INCREASING COMPLEXITY AND THE PROBLEM OF THE INTEGRATION OF KNOWLEDGE:

A DISCUSSION OF AN EMERGENT CONCEPT

by

ASHLEY WILLIAM DERMER

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APPROVAL

Name: Ashley William Dermer
Degree: Master of Arts (Education)
Title of Thesis: Increasing Complexity and the Problem of the Integration of Knowledge: A Discussion of an Emergent Concept

Examining Committee:

Chairman: R. J. C. Harper, Ph.D.

K. A. Peter, Ph.D.
Senior Supervisor

T. J. Mallinson, Ph.D.

'Ronald G. Jones, Ed.D., Ph.D.
External Examiner
Professor
University of British Columbia

Date Approved: 29th November, 1971
This thesis is concerned with the apparent lack of values, aims and purposes of modern man, as reflected in the trends of alienation and existential neuroses. The increasing success and dominance of science and technology has steadily eroded the ability of formal religion to maintain a satisfying transcendent myth, while the dominant trend in modern philosophy has largely neglected the intangible aspects of human life as unworthy of serious attention. The possibility of constructing a world view which incorporates values and purposes, and yet is grounded in science, receives a further setback by the tendency to specialization in academic circles, which contributes to a fragmentation of knowledge. Young people seem intuitively aware that all is not well with the values of "the establishment," but their frantic scurrying to diverse alternatives such as communes, encounter groups, and fanatical sects, indicates their difficulty in finding a system of orientation or world view which has both social support and the verification of empirical scientific knowledge.

Despite these difficulties, there does seem to be an interdisciplinary viewpoint emerging from studies of evolution, biological open system theory, self-actualization psychology, ecology, and eastern philosophies; represented by an array of scholars including Teilhard de Chardin, Julian Huxley, Law Whyte, Bertalanffy, Platt, Maslow, Frankl, Koestler, Watts and others. The possibility of unifying a set of
foundational concepts from such a diversity of subject fields may appear remote at first. Fortunately the task of elucidating the key ideas common to these fields is simplified by the prevalence of a basic common theme, namely the concept of "increasing complexity."

This unifying theme of increasing complexity is not a philosophical theory or an a priori principle, or a vague speculation, but something quite factual and objective, established by natural scientists. The whole evolutionary process has moved in this direction of increasing complexity, and this thesis attempts to trace the concept as an integrating theme linking various subject areas. A further argument is that this theme of increasing complexity can act as the basis for man's understanding of his place in the known cosmos, in which man is seen not as an insignificant speck, but as the epitome of structured complexity whereby the universe contemplates its own nature.

The first chapter discusses the urgent need for a new value orientation and clarifies the meaning of "increasing complexity," examining its use by different authors. The argument is that alienation and meaninglessness may be reduced by the development of a sense of evolutionary responsibility to contribute to the natural trend of increasing complexity.

The second chapter emphasizes the overlapping of ideas from authors in a variety of fields, leading to the emergence of an organismic world view in which "increasing complexity" serves to integrate creativity and personal values with evolutionary theories. The relevance of organismic properties such as balance, equilibrium, wholeness, and
plenitude, is considered as a model for human values.

The concluding chapter suggests possible connections between this viewpoint and the field of education. System concepts such as process, form, structure, and order are suggested as being relevant to curriculum planning if the organismic perspective is to be developed in the near future.
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Summary</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Prickles versus Goo</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>The Tendency to Increased Complexity</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Problems of the Individual</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Alienation and Evolutionary Responsibility</td>
<td>28</td>
</tr>
<tr>
<td>Two</td>
<td>CONVERGENCE OF VIEWPOINTS</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Emergence of a World View</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Complexity through Creativity</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Personal Values and the Organismic Perspective</td>
<td>70</td>
</tr>
<tr>
<td>Three</td>
<td>RELEVANCE TO EDUCATION</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>System Concepts and the Integration of Knowledge</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>Recent Ideas on Integration</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>BIBLIOGRAPHY</td>
<td>93</td>
</tr>
</tbody>
</table>
CHAPTER ONE

INTRODUCTION

"The old concepts and formulas are no longer adequate to express our modern outlook. The old bottles will no longer hold the new wine. The spiritual temple of the future, while it will be built largely of the old well proved materials, will require new and ampler foundations in the light of the immense extension of our intellectual horizons."

(J. C. Smuts, 1925, vi)

This paper examines some of the "new and ampler foundations" which Smuts envisioned as the basis of the spiritual temples of the future. The temples of the present are failing hopelessly to accommodate the needs of their congregations; in fact formal religion is virtually a myth of the past. In an age when man can land on the moon, he can hardly be expected to consider seriously the "anthropomorphic father-god floating in his bed sheet somewhere in the stratosphere, surrounded by cherubs and seraphs and other improbable species of celestial fauna" (de Ropp, 1968, p. 18).

Science has progressively eroded the religious foundations which formerly provided western man with guiding principles and transcendent purpose. Without such principles and purposes alienation has become the theme of our time. There is a general feeling that the certainties provided by religion have been lost. Modern man lives amid an immense, complex civilization that he himself created, but is unable to understand. Science informs him that he is an insignificant speck in a universe too vast to comprehend. The crisis in the metaphysical identity
of man, stemming from Nietzsche's "God is dead!," remains as the spiritual dilemma of modern times. How are we to come to terms with the character of human existence in an age in which there is widespread loss of confidence in all absolute or transcendent points of reference? For pre-literate man, the world received its intellectual, religious, and social structure through story or myth. Unity was achieved through verse, so that the universe made sense. Even in ancient Egypt and Greece, where science and mathematics began, the fundamental motivations were a matter for mythical Gods. The Judeo-Christian tradition also begins with a story: "In the beginning, God created . . . ." It is only within the present century that the story and the outline of the traditional dramas have been radically criticized and widely abandoned. In telling stories and myths, traditional man was affirming the unity of his place in the scheme of things. The individual, the tribe, nature, and the cosmos could be pieced together in concentric circles of integrated meaning. In our time the objectivity and precision of science has revealed the mythical nature of the traditional viewpoints, at the same time revealing the vast extent of the known universe. It is less than five hundred years since the earth was held to lie at the centre of the universe, but Copernicus, Keppler, Galileo and Newton shattered that illusion. Astronomy of this century has revealed an even vaster universe, making man seem ever more insignificant. The traditional myths of man's place in the cosmos have thus disintegrated, and have so far not been replaced by a suitable substitute which can withstand and gain support from the empirical sciences.
This is not to say that suitable views have not been put forward, only that they have not permeated to the consciousness of the population at large. Thus modern man faces an apparently meaningless existence, unable to accept the myths of old, and uncertain of where to look for transcendent values which he finds authentically satisfying. General consensus seems to hold that existential neuroses, alienation, normlessness are near synonymous terms describing our present milieu. In one form or another the concept of alienation dominates both contemporary literature and the history of sociological thought. In fact since Smuts' time, the problem seems to have become more acute, especially in the more affluent countries where modern technology is helping to provide the population with increased leisure time.

Man has never been more in need of a prime value or indication of purpose based on the broadest synthesis of modern knowledge. Nothing less will do. Old fashioned belief based on inadequate knowledge cannot hope to oppose scientific and intellectual searching. Since Galileo, the realms of science and belief have been separate, and this split has greatly contributed to the present trends of alienation and meaninglessness. Man seems to need a unified world picture to maintain his sanity and to serve as the foundation for the union of knowledge and belief, science and religion, fact and value. The disparate realms must harmonize if modern man's alienation is to be reduced, and recent developments in a number of fields indicate that this convergence might be near at hand.

The profit ethic of capitalism and conspicuous consumption is
apparently inadequate as a deeply satisfying prime motive; thousands of young people are refusing to work for dollars alone in the business world. They cannot see any point to it. The rise of existential psychotherapy illustrates the aimlessness and lack of purpose, boredom, depression and neuroses of a large proportion of the population, and the failure of their quest for meaning. Life is a failure to too many people; the reliance on the mass opiates such as alcohol and television reflects the fact that many have given up the search for maximum intensity of living, while those who are still sufficiently spirited to try turn to group therapy, Zen, or a host of other spiritual distractions which rarely offer complete satisfaction. The current surge of interest in various cults of eastern religions, and the intensity with which young people immerse themselves into these cults, are obvious pointers to the desperation of their frantic search for values. To offset this primary emptiness requires that man becomes conscious of his true place within the cosmos, and of his responsibility to the task that he has to perform within the totality of things.

The main stream of intellectual enlightenment seems to have increasingly cut man off from developing a well rounded sense of basic aim and purpose. As science delved into the structure of matter with spectacular success, the spiritual side of man's being was increasingly ignored to such an extent that its very existence came to be questioned. Science became so dizzy with its own success that it forgot to ask the pertinent questions, or refused to ask them under the pretext that they were meaningless, or not the concern of the scientist. The dominant
schools in psychology questioned the existence of man's mind and will, and although Husserl's followers studied these in detail, their voices were virtually unheard by the behaviorists. Philosophy seems to have matched its outlook to the dominant theme of mechanistic precision which Rutherford and Bohr were using so successfully in their physics laboratories. Thus for the first two thirds of this century, the physical and social sciences, supported by philosophy, have maintained a one-sided direction, coinciding with a negation of the intangible facets of man's existence. Matter was investigated quantitatively, but the investigation of life's purposes, aims, or basic values was of questionable validity because the quantitative methods of the physical sciences were insufficient in dealing with them. The scientific spirit of the times was such that no other than quantitative validation was acceptable.

Attempts to construct synthetic theories incorporating matter and spirit, the quantitative and the qualitative, were decidedly a thing of the past. Hegel had tried and failed, as had Spencer in the nineteenth century, and their grandiose schemes fell rapidly into disrepute, mainly because their synthesis lacked the support of the best available science of their times. Smuts wrote "Holism and Evolution" in 1925 while he was Prime Minister of South Africa, and continued the tradition of synthesising metaphysical links between matter, life, and mind through evolution. His efforts were barely acknowledged at the time. While physicists were unlocking the secrets of the atom, supported with spectacular experiments and precise mathematics, it is little wonder that Smuts' philosophical work in biology went unheeded.
History discloses a number of examples where creative individuals produce new concepts simultaneously, but independently, one case being the calculus of Newton and Leibniz. As Smuts was writing *Holism and Evolution*, Teilhard de Chardin was gathering material to later produce *The Phenomenon of Man*, which his church superiors finally permitted to be published after his death in 1955. Like Smuts, Teilhard links matter and spirit in an evolutionary scheme so Teilhard's contribution may not seem original or unique. The difference is that Teilhard is the first evolutionist to maintain the support of the empirical science of his time. The general system theory of Bertalanffy provides theoretical support to Teilhard's hypotheses, and the aim of this paper is to explore this convergence of acceptable empirical science with the realms of meaning, purpose and values, as shown by the overlapping of ideas from writers in diverse fields of interest.

If sufficiently strong links can be uncovered between areas of knowledge which traditionally were regarded as antithetical, then the synthesis may well give rise to a new image of man. Smuts complained that the old bottles will no longer hold the new wine. Sir Julian Huxley, writing in the same tradition of evolutionary biology, claimed to have produced *New Bottles for New Wine*. These new bottles it seems, represent the underlying meta-scientific concepts which pervade a wide range of recent intellectual content in a number of fields. In fact new knowledge from a number of thinkers seems to fit the new bottles so elegantly, that one can perhaps foresee increasing numbers of people becoming so intoxicated by the contents that their existential neuroses and alienation may be considerably lessened.
This possible unity of fact and value, science and religion, is based on the evolutionary tendency of the known universe towards states of increasing complexity. The meaning of increasing complexity, its significance, and the overlap of its use by different authors, is the basic theme of this paper.

The aim of this thesis is to present the foundations of a new view of man; a view which seems to have been progressively and consistently consolidated in the past forty years in the minds of leading thinkers, and which seems to have the potential to furnish man with a cosmology which is not only refreshingly optimistic and satisfying in a time of nihilism and crisis, but also one which posits man once again to hold a central and vital position in the universe as he knows it today. Man will be viewed not as an insignificant speck, alone in an alien and harsh existence, but as the superbly structured entity whereby the universe conjects on its own nature through the brain-mind of man understanding the order inherent in himself and his environment.

The concept of increasing complexity acts as the principle of integration for this view. The concept is broad and lacks clarity of definition, since different authors in different fields naturally express the theme with different emphases. This paper firstly examines these different uses of "increasing complexity", and secondly aims to suggest that the concept does emerge as an interdisciplinary integrating thread, which may have relevance to educational planning and the problems of the search for new values by today's youth.

The meaning of "increased complexity," from the viewpoint of
Teilhard de Chardin, is that the cosmic, biological, and human evolutions are not only components, but are developmental stages of a single process of universal evolution. This single process has a discernible direction, having advanced from matter, to simple and complex life forms, through man, and presently culminating in mind and thought.

Julian Huxley says the same thing. "All nature is a single process . . . which in its course generates both greater variety and levels of organisation" (Huxley, 1957, p. 43).

Increasing complexity is also central to the ideas of Platt, who writes of sudden changes of structure in a variety of organisations. Platt mentions such apparently diverse examples as the quantum jump of an electron, the change in political structure after a revolution, the change in an individual after a mystical experience. The common theme here is growth by restructuring to a higher level of organisation.

Summary

This paper outlines the similarities and overlap between different areas of knowledge by tracing the common theme of increasing complexity through the work of different authors. Teilhard and Huxley base their concepts of evolution on the tendency of the universe towards hierarchical states of increasing complexity. Koestler incorporates their ideas to emphasise the "holon" (similar to Smuts' "whole") as an organised system, viewing biological "holons" in the light of Bertalanffy's open system theory. John Platt, as biophysicist, is interested in the hierarchical jumps or sudden changes leading to new structures, while
Law Whyte calls for a unifying science of spatial form and structure to explore organic coordination. Most of the authors to be quoted in this paper share a basic vocabulary of common terms, such as change, growth, form, system, hierarchy, structure, process, and order.

The transition from biology to the social sciences is achieved by positing man, through the complexity of his brain, as being the evolutionary spearhead, making him the "managing director of evolution" (Huxley, 1964, p. 218), or "the steward of the biosphere" (McHarg, 1970, p. 23). Once man's brain is acknowledged as the epitome of increasing complexity, further progress can be achieved through man's creativity. McHarg makes the point that reflection, thought, and creativity can be synonomous with the increasing complexity of physical systems, since both are antientropic and display an ordering tendency in apparent defiance of the second law of thermodynamics.

This transition provides a unifying link between the biological and socio-psychological sciences, since creativity in the individual, as investigated by Maslow and Rogers, becomes a special case of the more general tendency of increasing complexity. Another link between evolutionary biology and the individual concerns the property of "holons" to achieve fully developed characteristic form. Thus the sociologist Becker sees man's alienation as the result of restrictions which inhibit this development of full potential, and the social critic Mumford sees the problems of modern society arising from a failure of man to emulate the properties of organic systems. Thus in different ways, links are formed between authors from various academic specialities, contributing to an image of man based on a broad synthesis of modern knowledge.
The remainder of this paper examines these links and interconnections between these various authors, and others. Hopefully this network of ideas will interweave to contribute to the ampler foundations sought by Smuts, to help reduce the confusion and alienation of modern man. I believe that the features of organicism, increasing complexity, and the growing unity of previously disparate realms of knowledge, constitute the foundations of the "immense extension of our intellectual horizons" to which Smuts referred.

