

Cultural Heritage and Contemporary Change
Series I, Culture and Values, Volume 23
General Editor
George F. McLean

Ecology of Knowledge

by
Jerzy A. Wojciechowski

The Council for Research in Values and Philosophy

**Copyright © 2010 by
The Council for Research in Values and Philosophy**

Box 261
Cardinal Station
Washington, D.C. 20064

All rights reserved

Printed in the United States of America

Library of Congress Cataloging-in-Publication

Wojciechowski, Jerzy A.

Ecology of Knowledge / Jerzy A. Wojciechowski – 2nd edition.

p. cm. -- (Cultural Heritage and Contemporary Change, Series I,
Culture and Values ; v. 23).

Includes bibliographical references and index.

1. Knowledge, Theory of. I. Title.

BD241.W59 2001

001--dc21

2001000792

CIP

ISBN13 978-1-56518-1595 (pbk.)

Table of Contents

<i>Introduction</i>	1
 <i>Part I. Looking at Knowledge Differently</i>	
Chapter 1. Why Be Concerned about Knowledge	5
Chapter 2. On Knowing Knowledge	9
Chapter 3. Time of Reappraisal	15
Chapter 4. Present Intellectual Situation	19
Chapter 5. Change of the Cultural Paradigm	25
Chapter 6. Knowledge: The Present Predicament and Culture	29
 <i>Part II. Knowledge and Culture</i>	
Chapter 7. Western Culture and Its Sources	35
Chapter 8. The Rise of Modern Science	43
Chapter 9. Knowledge as an Existential Act	49
 <i>Part III. Knowledge as One Existential Fact</i>	
Chapter 10. The Central Problems of Our Times	65
Chapter 11. The Existential System of Humankind	69
Chapter 12. The Knowledge Construct	83
Chapter 13. The Relationship between Knowers and the Knowledge Construct	93
Chapter 14. The Impact of the Knowledge Construct	101
Chapter 15. The Knowledge Construct as an Element of Rational Life	107
 <i>Appendix I</i>	 119
<i>Appendix II</i>	127
 <i>About the Author</i>	 133
 <i>Index</i>	 135

INTRODUCTION

The title of this book may surprise many readers and, therefore, demands a word of explanation. The book is concerned with human knowledge and its consequences. Knowledge is a complex phenomenon, which can be studied from different points of view. The theory of the ecology of knowledge developed by the present writer is one of them.

First, the very name of this theory has to be justified. Ecology is a branch of biology studying the relationships of organisms with their environment. As we now know, these relationships are vital for the existence and proper functioning of living beings. This is why ecology became such a fast developing branch of life sciences. What is important for us here is the fact that ecology is essentially a science of relationships, i.e., of the interdependence of various factors in a dynamic system. This is the reason why the name ecology of knowledge seemed appropriate for the theory discussed in this book. The ecology of knowledge is a study of the relationship existing between humans and the body of knowledge. Knowledge is viewed in this theory as a distinct element of the human environment and a rapidly growing factor in human life.

The body of existing knowledge is a product of human evolution, but it is not a natural product in the same sense as is a stone or a tree. Knowledge is a human product more like a tool, a dwelling or a system of laws. In order to underline the artifactual character of the body of knowledge, as well the fact that it is always more or less structured, it can be called the knowledge construct.

The central premise of the ecology of knowledge is the affirmation of the distinction, i.e., the nonidentity of the knowledge construct and knowers. The knowledge construct is seen as an entity in its own right, possessing an existence of its own and distinct from the knowers who produce it. This is why, it can be viewed as an element of the human environment with which knowers interact in a feeding - either feedforward or feedback - relationship. It is because of this interaction that the knowledge construct plays such an important role in human life, both in thinking and in doing. This apparently simple and obvious affirmation has far-reaching consequences, incompatible with some deeply ingrained beliefs proper to the Western cultural tradition. The incompatibility is the consequence of the distinction introduced by ancient Greek thinkers who divided human knowledge into the theoretical or the contemplative and the practical. The former was supposed to have no concrete consequences outside the knower's intellect. The latter was geared to the production of material objects and considered of socially low status as a craft. The distinction between the

two kinds of knowledge became deeply embedded in the Western mentality and obscured the fact that knowledge, all knowledge, is power, i.e., it has the capacity to produce concrete results, whether this is immediately evident or not. The affirmation that knowledge is power, made almost four centuries ago by Francis Bacon, is another important thesis of the ecology of knowledge.

Like many other types of power, knowledge obviously can be used for good or bad purposes. What is less obvious is the fact that whatever the intentions of those who develop and/or use knowledge, it does produce positive and negative effects. This realization was one of the principal reasons which motivated the present writer to develop the theory of the ecology of knowledge. In our age of explosive development of cognition, it is imperative to understand as clearly and as adequately as possible the role of knowledge and its consequences in the lives of individuals, societies and humanity in its totality. One of the major consequences of the development of knowledge is the growing worldwide economic, political and cultural interdependence. The globalization of humanity brings us face to face with the painful problem of the uneven distribution of knowledge and the great differences existing between culturally determined knowledge constructs. The fact is that there is no one universal and evenly distributed knowledge construct, but many differing in structure, mode and level of development.

The faster knowledge develops, the more interdependent countries become and the more their cultures are affected by each other, and consequently, the more mindful everybody has to be of the differences existing in the sphere of knowledge and of their consequences. It is in the interest of all concerned, whether great or small, strong or weak, to be able to cope effectively with the difficulties which the disparities in the possession and the use of knowledge create. The differences existing between knowledge constructs and the resulting problems are but one class of problems generated by the development of knowledge which humanity has to face. This is why an understanding of the phenomenon of knowledge and of its global implications is urgently needed, as well as being very interesting theoretically. May the present volume help in generating this understanding.

PART I

LOOKING AT KNOWLEDGE DIFFERENTLY

CHAPTER I

WHY BE CONCERNED ABOUT KNOWLEDGE?

The more we think, the more we have to think about our thinking. Thinking does not end with thinking. By using our knowledge, we transform the world around us to suit our needs and desires. In so doing, the man-made world becomes a source of growing problems for us and so does our rational behavior. The more we know and the more we act to the best of our knowledge, the more we render our life complex, and the more we have to know in order to cope with problems confronting us. The more we know, the more there are questions to ask, not less, and the more we are forced to ask questions. Apparently, thinking and the simplicity of the existential situation do not go hand in hand. Knowledge has allowed humans to replace, to a large extent, muscles with brains, liberating them from physical effort. It also gives people more free time, but it does not liberate them from effort in general nor from stress. Humans are now confronted with evermore varied causes of stress than their less knowledgeable forebears. Obviously, rationality is neither a warranty for existential simplicity nor a safeguard against existential difficulties. Quite the contrary! Let us express this unpleasant but fundamental fact in the form of a law:

Law I: "The number and the variety of causes of stress are proportional to the amount of knowledge."

Psychoanalysts specializing in stress therapy have a bright future.

Had knowledge and thinking been marginal factors in human life, their complexity-producing causality could, perhaps, be overlooked or dismissed as irrelevant; but this is not the case. Knowledge is an evermore powerful factor of human existence, and thinking is an increasingly common-time and effort-consuming occupation. Moreover, we live in an epoch in which the Baconian thesis that knowledge is power has become obvious. The impact of knowledge and its importance in everyday life are now understood by the general public. From a preoccupation of a few specialists working on the fringes of society, knowledge, its development and its consequences moved to the center of national and international life and became a growing concern for governments and international bodies. Knowledge ceased to be mainly a theoretical problem and acquired great practical importance because, whether one likes it or not, knowledge and its progress affects everybody to an ever greater degree.

It is easy to say that individuals, societies and humanity as a whole are evermore knowledgeable and think more and more. The fact is at the same time both obvious and overwhelming, and its consequences are mind-boggling. They are too complex and far-reaching to be imaginable in their totality, let alone to be understood adequately. One thing is certain: knowledge produces an increasingly more rapid and profound cultural evolution. The cultural evolution of the human species is the most advanced form of evolution in the living kingdom, and biological evolution is the most advanced form of evolution in the cosmic evolution of which we are aware. Consequently, knowledge is the most recent, most advanced and increasingly most powerful factor producing change and novelty in the world.

The impact of knowledge on humans should not be surprising, for persons are thinking creatures. Their rationality specifies their nature, sets them apart from other creatures, and shapes their behavior and environment. These statements are commonplace and could easily be dismissed as platitudes not worthy of mention had it not been for the evermore complex, surprising and far-reaching consequences of the use of reason. Had these consequences been simple, easy to foresee, easy to understand and uniformly beneficial, they could have been taken for granted like many other good things in life. They would not be a source of problems and, as such, would not merit special attention. But, as we have already mentioned, unfortunately, this is not the case.

"Man proposes, God disposes." Humans think, but the consequences of this most perfect human act go beyond our expectations and provisions; they escape our control. While the relationship between the individual knower and his or her thinking may appear simple and understandable, the relationship between them and the body of existing knowledge is neither simple nor fully known, perhaps, it is not even fully intelligible. After 25 centuries of philosophical reflection about knowledge, this statement may appear shocking, but it is true nevertheless. What is worse, the relationship between humans and knowledge (which will be referred to as the human-knowledge relationship) is not only not fully understood; it now becomes apparent that it is also not exclusively beneficial.

