontal" integration is emerging at many levels.

None of these SP(I)Ns have emerged as a result of rational planning. Like any other evolutionary novelty, they emerge out of functional necessity. Only after the fact can we bring reason and logic to bear in understanding what is happening and is making rational decisions about what might facilitate or inhibit the changes. If this model of the emerging paradigm has any validity, the organizational structure of the future is already being created by the most as well as the least powerful within the present paradigm. It is very clear, however, that the ideologies which inform SP(I)Ns at the two levels are diametrically opposed. Perhaps one of the crucial tasks in the immediate future is to clarify and expose the underlying assumptions that provide the ideological "glue" for SP(I)Ns emerging at various levels of the global social structure. The key to the future may very well be conceptual rather than organizational.

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