Prickles versus Goo

It is distinctly out of fashion to ask about the meaning and purpose of life, the 'big questions,' as Becker calls them. "Try posing the big questions at a cocktail party and see the quality of discussion you can get: What is the good life? What is the good state? What is the nature of the cosmos? What is the nature and destiny of man in the cosmos?" (Becker, 1967, p. 15). While cocktail party conversation may not provide satisfactory answers, one might expect erudite discussion on such topics to be found in scholarly circles, so where better to turn than to the universities. Yet answers of a broad scope are still not easy to find.

Areas of specialization tend to be pronounced, and an interdisciplinary synthesis which overflows departmental boundaries is very susceptible to criticism. The problem may be in the polar nature of synthesis and analysis. Alan Watts realises the extensive differences in interpretation which are likely to emerge from partisans of 'prickles' being opposed to partisans of 'goo.'
The prickly people are tough-minded, rigorous, and precise, and like to stress differences and divisions, between things. They prefer particles to waves, and discontinuity to continuity. The gooey people are tender-minded romanticists who love wide generalizations and grand synthesis. They stress the underlying unities and are inclined to pantheism and mysticism. ... Either party would be hopelessly lost without the other, because there would be nothing to argue about, no one would know what his position was, and the whole course of philosophy would come to an end. (Watts, 1966, p. 135)

While Watts is acknowledged with considerable reluctance in some scholarly circles, his distinction between 'prickles' and 'goo' does draw attention to the possibility of differences in perspectives. The notion of a continuum scale between the extreme positions of 'prickles' and 'goo' may be a useful one to the extent that it stresses the variations in style and interpretation possible when a group of scholars debate an interdisciplinary problem.

This point is reinforced by Hunter

An eye trained to see things as being separate and unrelated, an eye trained to divide, cannot readily perceive whole systems or flows. Certainly it cannot directly perceive synergistic effects, which are always more than the sum of their parts. But an eye trained to see things in terms of patterns or gestalts, which automatically related things one to the other, and all into something more, confronts the world in a quite different way. (Hunter, 1971, p. 16)

For most of this century the 'prickly' group of scholars has been dominant, which has tended to rid philosophy of its metaphysical heritage. Yet the line between the realms of metaphysics and more 'respectable' areas of investigation does not remain fixed. For example, the idea of an élan vitale, or vitalistic life force, which may have been considered metaphysical by the Vienna circle in 1929, has been
superseded by concepts from biology and system theory which tend to be scientific rather than metaphysical.

The concept of an open system relies directly on fundamental energy concepts, such as negative entropy, which could not be categorized as metaphysical by even the harshest critic. System theory stresses the organisation of the component parts of an entity, the way in which the highly differentiated parts may integrate to form the whole, and the 'energy flows' involved in maintaining the form of such structured hierarchies.

The power of the system approach lies in the scope of its application. Corresponding abstractions and conceptual models involving system principles can be applied to crystals, atoms, cells, social groups, and other phenomena. The system emphasis on process and change permits extrapolation over a wide variety of time scales, from the time involved in an electron quantum jump, to that involved in the process of terrestrial or even cosmic evolution. Mathematicians handle such vast differences with simple exponent numbers. Now system theory offers, even to the non-mathematician, a set of concepts which can lead to increased unity in our view of the world.

This evidence of scientific knowledge encroaching on realms once considered metaphysical indicates the larger problem of the rise of science having literally destroyed formal religion as the unifying concept behind man's quest for meaning, but having so far failed to supply him with a unified scheme of values or aims which man finds acceptable and satisfying.

It might seem then, that our need is for some genius to invent a new
religion, a philosophy of life and a view of the world, that is plausible and generally acceptable for the late twentieth century, and through which every individual can feel that the world as a whole and his own life in particular have meaning. (Watts, 1966, p. 7)

'Some genius' suggests one person, and Watts is being a little hopeful, as knowledge grows through the collective efforts of many. Watts himself is one of many thinkers concerned, and he tackles the problem of personal identity by incorporating the ancient Vedanta philosophy to overcome one's feeling of separateness from the world.

This separateness of the sense of self from the environment is a characteristic of Western man which has largely contributed to his alienation. The root of the matter is the way we view our individual existence, our concept of "I, myself" as a separate centre of feeling and action, living inside and bounded by the physical body. Other people are seen as separate isolated organisms, each with their own individual sense of "I." Watts suggests that this leads us to consider the world outside as hostile, and adds to our sense of isolation and loneliness. The Eastern religions stress that we do not 'come into' this world, we rather come out of it; as the ocean 'waves,' so the universe 'peoples'; every person is an expression of the whole realm of nature, the world beyond our skin is actually an extension of our own bodies. This may seem far from the open system theory of Bertalanffy's biology, but in effect is very similar. Both draw on the concept of organisms growing out of the universe, as leaves grow from a tree. Very few of us see ourselves in this light, a minute part of the universe reflecting on its
own nature, yet this realisation offers immediate escape from the restrictions of the personal ego. It is the first step of mystics and seers towards states of higher or 'cosmic' consciousness. Unity, oneness, is the quality stressed repeatedly by the great mystics. Alan Watts is interested in modes of perception and the mutual relation of organism and environment, the problems of egotism and resulting anxiety and alienation. He is, however, more of a theologian than a scientist, more goo than prickles, and though his vision of our current problems is perceptive, his answer of "you're It" is not particularly helpful. Watts' line of thought may offer comfort to some, possibly relieve anxiety and increase a sense of wonder at existence, but rather than satisfy the quest for purpose and meaning, his attitude is closer to 'don't ask, look around you in wonder, relax and enjoy it.'

Victor Frankl has a more serious approach than Watts to the problem of existential neurosis. Frankl sees the symptoms of our Age of Anxiety as being the planless day-to-day attitude towards life, a fatalistic attitude that personal effort is hardly worthwhile; the abandonment of personal responsibility to collective thinking; the same symptoms which Erich Fromm would characterize as an escape from freedom. Frankl, who survived the penultimate horror of a Nazi concentration camp, points out, in accounting for the existential vacuum of our time, that if no instinct tells man what he has to do, and no tradition tells him what he ought to do, soon he will not know what he wants to do.

Empty affluence, empty idleness, empty excitement, empty sexuality, are not the occasional vices or misfortunes of our machine-oriented
society, but its boasted final products. Once life is reduced to this state of helpless inertness, what good reason can be offered for keeping alive? Like Watts, Frankl has a keen view of the problem, which is essentially lack of purpose, and offers his solution with his "logotherapy." He suggests that the quest for meaning can be fulfilled by realizing creative values, experiential values, and attitudinal values. Frankl would assign more responsibility to the individual, and his logotherapy of realizing values is essentially advice to keep busy creatively, enjoy being personally responsible for the enrichment of one's experience, and, if suffering is unavoidable, then rise to the occasion and display an attitude of worthy responsibleness. Frankl is aware of the problem and as a psychotherapist has produced what he feels summarizes the answer, but it seems that he does not go far enough. If one of his patients was to ask, 'why should I distract myself by keeping busy creatively?' one would perhaps get the feeling that Frankl might reply, 'that because you are a human being, you have that responsibility, and furthermore, it is an effective remedy which works.' I feel that the same patient would be more satisfied with the type of reply he might expect from Teilhard de Chardin, Julian Huxley, or Colin Wilson; 'because science indicates that as a human being you represent the current peak of nature's evolutionary trend to complexification, that the potential level of consciousness of your brain puts you on the cutting edge of evolutionary progress, makes you the managing director of evolution, placing responsibility for your own maximum effort and development in your own hands, and automatically answering your quest for meaning. You
have the responsibility to achieve meaning through your contribution to
the progress of man's travel to states of higher consciousness, to the
realm of the noosphere, and for you to realize creative and experiential
values in the obvious way to do this.'

The idea of evolutionary complexification, which is the essence
of the outline suggested above, points the way to a development which
may have the potential to provide the prime ethic to help combat aliena-
tion. Science, having destroyed man's sense of purpose, is now in a posi-
tion to help man to restore it, paralleling the classic notion of thesis,
antithesis, and synthesis. Religion offered the original thesis as the
answer to man's quest for meaning and purpose. Science has been the anti-
thesis, and since the scientific method offers a more certain and objec-
tive type of knowledge than that based on faith alone, it has shaken
religion, and necessarily left man floundering in the area of transcen-
dental values, since science tends to be interested in causes, not in
purpose. Modern scientific views regarding the direction of evolution
can, I believe, help man to develop a central ethic as religion once did,
and consequently enable him to overcome the present theme of alienation.
The following examination of views favouring the notion of evolutionary
complexity, expands on the meaning of this concept and indicates further
similarities between different authors.

The Tendency to Increased Complexity

Ludwig von Bertalanffy, in the field of theoretical biology, has
developed the theory of open systems which accounts for basic
characteristics of the living organism which have baffled physicists, biologists, and philosophers, and appeared to be violations of the laws of physics, explainable only by vitalistic factors beyond the competence of science and scientific explanation. He has established that "self differentiating systems that evolve toward higher complexity (decreasing entropy) are, for thermodynamic reasons, possible only as open systems" (Bertalanffy, 1962, p. 5).

For readers not familiar with the concept of an open system, a very simple example is a waterfall, which maintains steady form even though the 'throughput' process of the water responsible for this form is comparatively great. Thus the concepts of form and process are very closely linked. Bertalanffy's great contribution has been to emphasise that living organisms, plants, animals, humans, can be considered as open systems.

The question of thermodynamics and entropy is basic to the notion of evolving complexity. Basically it is a matter of apparent conflict between physics and biology. The second law of thermodynamics is basic to physical science, and it states that energy can only flow from a higher to a lower level, or that entropy (the element of disorder) must always increase. For example, old buildings eventually crumble to less structured rubble and scattered stones. And yet evolution appears to have been ignoring the second law of thermodynamics since the beginning of time. The evidence is strong that matter was once in electronic form, that it then attained to the atomic and the molecular; that later, colloidal organic matter of a special type made its appearance, and later
still, living matter arose. If we contemplate the whole sweep of evolu-
tion, this tendency to increased complexity becomes apparent. The forms
of life, simple at first, attained progressively to greater complexity,
and mind, negligible in the lower forms, became of greater and greater
importance until it reached its present level in man. Thus life, as a
state of organized complexity of highly differentiated parts, has evolved
in apparent defiance of the entropy concept of physics. We can now see
nature and man as an evolutionary process which exhibits direction, and
which functions to produce negative entropy, in the form of increasing
order and structure of physical systems and ecosystems. Creation involves
the raising of matter and energy from lower to higher levels of order.

Teilhard sees man's nervous system, culminating in his brain, as
representing the present maximum degree of complexity to which the bio-
sphere has evolved. Thus for de Chardin, increasing complexity goes
with increasing psychism and consciousness; "we may be sure that every
time, a richer and better organized structure will correspond to the
more developed consciousness" (de Chardin, 1959, p. 60). This law of
complexity-consciousness is central to de Chardin's work, that evolution
has moved in the direction of mind, and that man stands at the head of
nature as the pivot of evolution, and that it is with man that the res-
ponsibility for the future rests. Man as he exists at present is a
hybrid, a creature whose natural home is the biosphere, but who is striv-
ing to adapt himself to the noosphere (de Chardin's term for the
'thinking envelope' surrounding the earth). Through man, as the most
complex phenomenon that evolution has produced, that same evolution will
presumably follow its ascending course:
As a conscious and free being, man stands now at the apex of cosmogenesis. He is a terminus, but also a new beginning. By exerting his creative energies he will surely do his part toward completing the evolutionary process. Within the framework of the fundamental laws of nature, man is the architect of tomorrow's world. (Wildiers, 1963, p. 82)

At this stage, the argument appears to be vulnerable. One might object that it is all very well to speak of the increasing complexity of physical systems, citing the cerebral cortex of man as the most complex, but that it is another matter to extrapolate to thought and consciousness as a logical extension. The gap between brain and thought may seem too wide to allow the assumption that increasingly complex thought may be considered a direct extension of an increasingly complex physical system. Philosophically we have entered the controversial area of mind-body dualism, an argument as old as philosophy itself. Teilhard surmounts this problem with a technique of parallelism, suggesting in the preceding quotation that a highly organized structure "will correspond to" greater consciousness. This enables him to make his point, which is central to his work, without committing a logical faux pas to arouse the ire of the analysts.¹

The point at issue, and which is highly relevant to the theme of this paper, is that creative thought may be considered as an extension of the natural tendency of systems to increased complexity of structure. Different authors have stressed this important point in different ways.

Teilhard's parallelism enables him to imply that such is the case, while sidestepping objections which would arise if he directly equated thought with physical structure.

An alternative way to jump any logical hurdle between physical systems and thought is to consider the link between energy and information. Energy, in the form of sunlight, is basic to photosynthesis and the existence of plants, and the animals which feed on them, and thus is the currency which creates antientropic ordering in the physical realm. But energy can as well be considered as information, since sound and light inform the perceptive creature. Ian McHarg suggests, "when energy is so considered, then the apperception of information as meaning, and response to it, is also seen as ordering, as antientropic" (McHarg, 1970, p. 30).

Thus energy has been raised to a higher, more ordered level, firstly by increasingly complex physical structure, and secondly by "apperception and the ordering which can be accomplished through consciousness and understanding" (McHarg, 1970, p. 35).

Here we see nature and man as an evolutionary process which exhibits the direction of increasing negative entropy in physical systems and in the evolution of apperception and consciousness, all of which might well be described as creation. McHarg writes, "Thus, creation equals the energy which has been temporarily entrapped and used with matter to accomplish all of the ordering of physical, biological, and cultural evolution. . . . The role of man is to understand nature, which is also to say man, and to intervene to enhance its creative processes. He is the prospective steward of the biosphere" (McHarg, 1970, p. 23).
Consequently we find personal alienation, lack of purpose, or existential nihilism, become lessened in the view of the prime value as being man's responsibility to make his contribution to the unfolding of evolution. The direction of the full development of human potentialities becomes the part the individual is to play in the unfolding of the cosmic mystery, provided his vision can be unblinkered from the restricted and alienated state in which he now finds himself. (Becker's concern in *Beyond Alienation*.)

Idealistic perhaps, but nevertheless, a self-transcending world view, which is firmly grounded in science. Many nineteenth century thinkers (e.g., Spencer) held a view in which man was a mere creature of evolution, a twig carried along in the stream. The message of Teilhard de Chardin, Huxley and McHarg goes further, making man the 'managing director of evolution.' On the level of mind, man is able to take his evolution into his own hands. The only power that is not in his hands as yet, is to pass on changes directly through the genes; but he can pass them on by education.