In light of this situation, it becomes necessary to analyze the human-knowledge relationship in a more critical manner than traditionally is done by philosophers and from a different perspective. It is the present writer's conviction that the study of this relationship is at once interesting from a theoretical point of view and necessary for practical reasons. The study may be viewed as an extension of the traditional philosophical approach to the problem of knowledge. It amounts to a meta-critique of knowledge. This type of approach does not require discussion of the time-honored issues of the problem of the

philosophy of knowledge. All that is needed to initiate the study of the ecology of knowledge, i.e., of the human-knowledge relationship, is the admission of the following, rather obvious, propositions: a) rational knowledge exists; b) it grows; c) it impacts on knowers; d) the knowledge construct is an entity distinct from knowers and from the act of thinking.

Knowledge and knowing have preoccupied philosophers since the birth of their discipline. It is therefore important to explain the difference existing among the ecology of knowledge and the traditional philosophical analyses of knowledge, as well as the contemporary anthropological and sociological approaches to this subject. The act of knowing is essentially an act of relationship between the knower and the object of knowledge. Philosophers recognize this fact and concentrate their attention on the nature of this relationship. The ecology of knowledge, instead, attempts to discuss the relationship between knowers and the knowledge construct and its consequences. There was an important reason why the traditional concern with knowledge did not address itself to the problem, which the present development of knowledge forces upon us. It has been customary in our culture to consider reason as the noblest human faculty. Consequently, knowing as the act of this faculty was seen as the loftiest occupation and its result, i.e., knowledge, as man's greatest achievement, which, no doubt, it is. Equally, it has therefore been assumed that the consequences of knowledge were unambiguously positive. This is why philosophers did not become interested in analyzing more adequately the multiple problems which knowledge generates. It is also true that these problems were less visible in the past than they are now. Generally speaking:

Law II: "The perception of the complexity of the consequences of knowledge is proportional to the development of knowledge."

Whatever was the attitude of philosophers in the past toward the problem of the consequences of knowledge, it is obvious that in the future they will have to take this problem into consideration in their study of knowledge.

Although the philosopher's love affair with knowledge was the expression of a quite common attitude, it did not result from the lack of other perceptions of knowledge. Neither was it due to the total absence of warnings about the dangers involved in man's temerarious forays into the field of reason. But these warnings, in general, were not to be found in the writings of philosophers. They were usually contained in myths, like the myth of Prometheus, or in religious sources such as the Book of Genesis. Interestingly enough, before humans embarked in earnest on their extraordinary intellectual adventure, they were warned about the

dangers which this adventure entailed. In light of the present day situation of humanity these ancient warnings appear astonishingly far-sighted. At the same time, it becomes obvious that the uncritical belief in the value of rationality and the exclusively positive nature of its consequences, perhaps useful in earlier stages of the development of knowledge, are far too simplistic to be accepted as satisfactory.

Let it be stated without ambiguity: the novel approach to the problem of knowledge in the theory of the ecology of knowledge is the result of and justified by objective changes in the situation of mankind and the evidence of the complexity of the noetic situation. In the presence of the increasingly massive and often threatening consequences of knowledge, and in the perspective of the evermore rapid development of knowledge, a new look at knowledge is called for. The purpose of the present book is to introduce the issue of the human's uneasy coexistence with knowledge. May it firstly be a contribution to the discussion of the nature and role of knowledge, and second, throw some light on the fast growing problem of man's relationship with his products, i.e., with the man-made world.

Whether man is the measure of all things, as Protagoras claimed, is an open question. But there is little doubt that the human being is the measure of man-made things. They are produced and exist to satisfy human needs and desires. In this sense, the man-made world is a complement and extension of its maker and, thereby, also his image. The issue of the relationship between humans and the sphere of their products is, in the final analysis, a question of self-knowledge and a problem of man's coexistence with himself and of the future of humanity. At the present stage of the development of humanity, the quest for self-knowledge has to involve a reflection on his growing demiurgic powers and their source, namely, reason and the consequences of its evermore perfect and efficient activity.

Before engaging in the discussion of the consequences of knowledge, let us, first of all, discuss the perplexing question of knowing knowledge. This we will attempt to do in the next chapter.

CHAPTER II

ON KNOWING KNOWLEDGE

What could be more knowable than knowledge? In logic it would seem that knowledge should not be a problem for itself. And yet, this is far from being the case. Knowledge, as an object of knowing, is complex, obscure and difficult to know. The same is true also of the brain and mind. In fact, they may be among the most difficult things to comprehend. The history of philosophy bears witness to this situation. The fundamental questions concerning knowledge and its origin remain open. The lack of definitive answers to these questions has not hindered the general development of knowledge. Whether we know how we know and have an adequate understanding of the knowledge construct or not, we can study the outside world and ourselves quite effectively. Whether knowledge can progress indefinitely without significant progress of the knowledge of knowledge is another question, which has no easy answer.

Whatever may be the answer to the above question, the fact that knowledge can progress without full understanding of itself is in itself highly significant and relevant for our discussion. It tells us two things. Firstly, to know something and to know how we know it is not only two different questions, but two different mental acts as well. Secondly, to know something, even in a rigorous and critical way as in science, is not necessarily to know how we know. Moreover, it is not essential to know the nature of the agency which produces knowledge. This case seems to be a particular instance of a general situation. We breathe, walk and use our hands without fully comprehending the mechanisms of these acts — and are not unduly disturbed by our ignorance. But breathing and walking are physical, not mental acts. Thinking is in a different category. However, thinking too is a product of evolution just as are physical acts. The analogy of the situation of our knowledge of these different acts may be a manifestation of a law of evolution creating hierarchies of levels of operations and degrees of autonomy at each level, so as to allow organisms to economize energy and behave in a most efficient manner.

Whatever may be the justification of our ignorance of the nature of knowing, this counter-intuitive situation is exacerbated by the fact that the product of the acts of knowing, the knowledge construct, does not form a uniform, well-defined, definitive entity. As far as it is possible to tell, the knowledge construct is the fastest evolving element of the human environment. It is not surprising that knowledge of the knowledge construct is, at best, partial and necessarily non-definitive. Understandably, philosophers prefer to concentrate their attention not on

the product, but on the process of knowing, which seems to be or, at least, is assumed to be unchanging through generations. Philosophy has to speak in universal terms or it is not philosophy. With respect to human knowing, philosophers have to make generalizing assumptions in order to come up with some general conclusions. These generalizations are based on such profoundly held convictions that they are rarely, if ever, mentioned. For the sake of the arguments, which will be discussed in this book, let us state the assumptions clearly.

The first assumption is obvious: by definition all humans are rational animals, therefore all humans think and have some knowledge. With the exception of certain borderline cases, such as an encephalitic individual, this assumption appears to be true. The second presupposition goes further. It concerns not the mere fact of knowing, but the mode of knowing. Namely, it is assumed that there is only one mode of knowledge and that all humans know in basically the same manner. In contrast to the first, the second assumption is much less certain. Intuitive, mystical and other modes of knowledge which, perhaps incorrectly are called extrasensory perception, cannot simply be dismissed as not consistent with the ordinary way of knowing. As far as the thesis of the species-wide uniformity of the mode of knowledge is concerned, we are in a different situation. In the present state of knowledge we can neither prove nor disprove it. It has, therefore, to remain a presupposition. The problems which Chomsky encountered with his thesis of the existence of universal linguistic structures are the best illustration of this situation.

There are good reasons why the assumptions of the species-wide uniformity of knowledge are usually accepted without much further discussion. They can be divided into two groups, namely, moral and pragmatic. Let us state first the moral reasons, which are quite substantial: the rejection of the thesis of the species-wide uniformity of knowledge would make it possible to introduce the idea of differences, not only in the mode of knowing, but also in the underlying faculties of knowing. From there it is only one step to the affirmation of racial inequalities with all its drastic consequences, an affirmation which philosophers are generally loathed to make.

The pragmatic motive is quite obvious. The assumption of the uniformity of knowledge satisfies the principle of Occam's razor and simplifies the rather formidable task of analyzing the process of knowing. It is useful, for it allows us to make general propositions about knowledge and attach to them objective meaning, thus, escaping the nominalist predicament. Though it may sound finicky, let us mention a third presupposition which may seem quite banal at first glance but upon reflection becomes rather intriguing. When we study knowledge we assume that knowledge is knowable, which to a certain extent is

obvious. The difficult part of this assumption concerns the degree of knowability of knowledge. The truly interesting and baffling question concerns the limits of the knowability of knowledge. Do they exist or not, and if they exist where or what are they, and is it possible to know them adequately?