The basic idea of biological evolution as tending towards organized states of ever increasing complexity, is a perspective which must be accorded highest respect, or, to put it more simply, a framework which cannot be denied. General System Theory provides the theoretical backing of open systems to support the observations of de Chardin. The theory of evolution tending towards states of higher complexity, like any scientific theory, is able to offer predictions and de Chardin has done this for us. He sees complexity increasing from its present apex (the
individual human brain) towards greater development of the noosphere, or terrestrial sphere of interconnected thinking 'substance.' As evidence, consider the development of radio, television, computers, telex, satellite communication, as representative of the first stages of a linked network of information around the earth, also McCluhan's global village concept. Modern technology seems to present observable verification of Teilhard's predictions, thus strengthening the credibility of his views. Even the current social crises of automation and concurrent unemployment are able to be placed in his scheme of thought. He sees unemployment as a release of brain power; "In its progress through a million centuries, mounting from the depths of the unconscious to consciousness, when has Life proceeded otherwise than by releasing psychic forces through the medium of the mechanisms it has devised?" (de Chardin, 1959, p. 178). The phenomenon of the vast amount of research work fits even more obviously into his view of an evolving noosphere. "Humanity is in process of 'cerebralising' itself... The Noosphere, in short, is a stupendous thinking machine" (de Chardin, 1959, p. 180).

The concept of increasing complexity leading to increased consciousness, or higher states of consciousness, is an apparent fact to the observer who has obtained his picture of it from a study of past events, as has Teilhard. The world appears as an historical ascent, first from matter to life, then from life to mind. The whole of evolution exhibits a line of ascent in the direction of ever greater complexity and higher consciousness, with the present orientation centered on the mind. As Koestler says, the new frontiers to be conquered are mainly in the convolutions of the cortex.
This ascent from matter, through life, to mind, is a characteristic of all the evolutionists, Teilhard, Smuts, Spencer, and its history can be traced even further back to the dialectics of Hegel and Marx. Hegel was concerned with historical evolution, where all things have immanent purposes, whereas the evolutionists considered in this paper emphasize biological evolution. Hegel propounded that the course of history proceeds by dialectical and deterministic movement, where a condition leads from an incomplete position to its opposite, and then, through synthesis, to a higher and more comprehensive whole.

Nothing as teleological or metaphysical is required by modern evolutionists to account for the processes of evolutionary change. Darwinian natural selection, genetic mutations, and recent work on the way DNA molecules in cells program the form of an organism, represent progressive refinement of the ability of science to comprehend evolutionary change.

Problems of the Individual

Teilhard's dominant interest is the evolutionary progress of mankind as a whole, rather than with the problems of the individual. British writer, Colin Wilson, is interested in similar ideas. His primary concern involves the individual's control of consciousness, rather than the collective trend of society towards Teilhard's noosphere, and his appeal is widespread. Wilson's first book, "The Outsider," published in 1956 when he was twenty-five, took the English literary world by storm. In it he examines the pessimistic tones of existentialism as he analyzes the views
of a number of leading literary figures; Hemmingway, Hesse, Lawrence, Camus, Sartre, Nietzsche, and Dostoevski. In a postscript, Wilson writes, "ever since I was twelve, I had been preoccupied with the question of the meaning of human existence" (Wilson, 1956, p. 289). Wilson's "Outsider" searches for answers in romanticism, and its later development, existentialism, which he now considers to be a 'dead' philosophy. After 1956, Wilson realized that "gradually, it became clear to me that what we are dealing with is a problem of evolution" (Wilson, 1956, p. 296), and he came to see his "outsider" type as representing a surge of evolution in the direction of mind. Wilson is concerned with purpose, the quest for meaning, and their relationship to evolution, and by 1963, his thought had developed to relating these concerns in Beyond the Outsider.

Wilson sees most people as having negligible capacity to handle freedom, pointing out that threats to freedom, such as pain or inconvenience, force us towards motive, purpose, and action, but that as soon as the threats are overcome, our intensity slips back to its normal low level. The difficulty of handling freedom is also recognized by Toffler, who writes "the problem . . . is whether man can survive freedom" (Toffler, 1970, p. 187). The same idea of the inability to handle freedom is suggested by Hayakawa, writing on student militants in the United States:

They are young men and women still in search of an identity. Most of them are bored with their purposeless existence, . . . the result of the incredible success of our economic system in making secure the lives of the middle class. Under conditions of scarcity, the struggle for survival absorbs most of one's energies, so that one doesn't ask lofty philosophical and ethical questions about the
meaning of life. These unasked questions come to the fore in a time of plenty. (Hayakawa, 1970, p. 4)

Similar ideas are echoed by C. P. Snow,

For we know how difficult it is, once the elemental needs are satisfied, to do something worthy and satisfying with our lives. Probably it will never be easy. Conceivably, men in the future, if they are as lucky as we are now, will struggle with our existential discontents or new ones of their own. They may, like some of us, try—through sex or drink or drugs—to intensify the sensational life. Or they may try to improve the quality of their lives, through an extension of their responsibilities, a deepening of the affections and the spirit, in a fashion which, though we can aim at it for ourselves and our own societies, we can only dimly perceive. (Snow, 1964, p. 79)

Part of the purpose of this paper is, hopefully, to improve this dim perception of the responsibilities needed to improve the quality of life amidst affluence, and Wilson is one writer illuminating the problem.

The Protestant work ethic is very rapidly declining in influence. The world wide "New Left" movement represents a rejection of our commercial, highly industrial, work oriented, power and authority dominated society. The ideology of the Protestant ethic, a combination of attitudes partly religious, but very much geared to the requirements of industry and commerce, is not acceptable to increasing numbers of educated young people. Any society tries to give people a framework for thinking which will further the purposes of that society, but if that framework is inadequate, then alienation, boredom and bewilderment are likely to be the result. It is to this basic problem of lack of purpose that Wilson directs his attention. As the former glory of the Protestant work ethic declines at an ever-increasing rate, leading to increased leisure with
the guaranteed income, the "lofty questions" will be asked with greater frequency, and Wilson's concern with meaning and purpose will be seen in its full relevance. He is obviously concerned with personal alienation, lack of purpose, failure in the quest for meaning, and sees the answer as lying in the direction of increased or intensified consciousness. In The Outsider he examines men who, like himself, find the normal everyday preoccupation with trivia to be a waste of time. From there he develops a philosophical basis for his direction of thought, drawing heavily on Husserl's phenomenology and Whitehead's ideas on perception in Beyond the Outsider.

Phenomenology, being the study of the way that consciousness perceives objects, provided Wilson with background for his primary interest, which was to elevate the powers of the conscious mind up and out of the slum of consciousness in which most of us spend most of our time. I believe that Wilson will be acknowledged as a pioneer in this field. His earlier predictions of the late 1950's and 1960's are only now being experimentally verified in the latest research into EEG brain wave patterns. In fact many of Wilson's insights are presented in more readily digestible form in his novels (he has written well over twenty books since 1956 and these have been translated into a number of foreign languages). His most recent novel, The Philosopher's Stone, published in 1969, contains insights which appear to be science fiction, yet Look magazine (6 October 1970) presents an account of laboratory EEG research into brain waves, which validates Wilson's earlier hypotheses. For example, in 1966, Wilson uses the term "peak experience" to describe a state of
heightened consciousness. The phrase originated with Abraham Maslow, an American psychologist interested in healthy self-actualizing human subjects. In The Philosopher's Stone, Wilson has changed his terminology to "value experience" possibly in deference to Maslow, but regardless of terminology, the Look article describes the state of consciousness of subjects emanating alpha brain waves into an EEG and talks of an "alpha high," which, from a description of the symptoms, appears similar to Wilson's "peak experience." The correlation between Wilson's earlier predictions of peak experiences and present day (1970) empirical verification through "alpha highs" is a classic example of the scientific attitude in action, although the evidence is possibly insufficient to permit the concepts of "peak experience" and "alpha high" to be considered synonomous. If man is to be in control of his own evolution, it is reasonable to assume that as part of this quest he must face the task of finding himself. Then the exploration of "inner space" becomes as relevant to overall development as the conquest of outer space.

Wilson's work on conscious states has developed from his prior concern with lack of purpose, and the way Wilson's interests in increased consciousness coincide with de Chardin's evolving noosphere, are apparent to anyone familiar with their writing. Once modern man has overcome the struggle for existence, he is at a loss for purpose and meaning. The rise of existential psychotherapy to overcome the resulting neuroses would indicate man's predicament in the face of lack of purpose. Teilhard has pointed out that evolution offers an encompassing broad perspective, and that presently we are evolving further towards and through
the realm of mind. Wilson has suggested that man can raise the vitality of his consciousness and laboratory research has confirmed this to the extent that man can now be trained to use his mind to regulate his own heart beat, and body temperature. Had Teilhard de Chardin lived for a further fifteen years, he would be less surprised than most to learn that bio-cybernetic training can enable man to use his own consciousness in this manner.

Alienation and Evolutionary Responsibility

The link between the concepts of alienation and evolution is the point I wish to stress. The dominant trend of meaninglessness and the current search for values are reflected in part by both the rejection of the profit motive for private gain and the success of science, which has left man in an apparently meaningless universe, with no fundamental value to redeem him from the banality of everyday life. Yet the views of Teilhard and Huxley indicate that the tendency to complexification does offer indication of direction. Increased consciousness, as predicted by Wilson and currently researched in bio-cybernetic laboratories, represents the forefront of the evolutionary surge at the individual level, and Teilhard reminds us that increased consciousness and increased complexity run parallel, if not concurrently, with each other.

Thus man has now become a direct and conscious agent of evolution instead of a grain of sand and a mere part of an immense process. The drift of evolution due to natural selection is at last able to become a conscious evolutionary drive, able to provide man with a new sense of purpose, which is scientifically reasoned, and assigns to each a role of
full responsibility to develop his sense of potential as part of a personal contribution to cosmological evolution. As Teilhard reminds us in one of his best known sentences, "the consciousness of each of us is evolution looking at itself and reflecting upon itself" (de Chardin, 1959, p. 244). This is not to argue that in order to develop a sense of evolutionary purpose that we must all become research workers in biocybernetic laboratories. Just an awareness that man is an inhabitant of an evolving noosphere and that he possesses greater potential control of consciousness than was formerly realized will change man's conception of himself and of the interior forces he has at his command. Increasing affluence is increasing personal freedom at a rapid rate, and the problem of alienation involves the question "freedom for what?" Freedom is useless without ultimate purpose, as testified by increasing rates of crime, suicide, alcoholism, and mental illness. For man to view his existence as part of a currently evolving cosmos, and to be aware that this entails responsibility on his individual part to maximize his contribution, can offer a primary viewpoint of increased meaning and purpose.

This view of the world as a creative process involving all of its forms, including man, is foreign to the Western tradition that insists upon the exclusive divinity of man, his independent superiority, and licence to exploit the earth. The traditional anthropocentric view enjoined man to subdue the earth, which he did so successfully that many fear a complete ecological breakdown is imminent. Testimony to the concept of exploitation can be seen in lakes becoming septic, DDT being found in Arctic ice, smog pollution; money is the measure of this
exploitation, the Gross National Product is proof of its success. If there is a value system based on exploitation, then the essential components for survival, health, and evolution are likely to be discounted, as they are. Until man develops better understanding of the realities of the interrelationships in the physical word, improvement will be hindered. Society at large must come to understand nature as a process, which obviously becomes a prime task of education. The man who views plants as the basis of negative entropy and the food chain is different from the man who considers them as an irrelevant aspect of life. The man who sees the sun as the source of life is different from the one who obscures sunlight with smog. McHarg suggests that "there will be a profound difference in attitude--indeed, a profoundly different value system--between those who understand the history of evolution and the interacting processes of the biosphere, and those who do not" (McHarg, 1970, p. 27).

Similarly, at the personal level, those who see man as the steward of the biosphere, contributing to increased complexity through creativity and a developed consciousness, are likely to have more realistic values and purposes than others. This viewpoint can be extended further. Thus the ecological or organismic perspective being implied here possibly offers the breadth of perspective to comprehend creation, matter, energy, form, process, and a realistic view of the place of man in the scheme of things, and seems interdisciplinary in the extreme.

From ecology, one can easily follow the theme into the realm of existential psychology, to the suggestion that man has at his disposal a new set of personal values, meanings, and purposes. It might be objected
that man has known about evolution for a hundred years, and that there is
no sign that evolution can replace the values of Christianity. This may
have been the case with respect to the 'old' evolution of Darwin and
Herbert Spencer, where the individual was not decisively important, since
"it did not occur to the first evolutionists that their scientific intel-
ligence had anything to do in itself with evolution" (de Chardin, 1959,
p. 242).

The 'new' evolution of Huxley and Teilhard sees man as a direct
and conscious agent of evolution, on an individual basis, leading to new
responsibilities and purposes for those able to comprehend the situation.
Thus the argument of this paper is that alienation can possibly be re-
duced by a self-transcending world view, based on science, wherein man
sees himself as being on the cutting edge of evolution, and is thereby
charged with the responsibility to maximize his contribution by the ful-
lest possible realization of his potential. Thus apathy, inertia, mis-
directed striving for profit alone, can be replaced by a new course
headed for maximum meaning, once this awareness of responsibility becomes
common knowledge.

The idea of alienation is hardly new. A review of the literature
in order to explicate the concept would not be particularly exciting,
other than to reinforce the basic point that man is in trouble. Alienation
is a pervasive theme in the classics of sociology, with its many
synonyms such as powerlessness, meaningfulness, normlessness, isolation,
self-estrangement. It is a central theme in the classics of Marx, Weber,
and Durkheim and more recent work such as Riesman's and W. Whyte's,
where the other-directed individual, or organization man, reflects values which seem less than adequate. Such a central concept, which has been put to use by such an army of writers, is likely to have its meaning worn ragged through excessive use. Becker suggests that "it seems to be the word that characterizes our time, or better, the one that tries to come to grips fumblingly with the problem of man in our time" (Becker, 1967, p. 88), and admits that the word has been used to cover almost anything, but follows with the suggestion that alienation is "about the constraints placed upon man by the state of civilization, the blunting of natural passions and appetites, the frustration of natural desires, the twisting and corrupting of basic needs" (Becker, 1967, p. 92).

Becker traces the history of the concept of alienation to the eighteenth century, to Rousseau's ideal Man of Nature, through Diderot, with their ideal of humanistic science of man based on man, as opposed to Newtonian physical science, where man was relegated to a minor position behind mechanical science. Alan Watt's dichotomy of prickles versus goo, evidently would have been just as applicable in preceding centuries as it is today. Becker asks, "where could we get a theory of man that is compelling enough to draw wide agreement among men?" (Becker, 1967, p. 100). The suggestion of this paper is that the common denominator of the ideas of Teilhard de Chardin, Julian Huxley and others, presents the basics of such a theory; one which may be sufficiently compelling to draw agreement, since it has scientific grounding. If alienation is the word that characterizes our time in the twentieth century, then evolution and its implications may offer the unifying theme which can act as a
countermeasure, providing a holistic viewpoint to the individual and a reasoned knowledge of his place in the unfolding of the evolutionary process.

Who needs evolution? Can we not function adequately without such a concept? Is such a self-transcending world view necessary or helpful to the human condition? Erich Fromm seems to think so. In *Psychoanalysis and Religion*, he writes:

> the study of man permits us to recognize that the need for a common system of orientation and for an object of devotion is deeply rooted in the conditions of human existence. . . . The thesis that the need for a frame of orientation and an object of devotion is rooted in the conditions of man's existence seems to be amply verified by the fact of the universal occurrence of religion in history. (Fromm, 1950, p. 26)

Fromm allows that man may worship animals, idols, an invisible god, money or success, and his concept of religion includes all of these and more, for by religion, Fromm means any system of thought and action shared by a group which gives the individual a frame of orientation and an object of devotion. Granted that some system of thought (i.e., religion) appears to be necessary, the question becomes, which system, and the suggestion of this paper is that the convergence of viewpoints of numerous thinkers indicates that the evolutionary perspective is most worthy of consideration. It offers a long range viewpoint which Teilhard recognized as being essential encouragement to the individual to continue his quest for optimal development, in contrast to the planless, fatalistic despair of many who lack the breadth of evolutionary perspective. Similarly, the problem of personal freedom finds a possible solution.
The personal responsibility inherent in man viewing himself as the evolutionary spearhead seems to present an obvious answer; freedom to maximize his own development and contribution, thereby maximizing his own sense of meaning and providing maximum integration of his own existence with the evolving cosmos, of which he recognizes himself to be a vital part rather than an insignificant speck.
CHAPTER TWO

CONVERGENCE OF VIEWPOINTS

"But somewhere between the cult of the Mechanic and devotion to the machine is a new conception of things, growing out of process philosophy, systems theory, field analysis, biological ecology, evolutionary studies, peak-experience psychology, and Oriental philosophy."

(Wood, 1970, p. 9)

And so the evidence accumulates to strengthen our ideas of increasing complexity as being the basic mode of evolutionary advance. Teilhard's law of complexity-consciousness is the very centre of his system, and von Bertalanffy writes that today our main problem is that of organized complexity. Huxley states, "it is perfectly proper to use terms like higher and lower to describe different types of organism and progress for certain types of trend" (Huxley, 1957, p. 49). These three are thinking along very similar lines. In many places their ideas coincide or reinforce each other. Huxley and Teilhard, more so than Bertalanffy, are interested in the ethical consequences of their scientific pursuits. The scope of their thought does not stop at secular ethics, but shades into a system of thought of such magnitude that may be best described as religious. Ambitious indeed, the synthesis of science, morality and religion. Yet, not only biologists are pointing the way. Becker, as sociologist, propounds a similar synthesis in Beyond Alienation:

... the really crucial question, namely the question about what
Thus there is a fascinating convergence of views from men in separated fields, all pointing to the recognition of man's appropriate place in nature. Lancelot Law Whyte is another whose thought is fundamental to this convergence. The singularity of his insight, which he called the "unitary principle," is in direct contrast to his own life as soldier, physicist, banker, man of affairs. Whyte's unitary principle, stating that asymmetry decreases and gives place to symmetry, came to him in a moment of insight in 1929, the same decade in which Teilhard and Smuts did their most creative work.

The fact that Whyte's ideas are synonomous with Teilhard's complexity-consciousness and Bertalanffy's theory of increasingly differentiated systems is obvious. Thus, there is a fundamental similarity between the most basic and underlying principles of these thinkers. Each of them has developed their basic insights into disparate systems of thought, but the foundations in each case are literally the same, all incorporating the basic glossary of terms such as change, form, system, process, nature, tendency, structure, hierarchy, and integration. Teilhard moved from his foundation of complexity-consciousness towards an attempted long range reconciliation of his evolving process with
Christianity, thus unifying science and religion. Bertalanffy developed General System Theory from biology as a set of unifying isomorphic principles applicable to various intellectual fields, permitting theoretical advances in a number of these fields and a movement towards the unity of science. Thus while these thinkers may have placed major emphasis on different areas, and followed different paths as their thought developed, the central body of fundamental ideas which is shared by them, and others, presents a compact body of theory which is rapidly becoming increasingly difficult to repudiate.

Ideas are only effective insofar as they are appropriate to particular phases of man's development. The idea being promoted in this paper is that an individual can make more sense of the world around him by viewing it as being in a state of constant flux towards more complex structure. Heraclitus first propounded a similar idea some thousands of years ago, so I can hardly claim it to be original. What is claimed, is that recent advances in a diversity of subject fields have added sophistication to the simple metaphysics of old, and that a recent convergence of views enables man to increase his sense of order out of the chaos around him. Man can live harmoniously only when in possession of unified knowledge and understanding of himself and his environment. Law Whyte suggests that "a new generation that rejoices in the union of contrasts must take over and make itself heard" (Whyte, 1966, p. 32). By "union of contrasts" he means organic coordination, the integration of differentiated parts, production of harmony from diversity, the tendency to develop and sustain integrations of contrasted parts. These are
synonymous terms for an order-creating urge leading to increased understanding. Whyte uses these terms to describe a state of comprehension, a level of understanding, a metaphysical world view, yet the terms he uses might well have been taken straight from Bertalanffy's biological description of living organisms. This suggests a world view based on a biological model, or at least a consideration of the isomorphisms between Bertalanffy's biology and Whyte's metaphysics. Whyte himself has already seized on this correlation, as he acknowledges the value of Bertalanffy's work in one of his more recent books (Internal Factors in Evolution).

This quest for order and comprehension is a basic ingredient of any intellectual endeavour, and unity and diversity are necessary aspects of any intelligible order. Whyte reminds us that each term implies the other; unity without diversity is identity, and diversity without unity is chaos. The power of the evolutionary world view is that it increases the order of our comprehension, offering both continuity and change, and change is reduced to order when the form of process is recognized.

Process consists in the development of form, when circumstances permit, and when process is understood, differentiation and form become comprehensible. To acknowledge evolution is to recognize the process underlying the development of man and his environment, and to accept increasing complexity as the natural tendency by which this process occurs is to increase order in understanding. The process of evolution, through the mechanism of the natural tendency to increased complexity, thus becomes the central principle which gives sense and significance to man's place and purpose in nature. The observation of process, through form,
represents the ascent of information to meaning. A general theory of integration is being suggested here, organic and holistic in type, rather than mechanistic (goo rather than prickles), in which the principle of integration is evolution through increasing complexity. Once the principle is accepted, an understanding of man's place in nature increases.

The notion of organic development pertains whether the units of analysis are those of biological forms, tissue systems, cells, nervous systems, personalities, self-concepts, the mental functions per se, society or inquiry. It is in this way that glimpses into the unity of things and knowledge can be achieved. (Jones, 1963, p. 84)

The power of the concept of increasing complexity as a central principle of integration towards understanding one's place in the cosmic scene, is that the concept is readily adaptable to both long term and short term time spans. Over the long term, one can perceive, as Teilhard suggests, man emerging as the most complex system from a line of evolutionary predecessors stretching back millions of years through the vertebrates and sea life to simple living forms of just a few cells. Based on this long term perspective of increasing complexity, or anti-entropic characteristic of increasingly differentiated and hierarchical order, Teilhard is able to postulate the evolution of his noosphere as the stage we are now experiencing en route to the "omega point." (How much of Teilhard's futuristic prediction is acceptable to the reader is a personal choice, and a function of one's natural scepticism, but while we may, perhaps, dismiss future "omega points," it is not so simple to discount his accounts of the present transition from biosphere to noosphere.) Increasing complexity also comes into its own as an integrative principle
over the short term. Consider the growth of any living organism, the interdependence and relatedness of its component parts contributing to the whole form, and one shifts one's authority from Teilhard to Bertalanffy's open system theory, and now in the realm of biology, the sceptics are obliged to display greater respect, but the central concept is the same; an incredible development from the simple union of egg and sperm cells to a cerebral cortex capable of the output displayed by a Newton or an Einstein. (Hardly surprising that Watts can write of the wonder of the process.)

John Platt is another author who connects the concepts of organization, structure, system, with a process metaphysics which draws on evolutionary change as its integrating theme. Platt refers to "self structuring hierarchical jumps" (Platt, 1970, p. 2), and he describes such changes in a wide diversity of fields including physics, chemistry, biological systems, small groups of individuals, and larger social organizations.

These probings in search of isomorphic evidence of a common principle in such a wide diversity of fields, brings to mind a statement of Krathwohl (as quoted by Jones, 1963, p. 84),

integrative behavior requires the ability to perceive relationships and the desire to generally perceive them.

Platt strengthens his argument by analyzing the symptoms preceding his "hierarchical jumps," and concludes that new patterns which emerge will represent a higher more integrated level. Thus Platt is essentially propounding an organic model, extending the concept of increasing
complexity from physics, chemistry and biology, where it is firmly entrenched, and extrapolating it to the broader fields of social organization and "world transformation." That crystals restructure themselves into larger crystals, that biological cells arrange themselves into complex patterns, can hardly be denied, but whether this is related to a group of children or industrial organizations suddenly organizing themselves into a new pattern of relationships, is open to some debate. The extent to which one accepts the isomorphisms is dependent on one's personal position on the continuum scale between extreme prickles and extreme goo, but nevertheless, Platt's theory does offer breadth of comprehension and order, based on the concept of increasing complexity.

Platt is certainly not the first to suggest that the ordering properties of physical systems, notably increasing complexity, can be applied to social and cultural change.

Leslie White writes that

culture undergoes . . . a developmental or evolutionist process of change . . . only systems can evolve; a mere aggregation of things without organic unity cannot undergo evolution.

. . . . . . . . . . . . . . . . . . . . . . . . . . biological evolution might be defined as the progress of energy organization moving in a direction opposite to that specified for the cosmos by the second law of thermodynamics, . . . to understand man in particular we must understand living material systems in general. . . . a culture, or sociocultural system, is a material, and therefore a thermodynamic system. . . . the principles and laws of thermodynamics are applicable to cultural systems. . . . cultural systems expand qualitatively by developing higher forms of organization . . . become more highly evolved . . . become more differentiated structurally and more specialized functionally. (White, 1959, pp. 30-39)

Thus the principle of increasing complexity gains further strength
as a principle of integration, as it is extended from the physical to the social sciences. Similarly, Bertalanffy has no qualms about extending the concept of increasing complexity to social organizations. He writes of systems organizing themselves by way of progressive differentiation, evolving from states of lower to states of higher complexity. This is of course, the most obvious form of 'self organization,' apparent in ontogenesis, probably in phylogenesis, and certainly also valid in many social organizations. (Bertalanffy, 1962, p. 5)

The preceding paragraphs attempt to show the scope and key features of an organismic perspective based on systems principles. In the realm of the biosphere it is the minute marine organisms and green plants which are best able to produce negative entropy through photosynthesis. As the level or organisation of cellular material becomes increasingly complex, culminating in man, and specifically in his brain-mind, the transition is made from the biosphere to the noosphere where the basic principle of increasing complexity is just as applicable.

The ordering and structuring of component parts into highly differentiated wholes still occurs in the noosphere, but the units or holons involved are now different. Whether we consider the noosphere to be a 'thinking envelope' around the earth, or the individual brain-minds which three billion strong comprise the whole, it is ideas and concepts which, in this realm, become the units to be structured into new more complex patterns and integrated hierarchies. That system concepts can be extended to the noosphere is illustrated by Teilhard, "Complexification due to the growth of consciousness, or consciousness the outcome of complexity: experimentally the two terms are inseparable" (de Chardin, 1959, p. 180).
Emergence of a World View

System analogies, with their emphasis on organization, wholeness, directedness, are such powerful conceptual models, that we may be now at the beginning of a period where the universal tendency or form of process espoused initially by Heraclitus, later by Goethe, and recently by Teilhard, Huxley, Whyte, Bertalanffy, Platt and others, will likely gather sufficient momentum to expand into an organismic world view. The consequences of such a world view development would be appropriate to our time. The sheer speed of technical and social change is often blamed for the disorganization and conflict around us. An organismic world view, with its emphasis on process and change, would be aligned with comprehending such change. Similarly, the emphases of wholeness and organization are indispensable in a world where technology is dissolving international boundaries, towards the global village.

As mentioned earlier, personal alienation and lack of fulfilment would be aided by a world view based on change, provided man accepts Teilhard's thesis, that as the epitome of the evolutionary process, it is a moral imperative that we accept the responsibility to take our place on the evolutionary spearhead. The question remains as to whether we can mobilize sufficient intelligence to shape the new world structure towards which we are collectively moving. The organismic world view is well adapted to recognize unity without neglect of variety, since unity is achieved by recognition of the basic mode of process (increasing complexity), while variety is retained by the necessity of the individual parts comprising the whole, and the organized relationships between the
parts. Thus an organismic view permits all men to be treated as examples of one universal process, and thereby as one with the whole of nature, while still recognizing each as unique in the form of his developed individual structure. As previously mentioned, this feature is stressed by Alan Watts, drawing on ancient Indian philosophies; that each person view himself as part of the evolving whole, rather than as a separate individual entity cut off from the world. Watts points out how conventional beliefs train small children to develop the undesirable sense of separateness and isolation, strengthening the "I" concept, resulting in self-interest, selfishness, competitiveness with others. This sense of separate identity and egoism may lead to greed and exploitation as part of a desire to excel at the expense of others. By contrast, the organismic world view would tend to enable each person to view others, and the environment, as interdependent parts of the totality; there would be no need or desire to expand one's ego at other's expense. Idealistic moralizing perhaps, but with so much of world strife attributable to greed, self-interest and exploitation, any possibility of an alternative perspective is worth consideration. Anthropologists studying Potlatch Indians and Polynesian natives, agree that they exhibit dominant values very different from ours and these people probably view themselves as being more dependent on each other, and their environment, as the organismic perspective suggests. Their myths display the wisdom of maintaining a closeness to nature, and their social cohesion contrasts with the personal alienation and egoism one associates with industrialized man's society. Thus the suggestion here is that to view the world as a whole
enables one to see other people and the environment as almost a direct extension of oneself, emphasizing interdependence, also hopefully eliminating undesirable character traits associated with pronounced individuality and egoism.

This however, is not to neglect the importance of individuality. Thus while holism and breadth of perspective are key features of an organismic world view, the development of full individuality is just as important a concept, and the concepts of increasing differentiation of parts and hierarchical growth, which are vital to any system, are particularly relevant to the full development of the characteristic form of an individual. Two hundred years ago, Goethe wrote, "it does appear that the development of biological forms is expressed in an increasing differentiation of parts and increasing subordination or hierarchization" (from Jones, 1963, p. 82). The fascination Goethe found in the manner in which even simple individual organisms grow to their characteristic form, is evidenced by the sketches found in his original manuscripts; Sir Kenneth Clarke, in his recent BBC series "Civilization," scanned his TV camera over Goethe's original notes, to disclose a series of simple sketches of the various growth stages of a small plant. Goethe used the term hierarchization (or its German equivalent), while the title of Platt's article, two centuries later, was "Hierarchical Growth" (Platt, 1970, p. 2).