Even with all the assumptions on hand we are faced with a plethora of theories of knowledge and with interminable philosophical discussions. After 25 centuries of assiduous reflection on the nature of knowledge, we do not seem to be any closer to formulating a definitive theory of knowledge than were our philosophical forefathers in ancient Greece. The question is whether this is a significant fact or not. Is this situation due to the very nature of knowledge, or to the way philosophers go about trying to know knowledge or to both? The answer is not at all clear. Although the definitive explanation of knowledge is not at hand, this does not mean that progress has not been made in this area. While this may not be apparent from philosophical texts, the knowledge of knowledge depends to a significant extent on the general level of knowledge. It is a reflexive, second-order type of knowledge, presupposing first-order knowledge of the external world as well as a degree of intellectual sophistication and the satisfaction of basic existential needs. The dependence of the knowledge of knowledge on other types of knowledge merits expression in the form of a law. All other factors being equal:

Law III: "The knowledge of knowledge is a function of a general development of knowledge."

Since the brain is the organ of knowledge, the knowledge of the brain is, of course, of major importance for the knowledge of knowledge. The problem is that the human brain is the most complex part of the human organism and, as far as we can tell, the most complex object in the universe. It is also the part of the human body most difficult to know and the least known. Only recently have we acquired means of studying the living brain in action. We still lack a comprehensive theory of the brain which would be considered adequate and generally accepted by specialists in the field. Nevertheless, advances in brain research are quite dramatic and of direct significance to the study of knowledge. The same is true of progress in other areas, from microphysics to linguistics. Although the Holy Grail of the definitive explanation of the nature of knowledge is as elusive as ever, the problematic of knowledge expands continuously under the impact of the general development of knowledge. Contrary to what may be intuitively assumed, the more we know in general and the more we know about the phenomenon of knowledge the more—not fewer—

questions can and have to be asked about knowledge. Let us express this important fact in the following form:

Law IV: "The size and complexity of the problematic of knowledge is proportional to the general level of knowledge."

The principal factor responsible for the development of knowledge in modern times is science. In view of the evermore rapid progress of cognition, the reflection about the nature of knowledge centers, quite understandably, on the nature of science and its development. The result is the growth of the problematic of epistemology as illustrated by the development of evolutionary epistemology. It is worth pointing out in this respect that science contributes to epistemological reflection in two principal ways, namely, as a continuously growing object to analyze, and as providing insights helpful in the study of the phenomenon of knowledge. One of these insights developed since World War II is the General Systems Theory. It helps us perceive the human phenomenon, whether individual, society or humanity, as a system in a hierarchy of systems. In this perspective, knowledge appears as an element of a system which is the human being, and as an element of a system of systems. Thus, human knowledge is seen in a much broader and more meaningful context than in the philosophical studies from Plato to Analytic Philosophy.

Thinking does not occur in an existential void. All the mystical and out-of-the-body experiences notwithstanding, rational thought is not an act of a disincarnate intellect. The intellect, in order to think, requires a well-functioning brain, which, in turn, needs a sufficiently functioning body. The body is always situated, inserted in a determined existential situation which conditions thinking. The conditioning applies also to problems; they, too, do not happen out of nowhere and do not exist in an empty space, unrelated to human concrete and conditioned existence. To understand the problems which agitate a society in a given period, the way they are perceived and the answers provided, it is necessary to view them in their intellectual and material context. This is why we intend to approach the problem of the knower-knowledge relationship through a discussion of the contemporary situation of humanity. The above problem and the present situation of humankind are bound in a feed (feedback, feedforward) relationship and are mutually illuminating. As they form a system, a systemic approach is therefore justified.

The precarious situation of humanity is a well-known fact. It has important consequences for the study of knowledge. Had it not been for the predicament in which humankind finds itself presently, the problem of the consequences of rationality would never have presented itself in such a drastic way, and rational knowledge together with rationality as

such would not require a critical reappraisal. It is for that reason that we shall attempt to discuss the relationship between humans and the knowledge construct in light of the contemporary great problems of humanity. A discussion of these problems, of their origins and consequences should make the problematic of the human-knowledge construct relationship more understandable.

CHAPTER III

THE TIME OF REAPPRAISAL

"These were the best of times. These were the worst of times." These opening sentences of Charles Dickens' *Tale of Two Cities* could apply equally to the present epoch. We are of two minds because we live in confusing times. Humans never "had it so good", and yet they were never threatened in such a global way as they are now. The situation of humanity has never been so indeterminate. For the first time in history, we have the power to elevate ourselves to a higher level of humaneness or to descend to the depths of self-destruction. For the first time, we are more afraid of the consequences of our own activity than of natural dangers. While we have emancipated ourselves from the fear of nature, we have become afraid of ourselves as thinking creatures.

History seems to have run a full course. The present situation of humanity is the culmination of a period of unprecedented development, fuelled by optimistic expectations for a rosy future and by an ardent belief in the value of material achievements. The period of naive optimism is now over, having been replaced by an era of reappraisal. The idea of progress has lost much of its original appeal; optimism has been largely replaced either by pessimism or by a much more sober and cautious evaluation of humankind's present and future situation. The demiurgic powers which until recently have been our pride and joy are now viewed with increasing concern. Human beings have become a problem for themselves.

The change in the intellectual climate has happened while knowledge increases at an unprecedented pace. It has been estimated that in this century the amount of scientific knowledge has doubled every ten years. It is important to notice that our rising concern for humanity coincides with prodigious developments in theoretical and practical knowledge. These developments are not an accidental circumstance of the change in the psychological climate—quite the contrary. They are an essential factor of that change. The more we know and the more we can do, the more we doubt and the more we worry. Our doubts and our worries appear to be commensurable with our knowledge. If this analysis is correct, then we are facing a rather surprising consequence of the much vaunted notions of intellectual and civilizational progress. Whatever were the intentions and hopes of the originators of the idea of progress, certainly they did not intend to make life more insecure or worrisome. Nor did they want to debase the image which man had of himself—quite the contrary. The discrepancy between the hopes which accompanied the birth of the Modern Era and

the consequences with which we must now deal have been discussed and analyzed from many angles. Demographic, ecological and economic studies have brought into focus various aspects of the situation of humankind and have suggested more or less dramatic remedies. Necessary and useful as these analyses have been, they have concentrated on the effects, rather than on the deep causes of the present crisis.

The fact is that the immense increase in knowledge leads to a better understanding of the outside world and of the inner realm. We continue to discover new things about both the natural world and about ourselves. It is now possible to analyze the human species as never before. More is known about humans in their physical, psychological and social dimensions. Likewise their physical and intellectual behaviors are better understood now. Members of the species have acquired a mind rich in understanding of themselves as individuals, of their involvement in society, of the hierarchy of societies and their global interdependence, and of mankind as a whole. For the first time, humans realize the role and the consequences of the planetary oneness of the human species. We look at ourselves in the mirror of our knowledge and see ourselves in the context of the species.

Growth of humanity's self-knowledge is not limited to the present but extends to the temporal dimension as well. The past becomes increasingly better known and man looks, now, more intensely into the future. The drama of the human species unfolds before our eyes in greater breadth, depth and detail. It is an awe-inspiring spectacle, but humans contemplate it with a growing sense of foreboding. The essential fact is that, through knowledge, we are capable of grasping the human phenomenon conceptually, sizing it up and evaluating its achievements and shortcomings. The growing self-knowledge of the human species does not come cheaply. In general, the price of self-knowledge is responsibility for oneself and one's behavior. In particular, two major consequences result from our knowledge of our own species, namely, responsibility for the fate of humanity and an ability to do something about it. Proportionally to this knowledge, humans have to assume the stewardship of their own species. Moreover, they now have the power to influence humanity on a worldwide scale, thus affecting their near and distant future. Through the development of knowledge, humanity becomes humanity's chief concern and principal business. From this perspective, the evolution of our species in general and of Western human beings in particular comes under close scrutiny. In this context, the problems and fears of contemporary humans acquire their full dimension and meaning.

The history of humanity has been one of competition: individual against individual, tribe against tribe, nation against nation. Men have

fought for women, food and territory; they have been at each other's throat for political, religious or ideological reasons. But, never in the history of the human race have humans been in competition with themselves; never has the existence of humanity itself presented such a challenge or been the source of so many difficulties. This is today's unique dilemma. Although great thinkers have developed a number of theories about the value of the human body, until now human nature itself has been taken for granted. We know, for instance, that Plato took a rather gloomy view of the value of the material frame of our being, as did many others, motivated by the search for spiritual perfection. If the body was challenged, if our natural makeup was questioned, it was in relation to the idea of a hereafter in the perspective of an ultimate personal destiny. No matter how much Western humans may have cursed their bodies, they accepted their minds and their intellectual powers as perfections and thought rather highly of them. There was little question, if any, about their activity as a source of serious problems for humanity as a whole. In general, humans thought of themselves as individuals or as members of a determined, particular society, a part of a greater whole.

Today, thoughtful humans are ill-at-ease with themselves and question themselves radically. Not only does their existence as individuals appear to them to be of dubious value, but, moreover, their very nature as human beings is under critical scrutiny. For the first time, serious questions are being raised concerning the biological value of the species *Homo Sapiens*. Thoughtful men, such as Arthur Koestler, wonder whether humans are not just another of the unsuccessful products of evolution, a blind alley, similar to many others whose existence and extinction is attested to in an objective and detached way by the unbiased fossil record. Whatever the truth is, the very fact that questions of this sort are being raised is the measure of our contemporary predicament and of our concern about ourselves individually and collectively.

In this situation, the future of humankind can no longer be taken for granted. We cannot assume that nature will take care of the human species the way it takes care of all other species. Ours is a species unlike any others. Besides, we know that the history of life on earth is a history of the development and disappearance of forms of life. Nature is no safeguard for the permanence of a species. In particular, it cannot assure the future of the thinking species which, through the exercise of its rational powers, has acquired the unique capacity to alter significantly the conditions of its own existence and that of other beings.

Faced with the problem of our future, we have to take stock of ourselves, our achievements, our abilities and our goals. We have to know where we came from, where we are now and where we are going.

In short, we have to understand the situation in which we find ourselves. In particular, we have to understand the role knowledge plays in our predicament. The next chapter will discuss the present intellectual situation.

CHAPTER IV

PRESENT INTELLECTUAL SITUATION

Thinking, in general, and philosophical reflection, in particular, often runs the risk of losing touch with reality and drifting in a void. A void may be the physicist's delight but it is the philosopher's fatal pitfall. The surest way to avoid it is to keep close to reality. The trouble is that reality, as philosophers know, is a rather complex and confusing notion, notwithstanding Dr. Johnson's famous refutation of Berkeley's subjectivism by kicking a stone. As far as the discussion concerning the ecology of knowledge goes, the aspect of reality which is most relevant is the present intellectual situation. Not only is the very idea of an ecology of knowledge a product of that situation, it is a reflection about that situation. Moreover, the reflection is guided as much by a desire for pure knowledge as by a search for some laws and guidelines for the best possible development of knowledge and culture. As far as our interests are concerned, the present intellectual situation is the most important factor in the search for a better future, not just because it is present, i.e., the only one actually existing, but also because it is the most developed stage of knowledge we know of and the one which exercises the most determining influence on humankind and therefore on its future.

Just as one can easily get lost in a forest, with equal ease an observer of the present intellectual scene can get lost in its maze. The richness of factors and elements, the complexity of relations between them, the plurality of individuals, of events of all sorts, of modes and aspects of things, in short multiplicity in the fullest sense of the word, is the most striking aspect of the present situation of man. His intellect is faced with an object of overwhelming richness, complexity and dynamism. Is there anything new in this situation? In itself complexity is nothing new or surprising. It is a fundamental aspect of nature. Humans have always been surrounded by a very complex nature and their intellectual development progressively reveals to them nature's seemingly inexhaustible richness of forms of organization. But besides containing limitless variety, nature also presents the quite intellectually satisfying, and psychologically reassuring aspects of regularity and stability. Above and beyond all change and diversity, there is apparent order and permanence. They render nature intelligible and make human life possible. Man has always adjusted to the complexity of nature, as do all other successful forms of life.

The problem is that the multiplicity found in nature is not the only kind of plurality with which humans have to contend. Besides the ever present, and constantly better known multiplicity of species,

individuals, systems of various degrees of complexity, and all sorts of relations, there exist the constantly growing, man-made multiplicity and complexity of human products, both material and intellectual. Let us consider the intellectual level. The very effort to understand the complexity of nature results in the plurality of concepts, mental constructs and their corresponding verbal counterparts. Produced to make the world intelligible to us, the universe of mental products itself becomes a subject increasingly more difficult to grasp, and well beyond anybody's capacity to comprehend totally. Knowledge grows and its richness becomes in turn a source of unintelligibility and the cause of various serious problems for humans. The situation is further complicated by the fact that the growth of knowledge produces a parallel growth in two other areas, namely, those of material products and existential situations.

To satisfy his insatiable and evermore sophisticated desire for possessions, man surrounds himself with a mushrooming multiplicity of artifacts. The growing ability to do things results in the multiplication of kinds of activity, occupations and existential situations. Adding insult to injury, that which is meant to express knowledge and to be the means of communications par excellence, namely, language, has transcended in its growth the capacities of individual minds. The specialized vocabularies of different branches of knowledge have themselves become a source of incomprehensibility.

There are some important differences between the natural and the human-produced orders of multiplicity. Within the time limits of the existence of humanity, the natural plurality may be considered as more or less stable in its broad outlines. Instead, the man-produced multitude is constantly growing. Not only does it increase the number of entities and their variety, but the rate of this increase grows at a fast pace. In some important areas, such as science, it does so exponentially. While nature is being mastered more and more, the human-made multiplicity is getting increasingly out of hand. The consequences of man-made plurality and of its growth are in themselves many, varied and evermore important. Overpopulation, pollution, problems of classification, and an inability to form a harmonious and satisfactory picture of the world, are some examples of the consequences of man-made plurality. It is fair to say, that a large portion of the problems besetting humanity today are a result of this plurality and of its impact on the individual, on societies and on humanity as a whole.

As if the increase of multiplicity facing humans was not enough, the present situation, whether intellectual or existential, is characterized by instability. This is again a human-induced factor. The more we think the more we know, the more active we are and the more we do. Consequently, the more change we produce. The relationship between

thinking and change is sufficiently general and fundamental to be expressed in the form of a law:

Law V: "Thought induces change."

The more we know, the more change we produce. We will be analyzing some of the multiple consequences of the development of knowledge, but let us now point out that change occurs on the intellectual and physical levels. As a result we find ourselves in a highly unstable existential situation, bereft of a fixed intellectual framework. The fluidity of the situation is the result not only of increasing intellectual output. It is also due to the absence of dominant ideologies, theories, points of view and hierarchies of values. We live in an era of growing intellectual pluralism. Hand-in-hand with the pluralism goes the loss of faith among Western peoples in the absolute superiority of Western rationality and the emergence on the world scene of non-Western intellectual traditions and perspectives. It is interesting to note that this process occurs at the same time as the rapid development of science and technology and the extension of a Western type of education throughout the world, inducing progressive Westernization of non-Western cultures and growing worldwide behavioral homogeneity.

Further major elements of the contemporary intellectual situation are: the intellectual dynamism, the efficiency of thought and the impact of knowledge on humans and on nature. These factors are closely inter-related and essential to producing the uniqueness of the present-day situation. They distinguish it from all previous epochs of human history. Intellectual dynamism is the implosive effect of the existence and activity of a great number of "knowers." Not only are there more knowers than ever before, but they are better educated and more knowledgeable. They are aided by a much greater store of knowledge, which is vastly more accessible and available to increasingly greater numbers of individuals. This in turn makes possible better utilization of existing knowledge and of intellectual potential. The more knowers there are, and the greater the body of knowledge, the greater will be the pressure on individuals and societies to acquire existing knowledge and to further the development of knowledge. Thus the body of knowledge and knowers form a self-energizing system bound by positive feedback. We will discuss the consequences of this fact in some detail.

The efficiency of thought which characterizes present knowledge is an essential element of this system. It manifests itself in two ways, namely, in the production of new knowledge and in its practical results, i.e., in technology. The increased capacity to produce new knowledge is the consequence of the development of powerful

intellectual tools as well as advances in the technology of experimentation. In the sphere of analytic thought, let us mention advanced mathematics, logic, cybernetics, or information theory. The advances in analytic thinking, important as they are, would be insufficient to give us the integrative perception of reality so necessary in the present situation of humanity. Fortunately they are accompanied by even more impressive developments in systemic, i.e., integrative, thinking. Suffice it to mention the development of general systems theory, hierarchy theory, interdisciplinary studies and generalist studies.

Furthermore, the efficiency of thought is intrinsically related to the development of the knowledge industry as both its consequence and cause. Though the expression 'knowledge industry' may displease and even give rise to objections, it is well-justified as nowadays the production and dissemination of knowledge is a true and massive industry. It involves a large and growing number of highly qualified individuals, large and growing sums of money, complex organization and great amounts of sophisticated equipment. Moreover, it generates increasingly more wealth. One of the important new insights is the realization that knowledge is a crucial economic resource and has to be treated as such. An essential element of the knowledge industry is the technology and the production of research apparatus. Perhaps the most distinctive trait of contemporary knowledge is its largely experimental character. The ability to produce increasingly more advanced research tools is crucial to the advancement of the most dynamic element of knowledge, namely, science. Scientific knowing implies doing, which in turn presupposes knowing how to do. The prodigious development of knowledge is the result of the close cooperation and the feedback relationship between theoretical and practical cognition.

The more efficient knowledge is, the greater its impact on humans and nature. The more humans know, the more they can do and thus transform the conditions of their own life and their environment. The more knowledge there is, the greater the number of aspects of human life that are affected, and the more profoundly so. Intellectual, psychological, social, economic and political spheres are constantly and increasingly influenced by the development of knowledge. As far as nature is concerned, human interaction with it becomes increasingly more massive, more invasive, more transforming and occurs in an ever wider radius. This is obvious and well-publicized. What is perhaps less evident is the resulting change of the status of nature in human perception. Primitive humans look at nature in awe. For them nature is the supreme power, the life giver and the life taker. The regularity which they discover in nature is the foundation of intelligibility and of the notion of law, first natural, and then human. Reverence for nature goes hand in hand with the conviction of total subordination to nature, of

which primitive humans consider themselves an integral part. The demiurgic activity of Western people has changed radically the attitude towards nature. It has dethroned it from its exalted position and transformed it into a source of raw materials for industry. Thus, through increasingly more sophisticated activity made possible by the development of knowledge, the traditional source of intelligibility lost its preeminent status, leaving the question of the justification of intelligibility and of order in nature and in human affairs wide open.