The idea of process leading to the development of optimal characteristic form of an individual organism, when circumstances permit, concentrates attention on the complete fulfilment of individual potentialities.
This ideal of full realization of potential has been a worthwhile slogan of idealistic educator's for a long time. Becker's concern with alienating factors can now be viewed in such a perspective that it becomes an analysis of the restrictions preventing this complete development of characteristic ideal form. Whyte is also concerned with such development of form, just as Goethe was as he sketched plant growth. Whyte writes:

\[\ldots\] the organic form of man characteristic of man is a complex system of organic processes, culminating in the social relations which are maintained and developed by speech and script. This pattern of human processes and behavior implies also a characteristic structure, the human body. The integration of a community consists similarly in the timing of behavior, so that the form characteristic of the community, its whole culture, is maintained and developed. (Whyte, 1944, p. 18)

One can detect Whyte using the theme of an integrated hierarchy of parts with reference to both the human body and social community structure. Platt uses the same concept when he writes: "\ldots in general, the growth picture is that of a hierarchical structure with stable pattern \ldots." (Platt, 1970, p. 2).

The major problem is to specify more precisely what the characteristic form of fully developed man is. Whyte reminds us that the integration of an organism consists in the spacing of its structures, cells, tissues, organs, and the timing of their functions so that a characteristic organic form is maintained and developed, but the question remains open as to how one determines the specific characteristics of the fully developed man, and of course it will remain open, due to its breadth and scope. An analysis of human nature is a problem which is so complex, that attempts deteriorate to personal opinion. Homo toto, the whole man,
representative of the characteristic form of human development, can be nothing more than a hypothetical ideal, and a private ideal at that, since each of us is likely to have our own ideas on such a topic. However, the organismic world view offers the emphasis of complete development of characteristic form as being a natural corollary of the life process. Related to the desirability of the full development towards the ultimate form of an organism, is the idea of balance. As Whyte puts it:

the unitary view of normally integrated man is as a hierarchical system of processes. The developing balance is what is called life, and it can only be understood as a part of the development of the wider environmental system which includes the organism. (Whyte, 1944, p. 42)

This idea of the essential interaction between organism and environment is shared by most of the thinkers whose outlook could be broadly categorized as "organismic" or "holistic," notably Whitehead, Watts and Platt.

A central problem which is reflected in the idea of balance concerns the relative emphasis that should be assigned to the full development of the individual, as opposed to the idea of the individual merging into the mass of the species, as suggested by Watts, seeing himself less as "I" and more as just a minute part of "It." Some writers tend to emphasize individual development, others tend to side with Watts' perspective. For example, Becker proposes "self esteem" maintenance as an integrating factor for human psychic development, but it may be only a short step from maintaining self esteem to becoming a status seeker, with the less desirable associations of ambition, pride, and avarice.
Thus in contrast with Watts, Becker prefers to stress the self assertive aspect of the individual.

By contrast, the opposite position is open to criticism also. To play down the relevance of the individual in deference to the whole, invites rapid retaliation from humanist critics. Teilhard's analysis has been labelled totalitarian, and not surprisingly, when one considers his statement, "Life shows signs . . . of requiring us, by very virtue of its movement toward a state of higher Being, to sacrifice our individuality" (de Chardin, 1959, p. 44). For Teilhard, the development of the individual is not the end of evolution; indeed, individuality robs us of those "ineffable joys of union and conscious loss of self in that which is greater than self" (de Chardin, 1959, p. 54). He applauds the collectivization inherent in modern society, the rise of the masses, economic integration and "the increasing impossibility of being or acting or think alone—in short, the rise, in every form, of the Other around us" (de Chardin, 1959, p. 118). For Teilhard this is all a very natural concomitant with increasing complexity. Compression is needed for planetisation, and if totalitarianism is a necessary by-product of an evolving noosphere, then he suggests that it is too early to judge whether the result will be "a greater degree of enslavement or a higher level of spiritual energy" (de Chardin, 1959, p. 123).

This is where the concepts of equilibrium and balance become vital, and the organismic world view stresses both. Whether "self esteem" should be promoted or de-emphasized is open to argument, but it is more relevant not to take sides, and to be able to recognize the
importance of both positions; as Whyte suggests, to "rejoice in the union of contrasts" by recognizing the necessity of balance.

The argument seems to be leading to the rocky shores of confusion at this point. Watts is calling for less "I" and more "It," in the tradition of eastern thinkers. Becker goes the other way in promoting self esteem maintenance which would seem to support the "I" concept. Teilhard has less time for individual man than for Man, while Law Whyte appears to add to the confusion by constantly calling for a "union of contrasts."

Fortunately Koestler offers clarification. He posits the "holon" as being analogous with Smuts' "whole." The holon or whole may describe whichever unit is being examined, whether it be an atom, cell, person or group. The clarification comes with Koestler pointing out that holons display a dual mode of behaviour. Firstly they exhibit self assertive tendencies, and secondly they behave so as to integrate and merge into a greater whole. These dual tendencies can occur simultaneously. Atoms in a molecule retain their own identity if the compound is analysed, yet merge to promote the whole molecule. Any organ in our bodies has a vital function to perform, yet is beautifully integrated to promote the whole. Personal motivation may be self assertive through egoism or selfishness, yet may be integrative to the group through altruism or love, thus expressing partness and submission.

This polarity of behaviour is fundamental to the organismic perspective, in fact it follows logically from the concept of hierarchical order. Thus Koestler has given us an elegant and simple technique for
appreciating the desirability of balance, which now becomes an awareness of the dual tendencies of holons. Similarly when Whyte calls for a union of contrasts, he is directing our attention to these dual tendencies, and increasing our breadth of perception. Ideas such as these certainly have a rich heritage. As Jones suggests;

The notion of union of contrasts finds its origins in 3000 B.C. in the idea of Yin and Yang. It can be traced through the work of Lao Tze in 600 B.C., Plato and Heraclitus, 400 B.C., . . . Ernst Cassirer, Alfred North Whitehead, Pitirim Sorokin, Erich Fromm, Ludwig von Bertalanffy, and so on. (Jones, 1969, p. 8)

Separate writers, over the years, have expounded the organismic theme, but in diverse fields. Now the convergence of their views enables an elaboration of the network of ideas and concepts linking their thoughts together, possibly culminating in a world view based on a unified, holistic, organic model. The time is ripe for a swing away from the dominance of the "prickly people" and the quantitative, mechanistic, impersonal, detached, logical precision displayed by those over-endowed with what George Morgan would call the "prosaic mentality," or with what Roszak would describe as "objective consciousness." The mechanistic world view, dominant for the first two thirds of this century, has led to an economy of abundance, but now its own deficiencies are becoming increasingly apparent, as evidenced by the world wide revolt by educated youth, with their rejection of much of "the establishment." Critics of "the system" are apt to be over-zealous in their condemnation of its faults, forgetting that science has freed a billion people from immediate physical wants, but the crux of their criticisms is that the mechanical
world picture and its technological components are now hopelessly backward in their human commitments. A characteristic of objective, mechanistic science has been the detachment and neutrality its exponents have maintained on ethical or moral judgements. The "prickly people" still extend sympathy to anyone so amateurish as to extract an "ought" from an "is." To commit the "naturalistic fallacy" is a beginner's mistake. Yet this is precisely the style of expression which Teilhard, Mumford and others are rebelling against. They deplore lack of commitment to moral values, and if they commit the "fallacy" of deducing an "ought" from an "is," then it is because they consider it eminently worthwhile to do so.

The whole question of the empirical objectivity and testability of ethical judgements has been vigorously discussed in philosophy. The analytical school took the easy way out by claiming that ethical terms could not be supported scientifically, the implication being that they were not quite worthy of serious consideration. The relegation of the expression of values to a minor position behind scientific neutrality has undoubtedly contributed to the void faced by modern alienated man in his search for maximum meaning.

The appeal of writers such as Watts, Wilson and Mumford is that they dare to commit themselves to redeeming situations which excessive objectivity and value neutrality have undoubtedly helped to create. The dominant intellectual habit of insisting that all reality consists exclusively of material, objective happenings, has helped produce the moral bankruptcy of personal enjoyment in individual life, and left man
floundering in his search for basic values. Corollaries include the striving for endless power and expansion in national life, and uncontrolled manipulative capacity in technical undertakings. "Serious thought," at least in the western world, has systematically excluded the mystical, metaphysical, ethical, or transcendental aspects of existence. The unrestricted increase of population, the wastage of conspicuous consumption and planned obsolescence, and consequent deterioration of the environment and ecological balance, have at last begun to create the reaction needed to overcome them. Mumford reminds us that reformers who would treat the campaign against environmental and human degradation solely in terms of more strenuous scientific efforts or improved technology, see only a small part of the problem. Nothing less than a profound reorientation of our technological way of life will do. Man will have to consciously replace the mechanical world picture with a more inclusive organic and personal frame of reference.

Ideas are only effective in so far as they are appropriate to particular phases of man's development, and the combined aggregate of the concepts developed by Goethe, Whyte, Watts, Bertalanffy and others are now converging as an organismic world view most effective for our time. Man's increasing knowledge now permits him the possibility of mapping out a value system based not solely on his own selfish ends, but constructed from the most recent vantage point, from which, due to the ascent of his breadth of comprehension, he is able to see himself as a vital part in the scheme of nature.

The organismic world view, with its emphasis on organization,
holism, balance, and integration is based on the ultimate product, life itself, as embodied in living organisms and reflected, magnified and enhanced in the mind of man. Bertalanffy's open system concepts from biology, with the integrating principle of anti-entropic increasing complexity, are now able to be extended to act as the metaphysical base from which man can view his existence and position in the cosmic scene. Teilhard was primarily responsible for extending the concept of increasing complexity from its initial restricted use in biology to its position as a hypothesized integrating principle of the broadest dimensions. Whyte's unitary principle of increasing symmetry was synonymous, but twenty years ago their voices were literally neglected in a period, where in the aftermath of war, mass affluence was still novel, and its appeal too strong to resist. Now megatechnics can be seen to have raced out of hand, and the warning cries increase in volume from people like Watts, Platt, Ferkiss, Mumford and others. Drawing out the threads common to their thought displays certain key features. Man is seen not in an adversary condition against nature, but as a working part of it, and that in the totality of existence everything connects and interacts, just as do the tissues and organs of living organisms. Life is seen as a moving changing process within which man is the central agent, the managing director of evolution, as Huxley reminds us.

In a recent essay (New Yorker, October 31, 1970), Mumford analyzes some of the underlying reasons which may have given rise to Becker's suggestion that alienation is 'the word that characterizes our time,' and which account for much of the boredom and banality of modern living.
These reasons support his contention that a new world view is needed as a base for a value system.

Mumford suggests that disintegration and disorder within the industrial consumer society are becoming more apparent, since the majority of people in the affluent society will continue to demand its rewards, but are becoming increasingly reluctant to put in the effort or accept the responsibility to keep the system operating. The present conflict between labour unions and management would seem to be indicative of this. Organized labour is demanding ever higher rewards, but thinks little of crippling essential services through strike action in order to force their demands. With most of the skills and decisions taken out of the worker's hands by automation and centralized control, the human qualities remaining are mostly negative ones, such as indifference and resentment.

Until this century people spent more time in family groups in isolated towns and villages, with a shared background of traditional values and cultural heritage, in which religion played a central role. The machine age and mass production brought increased mobility as people moved away from rural areas to the large industrial centres. Radio and television, together with the barrage of commercial advertising which supports them, have contributed to the development of a mass culture to replace the more personal values of the older life styles.

Broad generalizations are easy to make, and just as easy to criticize analytically, yet Mumford's charges against the less desirable features of the machine age seem reasonable; they certainly coincide with other critics, for example, with Becker,
Modern man's meaninglessness is a problem of what to do with life, what to do with it beyond simply living it out in a completely fetishized way . . . he has nothing ultimate to dedicate it to; nothing infinite to assume responsibility for; nothing self-transcending to be truly courageous about. He has only himself, his dazzling and diverting little consumer objects . . . (Becker, 1967, p. 213)

If then there would appear to be a need for a new life style, a different perspective, how can the organismic viewpoint cater to this need? Firstly, an organic world view is by no means new. Man has long relied upon his place in the partnership of all living things, since plants, animals and birds have been his food, long before the world became mechanized. As agriculture developed through preservation, selection and cultivation, man deepened his roots in the landscape. Mumford points out that "paradise" is the Persian word for a walled garden.

The capacity for growth, exuberant expression, and transcendence, symbolized aesthetically as well as sexually by the flowering plants --this is the primal gift of life, and in man it flourishes best when living creatures and equally living symbols are constantly present, to stir his imagination and encourage him in further acts of expression both in the mind and in his daily performances of life sustaining work and human nurture . . . To be condemned to a devitalized megalopolitan habitat in which human beings are isolated not merely from each other but from all other organisms, and are even forbidden by housing regulations to keep a dog or a cat for company, is to unlearn all the lessons in coexistence and mutual aid learned by organisms in their three billion years on earth. (Mumford, 1970, p. 88)

Mumford's emphasis on the coexistence and interdependence of man and nature agrees with Watts' holistic perceptions involving interdependence of organism and environment, and the views of Ferkiss and others. This growing appreciation of all that distinguishes the organic world from the world of machines is giving rise to a fresh vision of the entire cosmic
process which is emerging to take precedence over the Newtonian ideology, whose source was the solar system, whose symbol was the mechanical clock, and whose ultimate achievement was objective, mechanistic, scientific detachment and the rise of the megamachine.

Mumford argues directly for the need of a new life style based squarely on the organic model. He writes:

the realization that organic forms have produced a model for man's own development, immensely richer than any provided by the mechanical world picture, is perhaps the greatest gift science has made. (Mumford, 1970, p. 88)

This is an important statement, for by suggesting that his choice of organic forms offer the best model for man's development, Mumford is providing a possible link between science and values. Organic forms have been presented in the light of open system theory and structured complexity by Bertalanffy, Teilhard, Whyte and others, with man himself posited as the ultimate known example. Now Mumford is proposing that these same principles of organic unity be used as a model in the realms of values, aims, purposes, and social planning.

Certainly there are violent contrasts between the general characteristics of a healthy organism and modern industrial society. The organism adjusts rapidly to any factor which might violate its equilibrium, relying on intricate feedback mechanisms. Body temperature is an obvious example, as is the balance of acid-alkaline concentration in the blood. Homeostatic balance, through feedback, preserves the dynamic equilibrium of the organism, maintaining wholeness and balance; in fact the swift response to stress without conscious intervention or direction
is a condition of survival. A basic property of open system theory in biology is the maintenance of a constant structure and balanced characteristic form. Mumford suggests that the chief properties of a power economy, the magnification and overexpansion of power alone, and the lack of boundaries and balance, are antithetic to those of an organic system. Modern society lacks the internal feedback mechanisms able to redirect its course, until man himself is prepared to accept that responsibility. The concepts of balance and equilibrium are key features of organicism, and it is on these characteristics that an organismic world view is largely based. It is a simple matter to list dichotomies, from which we must strive to extract a balanced position if man is to emulate the organic model.