To think is to order, said Aristotle. Intelligibility follows from unity; multiplicity as such is unintelligible. To become intelligible, things have to be reduced to some order or unity. As we have seen, human activity, even strictly intellectual activity, produces increasing multiplicity and makes the efforts of an overall comprehension more complex, not less. Is this an accidental result of human development; has development gone wrong? Or has the resulting complexity some redeeming features, some positive role and therefore a deeper meaning? Is the present intellectual situation just so much sound and fury, or does it signify something? Let us try to throw some light on the problem.

CHAPTER V

CHANGE OF CULTURAL PARADIGM

It is easy to say that we live in changing times; the fact is evident. It is more difficult to try to understand it and do something about it. Among the many statements about our times, one in particular merits our attention. In 1978, on the occasion of the tenth anniversary of the foundation of the Club of Rome, Aurelio Peccei, the founder of the Club, issued a solemn appeal to scientists to stop research for 50 years, or else humanity would be doomed. In Peccei's opinion, scientific development had outpaced the moral and social evolution of mankind so radically that the lopsided development threatened the very existence of humanity. The idea underlying his appeal was, of course, the belief that there must exist a basic balance between the capacity to do and the ability to master this capacity, so as to prevent it from becoming a threat to the human race. What Peccei clearly realized and is of particular importance for our discussion is the fact that knowledge is not always, nor automatically harmoniously related to humanity. The development of knowledge can outrun the capacity of its makers to use it wisely and can turn them into sorcerer's apprentices. In other words, the development of knowledge, at least of the scientific type of knowledge, does not automatically make humans wiser. Obviously, science and wisdom are not the same. There is no direct or necessary relationship between the two. It is easier to state this fact than to comprehend all its consequences! One thing is clear, there are very good reasons indeed, to be concerned about the impressive development of science and technology.

Whether or not Peccei was realistic in his perception of a cure for the present predicament of humanity is a problem which we do not propose to discuss at this juncture. Whatever may be the opinion about Peccei's statement, the statement itself is very revealing and throws much light on our times. First of all, it signals the end of an era, namely, the modern era with its uncritical belief in the power of reason, in the possibility of limitless material progress, in man's inborn superiority over nature and in his right and duty to control nature and submit it to his will. On a deeper level, Peccei's appeal expresses the failure of the demiurgic myth of man, the maker. Myths, as Levi-Strauss has shown, mediate between culture and nature, that is, between man as knower and the world as his habitat. They give meaning to humans and to their existence by telling them what they are and what their relations to, and place in, the universe are. Humans have to understand themselves and their place in the world; myth serves this purpose. The two

understandings are intrinsically related; and one cannot exist without the other. The demise of a myth results in a profound change in the understanding we have of ourselves. This occurs when an accepted image appears insufficient and has to be replaced by a more satisfactory one, as happens now to be the case.

The change in the prevailing myth is a very serious matter indeed, because it affects the foundations of the explanatory structure which humans so laboriously construct to satisfy their imperative need of intelligibility. It is therefore a more far-reaching change than that of a scientific paradigm. The latter is an expression of conscious, overt, logically consistent reasonings, and as such is a product of attitudes and activities which intend to be strictly rational. Whether this ideal of rationality is in fact achieved is another matter which we do not intend to discuss at this point. What concerns us here is the fact that, to the extent that these attitudes and activities aim to be purely rational, they do not express the total human, ignoring or rejecting the non-analytically rational dimensions of the human being and, thus, reducing him to the two dimensionality of a geometrical, measurable surface. The scientific paradigm presupposes the fundamental explanatory context of basic beliefs contained in and manifested through the prevailing myth. Consequently, the change of a scientific paradigm without the change of the underlying myth does not affect humans in their basic attitude concerning their lives.

In contrast to scientific paradigms, myths serve and express the fundamental involvement of humans in the world. They function on the level of humans' existential insertion into reality and symbolize for them the meaning of their existence. Man's insertion into reality is complex and multilevel: physical and psychological, intellectual and emotional. The global product of this insertion is culture. The complexity of culture reflects the complexity of humans' relationship with reality. A change in the myth expressing their involvement in reality is tantamount to a change of cultural epoch. Such a change is taking place now. It already affects all of us in many ways and will continue to affect us even more in the future. It will produce substantial changes in our understanding of ourselves and of the world. Consequently, it will change our attitude towards nature and towards ourselves. This will have an important influence on our mode of life, even in its most practical, concrete, everyday aspects. But most of all, the demise of the demiurgic myth will be significant to those whose profession it is to study and/or to deal with the nature and the behavior of man. Psychologists, psychiatrists, sociologists, anthropologists, and philosophers will be affected by the change of myth more than others. This is why a philosophical discussion of humans' relationship with knowledge cannot overlook the fact that we are undergoing a change of

cultural paradigm. This change invites us to reflect on this relationship, and at the same time, throws much light on it.

The Western cultural framework contains both myth and what has come to be known as rational knowledge. The relationship of myth to that type of knowledge may appear ambiguous. In themselves myths are not rational, if by "rational" we understand the type of rationality which is epitomized by modern science. However, in-as-much as myths express the basic conceptualization of reality, they are essential for any more explicit type of knowledge, and consequently, for science. The relationship between science and myth is not a simple, one-way dependency: myth-science. It is much more complex and can best be expressed as a two-way, feedback relation, inducing alternative, though not temporally symmetrical, changes in each of the elements.

A culture may or may not contain science in the modern sense of this word, but it always contains a myth. Culture and the basic myth form a system, the elements of which are also bound by a feedback relationship. The important fact is that the system may be either quasi-static, i.e., evolving very slowly, or more or less rapidly evolving. The difference between these two situations may be traced to two factors. The first is the presence or absence of knowledge other than that expressed by myth. The classical example of this type of knowledge is science. The second factor is the myth itself which embodies the image of mankind and suggests an attitude towards the world. Depending on the myth, the given culture either does or does not stimulate the development of knowledge in general and of science in particular: rather to myth corresponds the resulting knowledge.

At the origin of Western culture there was the myth of Prometheus and the biblical message extolling humans to submit the Earth to their will. It should not be surprising that this culture has produced a situation where the sum total of scientific knowledge doubles every ten years. Interestingly enough, human-centered myths produce a dynamic culture. Nature-centered myths produce more static cultures. In the first case, humans view themselves as being distinct from and superior to nature. Their unique quality has to be justified by their relationship to the supreme value, as is done in the Old Testament. From their superiority in relation to nature flow two very important consequences. Humans are not subject to the determinism of nature and they can look at nature objectively. Free agents, masters of their own fate, they are not subject to the fatalistic necessity of impersonal destiny. Moreover, the ability of the objective perception of nature makes possible the development of science with all its positive and negative consequences. In contrast, the perception of humans as an integral part of nature, which is the case in the majority of cultures, subordinates them to the rule of necessity, giving thereby little incentive for an active

attitude toward the ambient world, and little desire to progress. The image which humans have of themselves is obviously decisive for their development.

The more dynamic knowledge is, the more and faster will culture change. In the situation of highly developed, dynamic knowledge, cultural changes are to a large extent results of rational activity. They are produced from within the culture, by its internal dynamism and not, as in the situation of less developed knowledge, under the impact of uncontrollable external forces, whether natural or human. The more developed and dynamic knowledge is within the given culture, the more self-induced are the changes which this culture undergoes. A dynamic culture forms a self-evolving system which is self-complexifying and self-accelerating in its evolution. If one wishes to understand cultural change in general and in particular in the case of contemporary Western culture, one must first assess the principal factor which produces this change, namely, knowledge.

In light of the above statement, it becomes apparent that the change of the cultural paradigm which we are presently witnessing is neither an accidental nor a surprising occurrence. It is the logical result of the development of knowledge. The understanding of the role of knowledge in the development of culture is therefore essential for the understanding of cultural processes. An understanding of these processes is important in itself. But that is not all. Cultural changes, as we have tried to explain, are important existential facts which affect us deeply. From the point of view of our study of knowledge, an understanding of the role of knowledge in these changes gives us important insight into the causality of knowledge in general and into the relationship between knowledge and humans.

CHAPTER VI

KNOWLEDGE: THE PRESENT PREDICAMENT AND CULTURE

It is rather obvious that the fate of humans is irreversibly bound to their rationality and its product—rational knowledge. If one wants to understand humans and the situation in which they find themselves, it is necessary to view them both in the light of the knowledge existing at the given time. We attach great value to knowledge because of the evident advantages it gives us. We are therefore not surprised when we see positive results of thinking. We find this normal and understandable. However, we find the opposite situation surprising and unintelligible. Such a situation exists now. It makes us particularly uncomfortable because it occurs at a time of tremendous development of knowledge. It would seem logical to assume that the progress of knowledge leads to the general betterment of the human condition, to less problematic situations, not to more difficulties and problems. Confronted with a seemingly paradoxical situation produced by the development of knowledge, it is logical to inquire about the causes of the use of the intellect. Perhaps an elucidation of this problem will throw some light on the present situation. Let us state in the first place that any attempt to reduce the reasons for thinking to only one cause will not do justice to the complexity of the use of reason. It would make the richness of rational life incomprehensible.

Generally speaking there are three reasons which prompt us to think. We think either because we find thinking interesting and enjoyable, or because we find it useful, or because something bothers us, and we feel impelled to understand the cause of our predicament. One may, perhaps, argue that the third reason is merely a variant of the second and may be reduced to it, because both, in final analysis, have for their final aim the improvement of the human situation. It is true that both have a practical aim in sight, but there are, nevertheless, important differences between them. When an engineer conceives a new engine or an architect draws plans for a building, each one of them thinks about producing something which does not yet exist. Instead, when somebody analyzes the contemporary predicament, he tries to grasp the reasons for something which already exists. Presently, it is this latter reason which accounts for the prodigious amount of publications dedicated to the discussion of the present state of humanity. We ask again and again how it happened that the obvious progress produced in the last few centuries has resulted in a state of what may be described as the general

predicament of the human species. After all, it was in the name of the pursuit of happiness, and for the betterment of the condition of human existence that the idea of progress was conceived and put into action, at the expense of great individual and collective efforts and sacrifices. Now, many begin to wonder whether all that striving was worthwhile. Have not our ancestors and we ourselves been deceived by an unattainable mirage, by a false ideal? Has not our knowledge deceived us? Can it assure us a better, happier life?

Is something wrong with our knowledge in general or with the ideals for which we have chosen to strive? Is, a reasonably good life and a modicum of happiness for the average person beyond the limits of the possible? Or is this aim realistic, but the method of achieving it inadequate or simply false? These and similar questions are at the center of our intellectual preoccupations. They are not simply the result of vain, intellectual curiosity, products of an overheated mind in search of new outlets for the exercise of the excess of its conceptual capacities. Quite the contrary, they are as genuine and relevant as questions can be. What is more, they are highly revealing for the study of the relationship existing between humans, knowledge and the consequences of the development of knowledge.

Not only does the present situation force us to ask questions of the type mentioned above, but the future of humanity largely depends on the answers which will be given to them. As mentioned before, the more man knows and the more thorough his knowledge is, the more he can do, and, consequently, the more his future is shaped by himself and becomes his own product. This fact is sufficiently fundamental and general to be expressed in the form of a law:

Law VI: "Humans' ability to determine the development of humanity is proportional to their knowledge."

The more humans know, the more the future will be influenced by their understanding of the situation in which they find themselves. This means that self-appraisal will play an ever-increasing role in the existence of humankind. Its destiny will be determined more and more by critical thinking. The feedback from thinking will exercise an increasingly formative function in the development of humanity. This means that the system of human-knowledge will become progressively more self-shaping, hence more autonomous with regard to outside factors. This claim, of course, will demand more ample elucidation.

In light of the increasing impact of knowledge, it is certain that reflection on the above-mentioned problems is bound to remain a permanent and growing feature of intellectual preoccupations. Strange as it may sound, the more humans think the more they become

problematic for themselves. The more they know, the more they have to understand the relationship between themselves and their knowledge and the latter's impact on them. In the first place, they will have to understand the nature of the predicament in which they find themselves and how it came about.

The present situation of humanity with its achievements and its problems did not just happen. In contrast to meteorites, great ideas and important problems do not appear suddenly and without previous developments. Our predicament is the logical result of a long evolution. It is the culmination of a process which began with the emergence of the rational animal in a remote past. It is, however, rather obvious that all of humanity has not equal responsibility for creating the situation we find ourselves in. The condition of humanity is, to a large extent, the result of the development of Western culture and of its dominant position in the world. Like all major and lasting developments in history, the achievement of the preeminent position by this culture was not the result of an accident. The rise of Western culture to its present status is not only a very important fact in terms of human relations, it is also highly revealing for the understanding of human evolution in general.

From the ecology of knowledge point of view, the most relevant element for our analysis is the role played by knowledge in the ascent of Western culture. No matter how critical one may be about this culture and its impact on other cultures, one thing is certain. Of all the cultures which exist now or have ever existed, Western culture has developed the most propitious intellectual environment for the birth and the evolution of dynamic knowledge in its two variants: theoretical and practical. It is this knowledge which allowed the transformation of the surface of the earth. Without Western culture, humanity would have existed, no doubt about that, but it would have been a very different humanity indeed. Whether it would have been a better or a worse humanity is a matter for discussion. It is, however, rather certain that it would not have achieved a comparable level of scientific and technological development. There would have been fewer people in the world much less capable of impacting on the environment. Consequently, humans would not have been faced with the problems which they now encounter.

The relationship existing between these problems and our culture is a matter of great importance in itself as well as for our discussion of the role of knowledge. Since it is Western culture that is mainly responsible for the problems which we now face, it is necessary to inquire about the nature of that culture. In the first place, let us ask what is specific about this culture, what, if anything, distinguishes it from other cultures? Each culture is unique; no two cultures are identical. So the very fact of Western culture being different from other cultures does not set it apart from the family of cultures. It is not

immediately obvious what is specific to that culture and what makes it so particular. Why, for instance, has this culture invested so much in the development of knowledge? The one thing that is evident is its rise to the dominant position in the world. How do we explain this fact? We shall try to answer this question in the next chapter. The discussion of the nature of Western culture should help understand the relationship existing between knowledge, knowers and their existential situation.

PART II

KNOWLEDGE AND CULTURE

CHAPTER VII

WESTERN CULTURE AND ITS SOURCES

The Greek Heritage

It is a rather formidable task to describe a culture and to try to explain the reasons for its specificity. And yet, if we want to understand the situation in which we find ourselves and its causes, we have to attempt to do just that. Of course, the discussion will be limited only to those aspects of culture which are relevant for our analysis. In the first place, let us try to elucidate further what we have said in the previous chapter about the rise of Western culture to its dominant position. The expansion of Western powers since the 15th century was fuelled by economic factors and the dynamism of Western people. Their conquering spirit was certainly a major cause of the expansion of Western influence over the world, but it was not the sole cause of the importance which Western culture has achieved in modern times. Westerners were not the only conquerors in history. The history of humanity is a long sequence of conquests in all parts of the world, by all sorts of peoples. What was peculiar to Western people was the fact that they combined their combativeness and lust for conquest with another quality which assured them the leading position in the world.

It is this other factor which is the most likely cause of the uniqueness of Western culture. Namely, Western people have developed mental attitudes of respect for, desire for and increasingly massive support for knowledge and its methodical development. True as this statement is, it is not yet sufficient for distinguishing Western culture. The respect for knowledge was not exclusive to the West. What was special, and still is in the case of our culture, is the respect for knowledge combined with the conviction that existing knowledge, whatever its level of advancement, is not definitive, nor sufficient. Western people want not only to know, they want to know constantly more. They are convinced that knowing more and developing better, more advanced knowledge is eminently worth the effort.

In contradistinction to many other cultures, the Western desire for knowledge was not preponderantly tradition-oriented or bound. In our culture, great intellectual systems conceived in the past, such as Plato's, Aristotle's or that contained in the Bible, influential as they were—or still are—did not prevent further development of knowledge. Instead, they fed the inquisitive spirit of succeeding generations and contributed powerfully to the development of Western culture. Culture is a system, the elements of which are intrinsically inter-related. This is

why, it would be wrong to assume that the Western attitude towards knowledge is a cultural aspect standing alone, unrelated to other elements of that culture. Quite the contrary, the exceptional respect for knowledge goes together with and is supported by the uniquely Western perception of the human individual as a person, and the importance attached to the development of personality. This is why the Western approach to knowledge stresses personal input, is creativity centered and future-oriented. In other words, the Western attitude towards knowledge is a systemic phenomenon, an element of the Western system of culture with its hierarchy of values and basic beliefs. The result of this system was the production of evermore advanced and efficient modes of cognition, giving their authors and users ever greater power over humans and the environment. The knowledge thus developed, combined with the conquering spirit, allowed Western people to achieve the dominant position in the world. It also made possible the satisfaction of evermore numerous and sophisticated needs and desires leading to the environmental problems which we now experience.

It is one thing to describe a culture; it is another to explain its roots which determine, at least to some extent, its nature. Western culture is, in a sense, a hybrid. It has two quite different sources: Greek and Hebraic. Not only are these sources different, but our awareness of each one of them is different as well. Interestingly enough, while the Greek factor is widely recognized and stressed, the Hebraic heritage is much less readily admitted. And yet, the latter's role in the formation of our culture was, through Christianity, truly decisive. Let us begin the discussion of the roots of our culture with a brief description of the Greek world view. The Greeks perceived the world as a cosmos, a well-organized whole. Nature appeared as eternal and unchanging in its essential determinations, governed by eternal laws. The world was thought to be a well-ordered whole, a cosmos. Its perceived regularities were the source of intelligibility and the foundation of natural law. Nature was the great ruler and the purveyor of all the necessities of life. Humans were subordinated to it and did not form an independent order of reality. Nature was for them an object of contemplation. It would have been inconceivable for the Greeks to consider nature as inferior to humans, a mere source of primary resources for human use, such as it appears to modern humans.