Man's vital prosperity rests on establishing a balance between self-maintenance and growth, between external proposals and internal responses, between activity and recuperation. To preserve one's identity as a member of a species and a group, and likewise as a unique individual, to remain 'true to character,' to establish the minimal conditions needed for traversing the whole life cycle; this is the basic condition for organisms, communities, cultures--and for developing human personalities. (Mumford, 1970, p. 92)

Thus the problem is primarily one of balance, maintenance of a mean position between extremes. Becker lists similar dichotomies:

how to strive and be still; how to release the maximum amount of living energy, and yet achieve the most complete closure and satisfaction; how to keep the world rich and diverse, and yet how to pull it integrally together; how to be an intensely private individual, and yet to bask in the full brotherhood of the great public life; how to get intense meanings from objects, and yet how to avoid fetishizing our action to a narrow range; how to get the maximum closeness of social unity, and yet not destroy others outside your own group, or suppress minorities within it--how, in sum, to have the greatest
intensity and satisfaction of life, within the limitations of the conditions of life and history. (Becker, 1967, p. 221)

Thus to those proponents of the organismic world view, such as Mumford, the analogy between the balance exhibited by the healthy organism, and the ideal of balance which they aspire to behold in individual lives and in social organization, is a particularly attractive one. The organism exhibits unification and integration of highly differentiated parts, whereas so many of the world's problems display conflict and disorganization, lack of system. Jones (1969, p. 2) reminds us that the identity crises and alienation associated with existential frustration and the fragmented personality, are examples of disorganization at the personal level. On the level of society, individuals become isolated and alienated from one another, unable to pierce one another's character armour, and again the problem is one of conflict or disorganization, either in social groups, family, or church. Similarly, at the cultural level, conflict between ethnic or religious groups leads to segregation, which is a further example of conflict and lack of order, while at the international level, the same lack of harmony and unity is apparent in the guise of nationalism.

Alienation, segregation, and nationalism, are similar in so far as each is a problem of order, structure, unity. The catch phrases of 'unity amidst diversity,' 'oneness and manyness,' 'union of contrasts,' 'reconciliation of opposites' may be worn a little thin through over use, but they are highly worthwhile to the extent that they are indicative of efforts to search for the widest and most inclusive perspective. Indeed,
the search for breadth of perspective and synthesis provides the rationale behind the work of many of the thinkers mentioned in this paper.

Unfortunately conflict and segregation exist even in the realm of the social sciences, between the mechanistic and organismic schools of thought, but again the concept of balance can prove its worth, if we can attain to the perspective of appreciating the points of view of both 'prickles' and 'goo.' If one can strive for the detachment and precision of the objective scientist, in combination with the best reasoned value commitments of the humanist synthesizer, then one will be in the best position from which to enjoy the union of contrasts of analysis and synthesis.

Balance is not the only feature which advertises the organic model as most worthwhile for man, in contrast to his present life style. Organic plenitude is another characteristic which man may do well to emulate. Organized superfluity is a feature of the organic body, which stores far more energy than it is ever likely to require, and which has vital organs such as lungs, eyes, kidneys, occurring in pairs, whereby if one is harmed, the other can maintain the whole organism. This contrasts with uncontrolled abundance and expansion for its own sake, characteristic of modern affluent society. Mumford reminds us that good examples of plenitude existed in quite primitive communities, until the controlled surplus was expropriated by the prevailing power complex in the form of taxes, forced labour, and war. In these primitive societies, the extra margin of energy that nature supplied was employed not in amassing more material wealth, but in the elaborations of art, ritual
and dance. By contrast, modern man devotes much of his surplus energy to 'moonlighting' at a second job, in order to better enjoy the benefits which he is convinced the consumer society has to offer.

Balance and plenitude are obvious characteristics of organic systems which man would do well to incorporate into his value system. Already many of man's values are biologically based, for example, the impulse to care for the weak, the love of a mother for her offspring, are not exclusively human values and are often surpassed by birds and animals.

A less obvious connection between the organismic world view and an emerging value system involves the organization and integration which forms millions of different cells into a single organism. Hans Selye (1956, p. 282) points out that a human being exists as a result of the cooperative relationships in which cells assume different roles as blood, tissues, and organs, all integrated as a single organism. Similarly, the biosphere can be considered as a single superorganism structured from integrated component parts such as oceans, atmosphere, all creatures. The cooperation between the integrated parts of both the organism and the biosphere has led one author to suggest that "Surely we must conclude that the entire biosphere exhibits altruism" (McHarg, 1970, p. 31).

Thus the value of cooperation and altruism at the interpersonal level receives support from an organismic point of view. Also, the individual who is aware of the integration between component parts of the biosphere can more easily see himself as an essential cooperating part of the whole, rather than having to conquer nature.
Thus, in summary, the characteristics of organicism, such as balance, wholeness, and cooperation can be reasoned to provide man with a model on which to base a personal perspective. The convergence of views of thinkers from different academic fields seems to be coming to focus on a loosely structured set of concepts which, in this paper, I have called the 'organismic world view.' Many will view with cynicism and mistrust any suggestion of another universal doctrine; Christianity, Marxism, humanism, have all failed to achieve unity and harmony. Obvious evidence of this lack of harmony is that we live beneath the overhanging obscenity of thermonuclear destruction, yet philosophers still balk at the prospect of deriving an 'ought' statement from an 'is' statement.

A unified outlook, based on the concept of increasing complexity, whether in the evolution of organisms, or in the evolution of man's mind into the noosphere, is not intended to replace religion. It is no answer to the cosmic mystery of "why?" Increasing complexity is simply a description of a natural process, not an explanation for any rationale behind the process, but as Whyte reminds us, change is reduced to order when the form of process is recognized. The organicism world view is based on scientific knowledge and grounded in open-system theory and the equifinality of organisms to attain and maintain a form characteristic of the species. The point of view is still young. As a reasonably coherent body of theory, it is little more than forty years old, but the network of concepts involved, and the diversity of the interrelationships between them is rapidly increasing.

Already it is apparent that one major advantage of organicism
over the previously dominant mechanistic world view is that it does offer greater scope for soundly-reasoned ethical prescription, and that it also offers indication of increased meaning by partially disclosing the direction in which we may be heading. More importantly it offers the individual the opportunity to overcome the alienation, boredom, and meaninglessness so characteristic of our time. Firstly he can elect to align himself with the organismic tendency to attain characteristic form, by developing his own potential to coincide with his best-reasoned ideal of human nature. Secondly if he is more ambitious, he can also endeavor to attain to the status of one of Maslow's "self-actualizers," and, by his creative efforts, maintain himself on the cutting edge of the evolutionary trend by contributing to the development of the increasing complexity of Teilhard's noosphere.

For the individual attuned to the organismic viewpoint, the question of "freedom to do what?" is automatically answered immediately it arises; freedom to accept the responsibility to aid the natural tendency to increased complexity; freedom to attain a place on the spearhead of the evolutionary trend by creative effort. If Teilhard's developing noosphere represents a collective growing body of creative thought and mental effort, then each of us has the choice as to whether we wish to contribute, and certainly this quest is self-transcendent. Perhaps this accounts for the vast body of research and original creative work being performed around the world. What motivates creative individuals to produce long after their material needs are satisfied, if not the feeling that their efforts maintain them on the fighting edge of the evolving cosmos?
organismic world view, based on the process principle of increasing complexity, simply crystallizes this fact a little more specifically. Educators have long stressed creativity and self-realization as desirable ends. Now the ideas of organicism are able to accommodate these previously nebulous suggestions with greater precision.

Complexity through Creativity

Creativity is worth considering in greater detail, since its expression by the individual is here hypothesized to represent his alignment with transcendent evolutionary purpose. For Mumford, creativity represents the climax of existence. He writes:

... in so far as the organism has achieved the necessary preconditions for stability, continuity, dynamic balance, and self-replenishment, further creativity is assured, and the ability to transcend these conditions, at extremely rare intervals, becomes possible. It is in those moments, and in the personalities through whom such flashes of divinity become visible, that organic existence reaches a brief, but utterly satisfying climax. (Mumford, 1970, p. 88)

This emphasis on creativity as the ultimate achievement is in keeping with Koestler's "moment of insight" and Maslow's "self-actualizers." Creativity is readily accommodated by the organismic viewpoint as representing progress towards increasing the detail and complexity of knowledge, and hence of the evolving noosphere.

As discussed earlier, creative thought can be considered as the increased complexity and ordering of information into meaningful patterns, and since information is primarily energy, creativity can be considered as one aspect of the organismic emphasis on increasing negative
entropy. This idea is implicit in Teilhard's noosphere concept, and explicit in McHarg's writings, "the apperception of information as meaning, and response to it, is also seen as ordering, as antientropic" (McHarg, 1970, p. 30). Further support comes from Rapoport; "even aside from the remarkable discovery linking entropy with the 'amount of information,' the intuitive notion that 'order,' 'entropy,' and 'intelligence' are somehow connected has moved physicists to speculate on the relation between these concepts and life" (Rapoport, 1965, p. 187).

To any reader with a 'scientific' or 'prickly' background of empiricism, this discussion of creativity tending to increase the hierarchical differentiation of the noosphere, is likely to be dismissed, but the fact remains that to many thinkers it represents the point of departure from an inadequate empiricism of the mechanistic world view, to an evolutionary psychology of the future. One rarely finds mention of creativity or 'leaps of intuitional insight' in standard texts of philosophy of science, yet a number of eminent thinkers have been propounding such views for some time. This "evolutionary psychology" contains a number of speculative hypotheses which overlap with the notion of transcendent purpose. Since purpose, values, and truly worthwhile goals appear to be lacking in modern, alienated man, and since creativity reinforces the organismic world view, some of these ideas will be worth noting.

For Colin Wilson, the concepts of creativity, evolution, purpose, and maximum meaning, are very closely linked. Wilson traces some of the history of man's search for meaning and purpose. He suggests that the
romantic poets of the nineteenth century were the first group to seek a more intense life style, but that their efforts dwindled, that most of them died in poverty and sickness, and that their imprecise use of language contributed to their downfall. Wilson sees existentialism as an extension of romanticism, with the added precision of a philosophical vocabulary, but feels that it has ended in a position of pessimism and nihilism with which he cannot concur. He admires H. G. Wells and G. B. Shaw as being more optimistic, and writes:

Man--and again I must add 'Wellsian man'--is a purposive animal . . . he is approaching a condition when he will cease to be a creature of biological motives--security, sex, dominance--and will regulate all his activities by a primary motive--evolutionary purpose, self-change. (Wilson, 1965, p. 138)

Wilson delves into the phenomenology of Brentano and Husserl, and extracts the concept of 'intentionality' as being of vital importance. He suggests that 'intentionality' of consciousness indicates that we are not the neutral, passive, and objective observers of experience that we imagine ourselves to be, but that 'intentionality' is vital to the mechanism of our perception. Wilson explains his use of the term 'intentionality' by example, suggesting that faces we may see in the moon, or in clouds are simple examples. (The popular press recently publicized a photograph of clouds in which the face of Christ reputedly appeared. The observers were probably avid churchgoers.)

Rollo May, in Love and Will devotes two chapters to the concept of intentionality, and writes, "the concept seems to me so important, and has been so neglected in contemporary psychology, that I ask the
reader to go with me into an explanation of its meaning" (May, 1969, p. 225). May traces the history of the concept through Aristotle ("what is given to the eyes is the intention of the soul"), St. Thomas Aquinas, Kant, Brentano, Freud and Husserl. May writes,

intentionality, as I am using the term, goes below levels of immediate awareness, . . . perception is directed by intentionality . . . it is an unjustified reduction on the part of Wittgenstein and the positivists—and the behaviorists are to be included at this point—to make the world only out of objective facts. (May, 1969, p. 242)

Wilson writes, "Husserl's phenomenology, then is an investigation of meaning" (Wilson, 1965, p. 166). Wilson's own contribution is that intentionality, which is linked to Husserl's "transcendental ego," and which is beyond our conscious control, behaves in line with the evolutionary process of increasing complexity, and this is the relevance of the concept to the organismic world view.

If evolution proceeds to states of increased complexity, and if man is considered a main agent of this tendency, it seems reasonable to assume that analysis of man might uncover mechanisms to aid this process. At the level of consciousness, the mechanism fostering increased complexity of the noosphere is simply creativity. Wilson is suggesting the complement to this, but at the unconscious level, in his hypothesis of intentionality, though his reasoning is only tentative and exploratory.

This view of transcendent evolutionary purpose is hardly likely to be received sympathetically by those with a 'prickly' background. College-level philosophy teachers are constantly asked by students "What is the purpose of life?" At this stage the instructor carefully analyzes
the word "purpose," shows the student that the question was "meaningless," and considers the topic closed. The student becomes more bewildered than before he propounded the question. The review of ideas of organismic thinkers discussed in this paper is an attempt to come to more satisfactory terms with such identity problems.

Wilson is suggesting a direct link between our perceptions, our consciousness, and the evolutionary tendency to increased complexity which is the integrating principle of the organismic viewpoint. His suggestion of a link between what we perceive, and the natural tendency to complexification is hypothetical and speculative. The relevance is that he does rely on increasing complexity as his integrating principle. Wilson's suggestion of some vague deterministic tendency directly affecting our perceptions, borders between science and mysticism, but this in itself is not sufficient reason to dismiss it lightly, as much objective and empirical investigation encroaches into realms previously considered mystical, one example being the current Russian investigations into extra-sensory perception. (Thunder was once considered to be the roar of angry gods.) Further relevance of Wilson's suggestions lies in the fact that empiricism considered the scientific observer as a detached, neutral, passive observer. The knower was separate from the known. This sense of separateness is what Alan Watts considers to have greatly contributed to the alienation of western man. By contrast, the organismic viewpoint sees the knower and the known as part of the one interacting totality.

Wilson, having made his speculative suggestion of a direct link between evolutionary complexification and our perceptions, tends to
settle for an anti climax in *Beyond the Outsider*. He concludes by realizing that he is approaching territory for which concepts have yet to be mapped out, and the last sentence of his book states, "the way forward lies through the development of language" (Wilson, 1965, p. 205).

Wilson's suggested link is possibly too deterministic to be palatable. Rollo May offers the counter balance with his *Love and Will*, stressing more the role the individual can play in willing his own destiny. It is interesting that 'will' and 'intentionality' are used synonymously in everyday language and that May devotes two chapters of his latest work to the concept of 'intentionality.'

If May and Wilson are correct, or even close to being correct, in their views on perception, they certainly bring into question the adequacy of empiricist views of perception and cognition. Sorokin is another who questions the empiricist outlook, based on sensory perception and separation of knower and known. He prefers to stress intuitional cognition;

By it is meant a momentary, unpredictable enlightening that gives to the knower, or to a creative genius, the essence of the problem studied or the solution of a creative task. Supersensory intuition is basically different from sensory perception-observation, as well as from rational (logico-mathematical) analysis and inference. The supersensory and super-rational intuition is the very opposite of the unconscious with which it is regularly confused. (Sorokin, 1956, p. 284)

There would appear to be obvious correlations between Sorokin's supersensory intuition, Koestler's "moment of insight," Mumford's "flash of divinity," Wilson's "peak experience," Platt's "acts of hierarchical growth." It is difficult to speculate on the relationships between
holistic metaphysics, creativity, and evolutionary tendencies, without ranging through the borders of mysticism. Husserl and Whitehead were mathematicians, yet both verge on mysticism; the former writes of 'the mothers' who were the 'keepers of the keys of being,' and the latter talks of 'eternal objects,' of which the natural world is a selection.