World views are fundamental elements of cultures with far-reaching existential consequences. The idea of the subordination of humans to nature is a perfect illustration of this fact. The subordination was twofold: intellectual, as we have just indicated, and operational. The most important practical consequence of the subordination was the belief in the reign of necessity. Necessity ruled supreme: while nature was governed by deterministic laws, inexorable Fate ruled over

divinities and humans alike. True, some thinkers tried to loosen the suffocating grip of Fate over humans. For instance, Aristotle limited the realm of necessity to the cosmic order and introduced the principle of indetermination, prime matter, in the sub-lunar realm, thus creating a possibility for the exercise of human free will. However, it has to be remembered that his lofty ideas did not represent the beliefs of the average Greek, expressed so eloquently by poets and dramatists.

Greek ideas about human subordination to nature were not exclusive to their culture. On the contrary, they were the general rule among cultures. What set the Greek culture apart from other cultures and made it truly unique was its attitude toward reason. For the Greeks, knowledge was a divine attribute, rationality was the most perfect faculty of humans, while contemplation of Truth and Beauty was the most noble activity. The two greatest thinkers of Antiquity, Plato and Aristotle, although differing widely in their ideas, were unanimous in extolling the virtues of the intellect. For Plato, the human intellect belonged by nature to the perfect world of ideas, while for Aristotle, though earthbound, it was "as if it were everything"—its object of knowledge extended to the whole realm of being. Hence, in principle, the whole Universe was intelligible. It was this attitude and hierarchy of values which made possible the invention of theoretical knowledge and its prodigious development. The spirit of rationality was the most distinctive mark of Greek culture. As is well-known, Greek rationality has determined to a large extent the development and the nature of Western culture with its particular mode of rationality.

The Distinction between Theoretical and Practical Knowledge

Among the most important ideas developed by the Greeks, which exercised a decisive influence on our culture was the distinction between theoretical or contemplative knowledge and practical knowledge. In Antiquity and until modern times, this distinction seemed evident and well-founded. There was, indeed, a great difference between the pursuit of knowledge for the sake of knowledge and the know-how aimed at producing a concrete object, for instance, a tool or a house.

The importance of the distinction between the two types of cognition transcended the field of knowledge. It had far-reaching social effects as well, because of the difference in the social status accorded by the Greeks to pure thinking and practical knowledge. The former was reserved for wealthy males freed from the yoke of manual labor and able to pursue freely their intellectual interests. Practical knowledge involved manual labor and had the lowly status of servile art, i.e., craft. Thus the difference in the value attached to the two types of knowledge reinforced social distinctions. Moreover, it led to an unequal

development of knowledge. It is well-known that in antiquity the development of theoretical knowledge far outdistanced that of technology. What is less well-understood is the influence of the ancient evaluation of knowledge on the perception of the intellectual achievement of the Greeks by early and medieval Christianity, and even by many modern thinkers. Namely, what was preserved, widely known and valued were mainly the theoretical achievements, not so much the practical accomplishments. In all fairness to the Greeks, we have to say that the slanted perception of the Greek heritage was caused not only by the Greek ideas, but also by the Judeo-Christian hierarchy of values.

In the present stage of the development of knowledge one may wonder what the value of this once so important distinction was. Armed with hindsight and before passing a judgement on the formal value of the distinction, it is now possible to say that the contemplative attitude and the lesser interest for the advancement of practical knowledge prevailing in Antiquity and the Medieval Ages did have at least one very important and positive effect. Namely, it led to the development of logical reasoning to a remarkable degree. Logical skills and the ability to theorize proved very useful for coping with the flux of observational data. When Europeans became interested in the exploration of nature and in practical knowledge requiring more and more theoretical underpinning, they possessed the intellectual tools necessary for undertaking this task. Having said this, let us now turn to the question of the formal value of the distinction between theoretical and practical knowledge.

In light of the power of contemporary knowledge and of the evident relationship between theoretical science and its practical consequences, the ancient distinction between theoretical and practical knowledge appears inadequate and mistaken. The distinction, however, is not without foundation. It is valid on the level of the intentions of knowledge. One may pursue knowledge for the pleasure of knowing, interested only in theoretical problems, or, one may be interested in knowledge as a means for achieving practical aims. Had the consequences of knowledge been unequivocally dependent on the intentions of those producing knowledge, the distinction between theoretical and practical knowledge would have been fully justified. As it is, the intentions of knowers and the consequences of knowledge belong to two very different orders of reality. There does not seem to be much direct, causal relationship between them. Whatever the intentions of the thinker, be they the most theoretical and devoid of any practical intentions, the knowledge which he produces has a direct or indirect practical consequence. The classical illustration of this is the theory of relativity formulated by Einstein for purely theoretical reasons which, nevertheless, led to the development of atomic energy. More and more,

to know means to know how to do. However, the growing practicality of theoretical knowledge does not diminish the value of theoretical knowledge as such.

The Notions of Objectivity and Subjectivity

The birth of the distinction between theoretical and practical cognition and the persistence of the ideal of theoretical knowledge was explained by the availability of cheap manual labor and the resulting lack of the need to develop more efficient forms of practical knowledge, i.e., of more advanced technology. There is no doubt that cheap labor was a factor, but it was not the only factor; cheap, slave labor existed in other cultures as well, and even on a more massive scale; yet other cultures have not developed the same distinction between the two modes of knowledge. The above explanation cannot, therefore, be accepted as adequate. It attempts to explain the mental by the material and, like other reductionist explanations of this sort, does not quite succeed.

It seems that a more adequate explanation may be given by taking into account another intellectual factor specific to Western culture, namely, the ideal of objectivity. This ideal was a logical complement to the ideal of theoretical knowledge, the two justifying and reinforcing each other. Both belong to the conceptual order. The notion of objectivity, like that of theoretical knowledge, does not represent an evident, simple datum such as the piece of paper on which these words are written. It is not a given perceived and accepted by everybody. The notion of objectivity and the distinction between objectivity and subjectivity are products of reason, conceptual distinctions with foundation in reality. These notions were conceived in ancient Greece and became the cornerstones of Western rationality. It is, therefore, difficult for us to imagine that they are quasi-inexistent in other cultures. Somebody may remark here that these notions have lost much of their importance and that in this respect we are moving closer to other cultures which have not elaborated the distinction between objectivity and subjectivity to the same extent as our culture. In this century, microphysics taught us that all observation is deformation and that it is very difficult, if not impossible, to distinguish in scientific data between the part played in their formation by the observer, and the thing observed. Again, the relativity theory taught us that all observation is relative. There are, therefore, no absolute observers and the distinction between subjectivity and objectivity is much more complex than previously had been thought. It remains, however, that outside the arcane field of advanced physics, this distinction continues to be accepted at its surface value and to play its crucial role in Western mentality.

It is one thing to insist on the role of the notions of objectivity and subjectivity in our culture; it is another to explain why they were developed in ancient Greece and not elsewhere, at least, not to the same extent and with equally far-reaching consequences. As far as the present writer can tell, this question remains open. What can and should be said is that the notions which interest us here cannot be conceived without certain preconditions. Namely, they presuppose the factual distinction between subject and object, and the perception and conceptualization of this distinction. These preconditions are more or less obvious. What is less evident and less well-understood is another precondition that belongs to the mode of thinking. It concerns the mode of forming concepts. The notions of objectivity and subjectivity, of theoretical and practical knowledge imply precise concepts which presuppose a particular mode of abstraction in the formation of concepts. This mode is known as formal abstraction. It produces clear and distinct concepts which, in turn, make possible the formation of univocal and analogical concepts, the perception of the distinction between them and the differentiation of both from equivocal concepts. These intellectual tools allowed the development of Western science and philosophy and Western forms of social life.

The Hebraic Root of Western Culture

The distinction between the subject and object of knowledge, simple and evident as it may seem to us after twenty odd centuries of its formulation, presupposes another notion proper to Western culture, namely, the notion of person as an exclusively and distinctly human property. It entails the belief in the unique character of the human being among all creatures. This belief is reinforced by the conviction of the radical superiority of humans over other beings. The root of this belief existed independently in Hebraic and Greek culture, but its justification in each case was conceived in a different intellectual perspective—religious in the first case, lay in the second. For the Greeks, the justification of the special status of humans is to be found in their rationality and in the value which they attach to the intellect. The Jews valued the intellect at least as much as the Greeks, but, moreover, their belief in the uniqueness of human persons was given a powerful, theological justification.

The Old Testament taught that man was created after the image of God and God considered man, because of man's rationality, a valid interlocutor. God gave humans the extraordinary command of populating the earth and of subordinating it to their will. It is difficult to over-exaggerate the importance of this command and its consequences. Being distinct from, and superior to the rest of nature, humans are free

agents, therefore authors of their acts and responsible for them. As free agents, they are not subject to Fate; the determinism of nature does not rule over them. Instead, they can and should explore nature and rule over it. A person brought up in the Judeo-Christian tradition has great difficulty imagining how liberating and friendly the doctrines of human personality and the freedom of will were. How different they were from the oppressive belief in Fate proper to other cultures past and present.