Sorokin (1956, p. 288) writes of the 'infinite ocean' and the creative flash which merges the creator with a superpersonal creative X called 'God,' 'nous,' 'Cosmic Mind,' and of the union of Yogi with the 'Godhead.' Shades of Alan Watts! Regardless of the degree to which mysticism enters their discussions, these thinkers would all appear to agree that creativity is eminently worthwhile. The concept of creativity, since it represents the ascending arrow of the evolutionary process, is very readily accommodated by the process world view of organismic thinkers, and the idea of an intuitional flash of insight is one avenue through which creativity can be obviously likened to a 'self-structuring hierarchical jump.'

The intellectual achievements of Husserl, Whitehead, Wilson and Sorokin illustrate that they can hardly be dismissed as 'cranks,' yet in parts their work verges into the mysterious and unknowable. Perhaps this is a necessary characteristic of the truly original mind, to carry the vanguard of advancing knowledge to such a forward limit that the interconnections of the supporting concepts necessarily become sparse and weak, thus exposing the project to scorn and ridicule from the less adventurous who prefer criticism to creativity.

Whyte is one who seems to have worked his inquiry to the stage
where he must now wait for the development of supporting concepts. He is fascinated with both inorganic and organic forms, and suggests that we are on the verge of a new science of form and formative processes, and he probes for continuity and unity between spatial forms and creative thought. Like Teilhard, he is bridging the traditional gap between body and mind. His interest in the formative processes of the spontaneous unconscious presents fascinating overlaps with the 'intentionality' of Wilson and May, and, even more surprising, presents parallels with the ideas behind Maharishi's Transcendental Meditation.

It is for the morphic science of tomorrow to trace the continuity which runs through the morphogenetic processes of embryological development and the self organising operations of the emerging nervous system and brain-mind, to the formative activities of imaginative thinking at all levels from which all good things have sprung. (Whyte, Hudson Review, 1971, p. 630)

Personal Values and the Organismic Perspective

The urgency of the need to unfold some convincing direction for values is indicated by the malaise of alienation, and the rise of the 'new left' counter-culture. Youth is most uncertain of its value orientation. While it rejects competitiveness, egoism, and conspicuous consumption, the counter-culture has not been successful in providing answers. The range of cults of young people, from 'Jesus freaks,' Zen groups, T-groups, personal growth workshops, indicates that they are searching for more meaning, purpose, and emotional integration in their lives than they are able to discern in preceding generations.

Anthropology has stressed the relativity of values between
different cultures, emphasizing differences rather than similarities, so that students seriously doubt whether cultural values exhibit sufficient strength to be worth commitment. Politics is even worse, with the world divided into two camps pointing nuclear warheads at each other. The modern individual is assailed from every angle by divergent and contradictory value claims, so that to take one side in an issue is to immediately make an adversary of the other, and the resulting polarization leads to confrontation. The whole question of the empirical objectivity of value judgements in ethics has been vigorously discussed in philosophy. Moral conclusions are not amenable to empirical test, with the result that mechanistic science has relegated the subject of ethics to a minor position. Ethical terms are supposedly expressive and imperative, attempts to define them are persuasive, and one cannot prescribe without committing the naturalistic fallacy of deriving an 'ought' from an 'is.'

Nevertheless, the organismic view being discussed in this paper does have something to offer in terms of values. Firstly, to the extent that one concurs with Teilhard as seeing man as the apex of complexity in an evolving process, there follows the imperative of accepting the personal responsibility to maintain a position on the 'cutting edge.' Secondly, to the extent that one agrees with Goethe, Whyte, and Mumford on the naturalness of attaining characteristic fully developed form, one can accept the responsibility to strive for the fullest possible actualization of individual potential. The religious slogan 'God's glory is man, fully alive,' contains wisdom, even if it is disguised as dogma.

The relationships between values and organicism may be more subtle
than the somewhat idealistic suggestions above. Carl Rogers, a leading humanistic psychologist, has made some fascinating points, which call for more than brief review. Rogers suggests that a young infant prefers those experiences which maintain, enhance, or actualize his organism, such as food, security, exploratory behavior. However, once he is satiated, he rejects any more food; once he is rested, he prefers new experience, indicating that this valuing is a flexible process, not a fixed system. The infant is his own centre of evaluation, regardless of the ideas others may try to impose, but as the child develops, he begins to learn to try to please others, rather than himself. Becker reminds us of the same thing in his description of the Oedipus complex, illustrating how conscience is formed in the early years, and how self-esteem is dependent on social performance which is pleasing to parents or authority figures (Becker, 1967, p. 152). This early training hobbles flexibility of choices in later life, resulting in distrust of one's own independent judgement. Thus we accumulate introjected value patterns, not based on our own experience, such as; sex is bad (from parents, church); making money is good; communism is bad; teamwork is preferable to acting alone; and many others. The criterion by which these values are set is the degree of acceptance they bring, and most of us cling to them in a rigid fashion. Since they are often at variance with our experience, we succeed in alienating ourselves from ourselves, as Fromm (1950, p. 51) suggests in Psychoanalysis and Religion. The mature individual remains open to experience, flexible to new value requirements. Values change for him as his psychological growth process continues.
His own experience provides the feedback necessary for the continued development of an adequate value system. The criterion of the valuing process once again becomes the degree to which the experience actualizes the individual. If the course chosen proves to be not self-enhancing, this will be sensed by feedback to affect a change towards self-fulfillment. Roger's description here uses terms such as process, enhancement, feedback, openness, growth, which are the basic vocabulary of an organismist.

Rogers hypothesizes that there is an organismic base for an organized valuing process within the individual, which any human being shares with the rest of the animate world, and that this base is the capacity for adapting feedback information in order to adjust one's behavior towards maximum self-enhancement. He further suggests that this valuing process is effective in achieving growth only to the extent that the individual is open to the experiencing going on within himself, and that in persons who possess this openness, there is an organismic commonality of value directions which tend to enhance the individual and to make for the survival and evolution of the species. This commonality of value directions is cross-cultural, and would be chosen by all individuals if they were genuinely free to choose. Examples of such values are the tendency to move away from facades or pretense, to move away from meeting the expectations of others, to positively value deep relationships with others; to value being a process of potentialities being born, rather than desiring some fixed goal. To quote Rogers:

I dare to believe that when the human being is inwardly free to choose whatever he deeply values, he tends to value those objects,
experiences, and goals which make for his own survival, growth, and
development ... though the individual of whom I am speaking would
not have a consistent or even a stable system of conceived values,
the valuing process within him would lead to emerging value direc-
tions which would be constant across cultures and across time ... 
would be highly effective in the ongoing process of human evolution ...
would be a worthy participant and guide in the process of
human evolution. (Rogers, 1969, p. 93)

Thus Rogers has arrived at a suggestion of universality of values,
not imposed by rulers, priests, or politicians, but based on common
factors inherent in human nature, provided man can open himself to his
own experiencing, though possibly Rogers is being optimistic when he sug-
gests that the values likely to emerge will be positive ones such as
sincerity, independence, self-direction, social responsibility, and loving
interpersonal relationships.

Maslow's work on the motivating values of self-actualizing persons
offers guidelines to those seeking their full potential. His self-
actualizers have satisfied their basic needs, and he finds them to be
dedicated to their vocation, in fact in the ideal case they are unable
to distinguish between work and play, and their vocation becomes a defining characteristic of self-identity. Maslow suggests that they see their
profession as a carrier of ultimate values; truth, unity, self-
sufficiency, meaningfulness are some which he suggests. "There is less
differentiation between the world and the person because he has incor-
porated into himself part of the world and defines himself thereby ... 
his self no longer has his skin as its boundary" (Maslow, 1969, p. 73).
Here the ideas overlap the organicism of Whitehead and Watts, and, like
Rogers, Maslow is elevating the reality status of positive values;
Thus, a fully inclusive definition of a fully-developed self or person includes a value system by which he is meta-motivated" (Maslow, 1969, p. 75).

The thought of both Rogers and Maslow is in harmony with the organismic theme of thinkers previously discussed. Rogers repeatedly uses the word "organismic" to describe his emerging common value base, while for Maslow, "the so-called spiritual, transcendent, or axiological life is clearly rooted in the biological nature of the species" (Maslow, 1969, p. 76). Their desire to hypothesize the reality of positive values contrast with the predominant, more 'scientific' outlook which avoids the difficult problem of value commitment on the grounds that values are of dubious reality and are not amenable to quantitative investigation. Rogers and Maslow are treating values as if they were far more real than 'boo-hurrah' attitudes, as held by the 'prickly' linguistic analysts.

What all of this means is that the so-called spiritual or 'higher' life is on the same continuum (is the same kind of quality or thing) with the life of the flesh, or of the body. (Maslow, 1969, p. 75)

By elevating the 'reality' of value concepts in this way, they become fact-based, legitimate scientific problems calling for research. Those who would hold dear the naturalistic fallacy, that one cannot derive an 'ought' from an 'is,' have their position weakened once it is realized that the axiological life is clearly rooted in the biological nature of the species and so is open to empirical research. Thus the suggestion of this paper, that a naturalistic, organismic world view can
legitimately generate valid value prescriptions, cannot be dismissed as logically untenable on the grounds of the naturalistic fallacy. Some of these values, previously mentioned, include organismic characteristics such as balance, wholeness, plentitude, attainment of characteristic form, and creativity.

When life is seen as an antientropic phenomenon, then creativity seems to be the avenue through which man is best equipped to make his contribution. The moral imperative which is built into this claim is that man ought to accept the responsibility to further his own alignment with this basic antientropic process. If nature's tendency is to evolve ordered structures in temporary defiance of the entropy concept, and granted that creativity is one form of this ordering of energy, then my claim is that it seems a reasonable value base that we direct our freedom of choice to that end. Creativity is antientropic, which aligns it with the evolutionary tendency towards states of increased complexity. Beethoven's nine symphonies are thus seen as good in their own right, where good is equated with increased negentropy.

The authors quoted over the last few pages, Wilson, May, Sorokin, Maslow, Fromm, and Rogers, are reasonably representative of a group sometimes labelled as 'humanistic psychologists.' As individuals, they would probably object to being classified in such a manner, but I use the term to illustrate that their focus of interest differs from people such as Teilhard, Huxley, Whyte, Bertalanffy, and Platt, who might be classified as evolutionists with a dominant biological, rather than psychological, emphasis. The reason I make this somewhat artificial distinction between
the dominant interests of these two groups is to make it easier to emphasize the concepts which they share and agree upon.

If the emerging picture of the nature of man is to be an integrated one, then we might expect to find a good deal of overlap in the concepts used by psychologists, psychiatrists and biologists. Bertalanffy himself, generally considered the founder of open-system concepts, has written on psychological topics, and often at variance with generally accepted constructs. For example, Bertalanffy has no time for the idea that human behavior is directed primarily towards a reduction of tension. His book, *Robots, Men and Minds*, illustrates the inadequacy of this principle of homeostasis and tension reduction on which the mechanistic-positivistic school of behaviorist psychology so heavily relied. This school of thought saw the classical stimulus-response scheme as primary, but to see human behavior strictly in the light of need gratification and attainment of equilibrium is to miss completely the realms of play for its own sake, exploratory activities, creativity, and self-realization, as Bertalanffy pointed out ten years ago. By contrast, his open-system and biological research led him to claim that the organism is basically and spontaneously active, without the need of external stimuli to generate this activity. This concept represents a complete revision of the original homeostasis principle, and obviously provides a foundation for personal goals involving continued development and realization of potential, as suggested in this paper.

Charlotte Buhler recently delivered the presidential address at an international conference of humanistic psychologists, and made the
same point. "One cannot simultaneously believe in the end goal of homeo-
stasis and the end goal of a fulfilling self-realization" (Buhler, 1971, p. 378). Her review of some basic concepts showed further overlap with organismic ideas, notably the underlying theme of emphasizing synthesis and wholes, rather than analysis of separate fragments, ". . . we strive to find access to the study and understanding of the person as a whole" (Buhler, 1971, p. 378). She also explores the concept of 'intentionality,' as used by Wilson in 1965 to suggest a link between our perceptions and the unconscious, and as treated extensively by May in Love and Will, who applied 'intentionality' to psychotherapy and to "the totality of the person's orientation to the world at that time" (Buhler, 1971, p. 380).

A major area of overlap between humanistic psychologists and the features of an organismic perspective is that of creativity through self-realization. I have earlier suggested a meta-scientific basis for this as involving a process metaphysics leading to increased negentropy through increased ordering of information. As McHarg says:

. . . if the measure of creation is negentropy, then it is the smallest marine plants which perform the bulk of the world's work, which produce the oxygen of the atmosphere. . . . Man has little creative role in this realm . . . [he] becomes prominent as a perceptive and conscious being. . . . and contributes negentropy through apperception and understanding. (McHarg, 1970, pp. 30-31)

Like Mumford, Charlotte Buhler talks of "the ecstasy of the creative vision and creative struggle" (Buhler, 1971, p. 382), and suggests that "the concept of the primary role of man's creativity is in a way the most central concept of humanistic psychology" (Buhler, 1971,
p. 383). She further suggests that creativity is a manifestation and evidence of the "new, generally accepted theory that the living being and especially the human brain represent an open-system with certain freedoms of operation and potentials for change" (Buhler, 1971, p. 383).
CHAPTER THREE

RELEVANCE TO EDUCATION

"... the challenge is clear: we must immerse ourselves in an 'organismic revolution' as the basis for sweeping changes in education." (Jones, 1969, p. 21)

I believe that some of the ideas reviewed in this paper are big ones, and big ideas can usually be correlated in some manner with the broad field of education. There would seem to be a number of ways in which the organismic perspective which has been developed and promoted in this thesis may be directly applicable to educational theory and practice.

Firstly, the problem of personal identity, as manifested by existential neuroses, boredom, lack of purpose, alienation, might be considerably reduced if school or college curricula could impart the nucleus of the ideas common to the organismic thinkers previously mentioned. Actually there would appear to be a demand for these ideas already generated by today's youth. Alan Watts' books are best sellers among the young, and, as a guest speaker on the campus circuit, he draws packed houses. Teilhard's ideas are also spreading rapidly now that the church has finally permitted their publication, while many of the other thinkers mentioned are prominent both as guest speakers and as best selling authors.

The growing acceptance of the ideas of people such as these, indicates the gradual breakdown of old established areas of specialization.
Consider the diversity of their primary interests. Wilson, with intensification of consciousness; Frankl, with psychiatry and logotherapy; Watts, with eastern metaphysics; Platt, a biophysicist; Becker, a sociologist. Using traditional "labels," these people present a very mixed bag, yet I propose that their appeal, especially to the young, lies in the common thread of increased meaning which the aggregate of their ideas has to offer. One possible means of imparting the basis of these ideas to students, would be to convert the traditional "guidance" lessons presently found in high school curricula, into unitary or integrating periods. This involves the rather optimistic assumption that there may be teachers available to present the material; to show students how their studies can be related to an evolutionary base, with synthesis towards states of higher differentiation and increasingly complex structures; how the concepts of order, process and form permeate many realms of our present knowledge; how the unifying themes link the areas of specialization and offer guidelines for ethical prescriptions. How much more meaningful would this type of presentation be, when contrasted against an education which lacks unifying themes, and neglects values, ethics, long-term goals, implying that these are of doubtful logical tenability.

Another area of concern which has rocketed to prominence is ecology and pollution. Young people are now the first to clean oil spills from beaches, and the ecological conscience which has emerged has much in common with the organismic viewpoint, notably the ideas of the interdependence of all living things, that man is a part of nature, not
apart from it. The recent upsurge in ecological awareness emphasises the complex organisation of our environment system, the way everything is related to everything else in the delicate balance of nature. Thus key concepts from the organismic perspective are already foremost in the consciousness of young people, and are causing profound changes in their values. The perspective of the organismic view is one of synthesis and wholeness, leading to an ever-widening range of experiences at the personal level. The traditional high school and college curricula do not satisfy this demand for increased breadth of experience. The young desire synthesis, not analysis, as part of their concern with increasing meaning. The use of drugs to open new vistas of consciousness is one avenue of experience being explored by increasing numbers; the same applies to transcendental meditation, which is becoming popular. Roszak's investigations of the counter-culture would indicate that the materialistic goals of the previous generation have been largely rejected in favour of experiences and knowledge which better contribute to increased meaning. As Becker suggests, "... man was peculiarly the animal who strived after meaning, and the creation of meaning" (Becker, 1967, p. 229).

Becker himself proposes an educational solution to the problems of alienation by outlining a curriculum designed to show how alienation in its many forms comes about. With Becker's curriculum from Beyond Alienation, a student would understand the restrictions on his personal and social fulfilment, and if the student was to enroll for the theological dimension of Becker's curriculum, then

this would show him the one thing man needs above all to know: the
direction in which he can experience the maximum exercise of his freedom. . . . this is the freedom to contribute our own energies to the eternal meaning of the cosmos, the freedom to bathe our daily life in the highest possible intensity and scope of meaning; and these must be divine, self-transcendent meanings. (Becker, 1967, p. 273)

But then Becker stops short. His alienation curriculum, superbly presented, and his acknowledgement of the need of self-transcendent meaning, but not the answer to the riddle of how to get there. "These are questions of great magnitude that, as we said, we cannot begin to answer here" (Becker, 1967, p. 278).

System Concepts and the Integration of Knowledge

The modest suggestion of this paper is that a combination of the views of Teilhard, Whyte, Bertalanffy, Mumford, and Platt, based primarily on the evolutionary tendency to states of increasing complexity, may be the complementary link to Becker's curriculum suggestions. Thus if Becker's alienation curriculum can "push" the student towards maximum meaning, then the "pull" to aid this "push" may be offered by the moral imperatives which I have argued to be part of an organismic world view; --firstly, the desire to attain fully developed characteristic form (which can never be more than a reasoned ideal), and secondly, the desire to find a place on the "cutting edge" of evolution by further creative development of Teilhard's noosphere.

Thus the primary link between organicism and education lies in the potential to increased meaning through exposure to the widest possible perspective. This idea is supported by Jones, who has applied
Frankl's logotherapy, Bertalanffy's open-system theory, and Whyte's union of contrasts, to develop an organized conceptual framework for education.

Summarising, the name logo-learning, based on the concept of logos, signifies education not only for meaning, but more broadly it signifies education aimed at developing the ability to see the unity of any and all things. (Jones, 1969, p. 18)

Meaning is further maximized in the prescription to attain ideal human form, which is an organicist's way of prescribing the development of maximum potentials; physical, intellectual, emotional, and creative potentials. This prescription offers an alternative perspective to comprehending the many dimensions of alienation suggested by Becker. The individual dimension of alienation, with studies of human development, the forfeiting of flexible values for parental and social esteem, the constraints imposed on the individual by society, these would be viewed as factors restricting the attaining of fully developed characteristic form. The desirability of the ideal itself would emerge from the development of an organismic world view encompassing the core ideas common to the thinkers reviewed in this paper. Any such perspective would be interdisciplinary in the extreme, and would require a basic ordering and structuring quite apart from the traditional divisions of academic specialities. Without some such structuring of the diverse subject matter needed to comprehend development of form, and its relation to alienation, the presentation of such an "alienation curriculum" would be chaos.

From physics, we need the entropy concepts of organic structure. Just as Smuts, Huxley, Wilson, Platt and Mumford interpreted life and organic matter as a temporary reversal of entropy, so must we too rely on the
status of the physical sciences for this foundation. The necessity of the organismic view to draw on biology is obvious, and to reason out an idea of fully developed man necessitates drawing on concepts from the whole range of social sciences, philosophy, and theology.

This ordering of diverse disciplines so that they may be presented as a complete organismic perspective, may not be the impossible ideal that one might imagine. As Jones says,

> When we turn our attention to the problem of the unity of science and integration of knowledge, or more precisely, the problem of the fragmentation of knowledge, the systems concept tells us that we must find a certain kind of order. There must be a unifying principle, a logos. (Jones, 1969, p. 19)

The unifying principle is simply that offered by the chief characteristics of the system concepts already discussed; structure, order, growth, the tendency to further development and increased complexity. Apparently diverse areas of knowledge can be viewed as displaying these same basic tendencies. Physical science becomes a study of form and structure in the inanimate state. Biology examines the extension to organized open systems of life forms. Sociology becomes a study of the structure of human groupings, just as chemistry studies atomic groupings. Whyte makes the same point by asking, "What do we know about the relation of man to physical, organic, psychological and social processes that can assist us now?" and then he answers his question, "all . . . are in some measure direct expressions of ordering tendencies or, if you like, of one general ordering tendency operating at many levels of the structural hierarchies of the inorganic and organic realms" (Whyte, 1971, p. 32).
Robert Francoeur, in a recent book, makes the same point; "There is in both man and the universe a single organic process at work . . ." (Francoeur, 1970, p. 121). This organic process is synonymous with Whyte's ordering tendency. As Bertalanffy states, "We are seeking for another basic outlook--the world as organization" (Bertalanffy, 1967, p. 57).

The metaphysical base of this organismic perspective then becomes that of process and the tendency of natural evolutionary change towards holism or increased complexity. These two terms are almost synonymous. Both concepts involve the idea of emerging process, both are descriptions of natural tendencies of evolution over the short and long term, both terms allow for a dominating process while still retaining structure and integration of parts comprising the whole, as being a basic characteristic. Both are fundamental to the perspectives of system theory to the extent that they stress the organization of component parts into a whole. The system may be a chemical atom with its organized diversity of electrons, a living cell with its component parts, an organism comprised of billions of cells, a social group of many people structured into a whole, a biosphere with its interdependent components, a solar system, a universe, or a college curriculum. Our knowledge of many of these systems is drastically limited, but this is no reason to cast out the analogies of organization and structure which are basic to the organismic perspective. Typical evidence of our ignorance is seen in the evolving theories of atomic structure, constantly changing, becoming more complex, beyond descriptions other than by statistical quantum mechanics. Similarly,
our knowledge of the cell is just beginning to unfold, but much molecular biology is still a mystery. While the organization of these basic units is still being researched, we cannot yet hope for explanation of the laws of nature's organization in producing a complete organism from billions of cells. Just as the primitives attributed thunder and lightning to the Gods, until science explained them with cohesive theory, we too tend to attribute to God that which our theory is unable to account for.

Fundamental laws of organization of cells, the way the sperm and egg can produce an Einstein; these are problems beyond our time. As Whyte says, "this great category of formative processes which underlie life and mind has not yet entered the collective awareness of its supreme expression and instrument--man!" (Whyte, 1971, p. 33).

Another link between education and the organismic perspective is that students would be able to view their education as an obvious step towards self-development, not in the usual sense of increased status, but in the sense of the input of information and knowledge as leading to increased differentiation and complexity of their own personality systems. Learning would be seen as a normal and desirable means of aligning oneself with the organismic system tendencies of continual growth and development towards a more complex whole. Taken to a greater extreme, students would not view courses as necessary obstacles standing between them and the coveted diploma, but could derive aesthetic satisfaction from the awareness that their apperception and comprehension of the course concepts were actually adding to the negative entropy content of their own consciousness. Implicit in this suggestion is the idea of
self-transcending meaning and purpose, possibly similar to that suggested by Wilson when he writes, "finally, the evolutionary vision is enabling us to discern, however incompletely, the lineaments of the new religion that we can be sure will arise to serve the needs of the coming era" (Wilson, 1965, p. 186).

The key concepts of organicism, order, structure, organization, are highly relevant to educational planning and practice, and, as mentioned, Jones has already developed these into a conceptual framework for educational issues. Recent developments in curriculum planning indicate that integrating themes are being more commonly used to overcome fragmentation. For example, at least one of the new two year nursing programs in British Columbia is based on the core concept of the patient as a whole person, and uses a text which has "Man; A Holistic Approach" as its first chapter heading; "... nature tends to synthesize units into organized wholes" (Francis, 1968, p. 2). Using Jones' terminology, this course would have holism as its principle of integration and so would be closely aligned with the organismic view.

Curriculum and course integration can occur at different levels. As Jones points out, "one must ask whether the parts (courses) constitute a whole (curriculum), or whether each course is a separate and distinct entity. ... the same question must be asked with respect to the relations among lessons and units within a course" (Jones, 1969, p. 7). This emphasis on structure has also been popularized by Bruner, who has written that "the curriculum of a subject should be determined by the most fundamental understanding that can be achieved of the underlying
principles that give structure to that subject" (Bruner, 1960, p. 31). Thus it would seem that many of the main features of the organismic world view are already incorporated into educational planning, so that its further implementation may not be too difficult.

Thomas Blackburn, writing in *Science*, suggests that, "What is urgently needed is a science that can comprehend complex systems without, or with a minimum of, abstractions. To 'see' a complex system as an organic whole requires an act of trained intuition" (Blackburn, 1971, p. 1007).

Perhaps the most basic link between the organismic perspective and education lies in the foundation concept on which systems constructs such as wholeness and hierarchical structure are based, and that is on the fundamental dichotomy of order and disorder.

When Whyte writes of the union of contrasts, and the biophysicists talk of negentropic tendencies, they are essentially reverting to the meta-scientific base of the universal tendencies towards both order and disorder. This is the prime contrast requiring union in our minds, and in the minds of our students; the simultaneous tendencies of the universe towards both disorder and entropy, and yet also towards increasing negentropy and structure, as exhibited by various systems. We tend to be so biased in favour of the traditional scientific approach, that even if we acknowledge the structure of systems at all, it is only in terms of concepts such as "negentropy," which imply that there is something freakish about any occurrence which dares to defy the second law of thermodynamics. Yet there are very many instances of processes which display this movement
towards order and complexity of structure; the formation of atoms, crystals, giant biomolecules, cells, organs, organisms. Whyte describes further examples of order and structure:

In the evolution process: the formation of mutated genetic structures and their consequences. In the psychological and social realms: the formation of the brain modifications on which learning and social evolution depend, such as the ordered structures or processes underlying memory, imagination, judgement and will. Then the formation of solar systems and structured galaxies. And, not least of all, man-made forms. (Whyte, 1971, p. 33)

This underlying concept of order, being the common denominator of traditionally diverse separate subjects, will possibly provide the unifying theme to link knowledge into an overall scheme. All the dominant physical, organic, psychological and social processes may be seen in some measure to be expressions of one general ordering tendency operating at many levels of the structural hierarchies of these realms. This is the continuity linking together areas of knowledge, and holding the key to human nature. "When not pathological (a crucial restriction), man is the supreme ordering instrument in the known universe. . . . This is the core of human nature and of the healthy mind, and this is what man needs to be told by science" (Whyte, 1971, p. 33).

Pioneers such as Smuts, Whyte, Bertalanffy, have given impetus to the organismic perspective, and the momentum is gathering fast. To borrow a phrase from the counter-culture; "this is where it's at."

Education today appears to be confronted with a dilemma. The individual academic disciplines require a very high degree of specialization on the part of the scholar, yet this refinement can apparently
only be gained at the expense of knowledge in other fields of activity; fields which are even more relevant to the students broader goal of living a fulfilled life in today's complex world. Existing institutions of learning are becoming increasingly unable to provide the student with a comprehensive awareness of the nature of man, his knowledge, and his place in the scheme of things. In the wake of this failure of our present education practices have come the tensions which threaten the very foundations of the existing facilities. Students are simply rejecting that which they find inadequate; they no longer want to know, other than for ulterior reasons such as grades, what the present system has to offer. (This is admittedly a generalization, but I believe, a reasonable one.)

Recent Ideas on Integration

Potter, in his book *Bioethics*, suggests that education should be designed on an interdisciplinary basis to incorporate both the sciences and the humanities, based on biology and including the essential elements of the social sciences. Potter does not hesitate to suggest that a value system should emerge from this biological base, hence *Bioethics*. He examines Teilhard's key ideas, discusses order and disorder, molecular biology, biocybernetics, and the emergence of a common value system based on a science of survival. Potter's book is one of the most recent works calling for an increased perspective based on the concepts of organicism. Francoeur is another, and one of the first to link the ideas of Teilhard and Bertalanffy.
Continuity in the process of ever-increasing complexity and structure has already been outlined from both Bertalanffy's and Teilhard's vantage points. (Francoeur, 1970, p. 118)

Another work which stresses an organismic synthesis is *Voices of Convergence* by Daniel Leary. He draws on Teilhard, Fuller, McLuhan, Watts and others to conclude that

The sacred and the secular have converged; science and religion have converged; within science, physics and biology seem to be breaking down their usual barriers... (Leary, 1969, p. 168)

A new book by Hunter stresses that the 'new consciousness' is already with us

Specific integrative tendencies have been identified in almost every field of human activity, from education to science to inter-personal relations. On a grand scale Teilhard de Chardin has attempted to encapsulate these tendencies. Something very much like his Noosphere of accumulating knowledge and consciousness would appear to be taking form, enveloping the planet. The town-planning has least been done and the downtown section of McLuhan's Global Village constructed. More mystically, one might say that, in evolutionary terms, God is passing a break-boundary in terms of becoming aware of Himself. What we see happening before us, on a grand scale, is what Arthur Koestler has called the Integrative Tendency joined in a penultimate battle with the Self-Assertive Tendency, which until now has dominated the behavior of groups of human beings throughout the course of history. (Hunter, 1971, pp. 22-23)

Thus the new awareness is taking hold with increased momentum, emerging simultaneously in the works of a number of authors. Their efforts will help to reconstruct our view of living in the light of a new and richer conception of what man is and what he could be.

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2This book was released for sale after this thesis was completed, and therefore is listed at the end of the bibliography.
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