Any discussion of the Hebraic input into our culture would be incomplete without the mention of the notion of linear time. The idea of linear time seems to us natural and normal because it is a fundamental element of our culture. We are so accustomed to it that we do not realize how unusual and unique it really is. All too often we forget the origin of that notion and its true meaning. The idea of linear time comes out of the Old Testament and has a religious origin and justification. Linear time is the dimension of the history of humanity which began with the expulsion of the First Parents from Paradise and will end with the end of the World and the Final Judgement. Human history is a unidirectional sequence of events, each one of them unique, non-repeatable and having a natural and supernatural meaning. The meaning comes from the fact that each event is an element of the long journey of humanity from the loss of grace to the return to the divine fold. The idea of linear time owes little if anything to the observation of natural events. It is a religious, mental construct. It is, indeed, rather ironic that this religious construct became one of the fundamental and indispensable notions of modern, lay science and of the lay world view. All too easily we forget that we owe the notion of linear time to the Old Testament. Without this religious text, our contemporary knowledge would have been very different. And so would our perception of ourselves and of the world.

One cannot fully grasp how unusual and important is the notion of linear time without comparing it with the notion of time existing in other cultures. In light of this comparison, one will be able to understand the existential consequences of the different perceptions of time. The idea of time is one of the most important ideas ever formulated. It is a cornerstone of the world view proper to a given culture. If one wishes to find a demonstration of the impact of ideas on human life, the notion of time provides a perfect example. This is why the Hebraic notion of time deserves our attention. The proper understanding of this idea and of its consequences is of decisive help in comprehending Western culture as well as the present situation of humanity.

Outside the sphere of the Judeo-Christian culture, the notion of time was based on observation of natural events, in particular, on the perception of regularly recurring phenomena such as the diurnal and annual cycles and the movements of celestial bodies. These phenomena were perceived as circular and, quite naturally, suggested the idea of

circular time. Not surprisingly, circular time became the standard idea of time in cultures which otherwise had little in common. Being based on observational data, circular time is a more concrete notion than linear time. In fact, it is more natural, and, grounded in observation, more scientific than linear time. The problem is that circular time has very unpleasant consequences for humans. It precludes the possibility of making sense of history in general and of human lives as a building-block-knowledge system of the historical process. What it does not prevent is the recording of consecutive events, i.e., the narration of the historical process.

The difference between narrating history and making sense of it may seem rather tenuous or obscure. Let us explain. History does make sense if the sequence of events which compose it has a direction, when it is a discernible, irreversible progression from state A to state B. This situation presupposes the uni-directionality of the flow of time and the resulting non-repeatability of moments of time and of events. Circular time does not satisfy these conditions. It really goes nowhere, being an eternal repetition of the same situations. Being repetitious and going nowhere, circular time cannot be the dimension of the progress of humanity. In this situation there is no real progress, all developments come to naught as in the great year of Heraclitus, only to begin all over again, *ad infinitum*. Consequently, human efforts do not really change anything; humans have no power to stop or brake the inexorable circle of repetitious events, and life, in biblical terms, is not a happy or meaningful state. It is not surprising that for the Greek, Moira, (Fate) was the supreme force standing above the gods of Olympus.

How different is the role of human life in the context of linear time! Humanity is perceived as a very special order of reality, distinct from and superior to nature. Humanity acquires a vocation all its own; human life and behavior become meaningful. Humans are motivated to progress, and human history becomes meaningful. As we have seen, the source of the linear idea of time is the story of the creation of Adam and Eve and of their expulsion from Paradise. The story is well-known. Students of Judaic and Christian religions understand the consequences of this account for believers and all those who live in the context of Western culture. What is less well-understood is the impact of the truly monumental message in the famous passage of the Book of Genesis on the development of modern science and technology and on the rise of Western culture to its dominant position. We will now attempt to discuss this question.

CHAPTER VIII

THE RISE OF MODERN SCIENCE

Among the many consequences of the biblical world view, the one which is of particular interest for our discussion is its, apparently, rather surprising impact on the development of the notion of objectivity. The further consequence was the rise of the ideal of objective knowledge as the highest, most valuable form of cognition. It is this ideal that underlies the development of modern science and, in general, the Western perception of knowledge. Let us discuss briefly the much overlooked influence of religious ideas on modern science and the modern world view.

We have already analyzed the notions of objectivity and subjectivity. What we intend to do now is to discuss the relationship which exists between the notions of objectivity and personality. We have seen that the notion of objectivity presupposes the distinction between the subject and object, i.e., between the observer and the thing observed. This is easy to see, but the distinction is not as simple as it may seem. What is problematic is the degree of distinctness between the observer and the thing observed. The way we conceive their relationship has important consequences for our conception of the nature of knowledge and its value. Let us remember that our ideas about knowledge are not a simple *datum*, arising automatically out of the act of perception. They are hypothetical, mental constructs, explicit or implicit interpretations of obscure and complex acts.

The question is whether the observer and the thing observed are both essentially similar, whether they belong to the same order of reality, or is the observer somehow superior to the object observed? In other words, it is the status of the observer that is in question. Let us explain. The notion of objectivity implies not only a distinction between the subject and object, it involves a particular attitude on the part of the observer, namely, looking at the object. The act of looking at something is a very different relationship from being with, feeling with, or participating in something. "At" and "with" express, in a sense, two opposed attitudes, two very different relationships. "With" implies a certain community, participation, interdependence, a union. It suggests a degree of equality or, at least, a common denominator. "At" indicates a distinction, a distance, a look from above of an observer who is not with the thing observed. Not only is the observer distinct from the object, he or she is able to consider the object as a mere thing, as something inferior. The looking at things is done best when one looks down at things. To look at things, one has to consider oneself not only

independent from the object of observation, at least in the act of observing; one has preferably to view oneself as superior to that object.

The belief in their superiority gives observers the conviction of their right to investigate the object at will. To the extent that the object is a mere thing, inferior to the observers, they think themselves justified not only to observe it passively, but to manipulate it, experiment with it and, if necessary, analyze it into its most minute constituent parts. Without this manipulative attitude there would be no modern science or technology. Nor would humanity have become what it is today. The active investigation of the world is done in the name of objective knowledge; the notion of the objectivity presupposes, as we have seen, a more or less clearly articulated notion of superiority of the observer. This is where the biblical doctrine of personality and of the special status of humans enters into the picture. This doctrine was necessary to give Western people the conviction about their preeminent position, justifying their superiority in relation to nature and their right to treat nature as an object of investigation and exploitation. In the light of what has been said, it becomes understandable that the ideal of objectivity has developed in the culture which conceived the idea of personality and attached to it such importance. It is also understandable why the ideal of objectivity has not been espoused by other cultures which have not developed the notion of personality to the same degree as Western culture.

The notion of objectivity is truly the linchpin of the conceptual edifice underlying modern science. However necessary, this notion is not a sufficient condition for the development of modern science. There is another, even more fundamental, albeit more hidden condition. It is the value attached to form in general, i.e., to determinations existing in the universe, to the "thusness" of things, as opposed to indetermination. Western culture perceives determination, form, the fact of things being determinately this or that, having such nature and not other, i.e., not being indeterminate, as a fundamental and positive aspect of being. This point of view has two kinds of consequences: metaphysical and epistemological. In the first place, perfection is identified with form, with the determinate mode of being. The hierarchy of perfections corresponds to a hierarchy of determinations from the lowest, simplest forms found in nature to the highest, most complex forms of human nature and behavior.

The metaphysical importance of form is reinforced by its epistemological role. For the Western mind, form is the structuring principle, the cause of order in the universe. Order is perceived as a perfection and as the source of intelligibility. Intelligibility makes intellectual knowledge possible and gives meaning to things and to human existence. Form gives shape to things and thoughts. It actualizes

the potential for development in beings and is the principle of evolution and progression to more perfect states. The opposite of form—indetermination, chaos—became identified with imperfection. Consequently, it was perceived as something negative to be avoided, and, more importantly, something to be overcome by positive, form-producing, structuring action. The Western perception of form and determination stood at the antipodes of their evaluation by various other cultures, especially that of India.

Not only did Western thinkers conceive of form as the determining and most positive principle of nature. Having perceived form as a value, they went one decisive step further and conceived the ideal of life as a process of realization of ever higher forms, of "in-forming." The "in-forming" is achieved through an active behavior of actualizing one's potential. This involved shaping oneself and, in the process, transforming the environment to satisfy the actualized human potential. That is why Western people try to master the situations they find themselves in, why they cherish leadership qualities and a "go-getter" frame of mind. Their attitude towards life is essentially positive, affirmative and active. The underlying ideal of the human is that of the doer, the conqueror. It is this frame of mind which produced the notion of progress in the most general sense of this word.

Western valuation of form affects human life in many different ways. As we have mentioned, it has an important impact on knowledge. Together with the ideal of objectivity it accounts for the development of modern science and of the idea of progress. In light of what we have said about the role of form and of the notion of objectivity in Western mentality, it becomes understandable that the modern notions of science and of progress have a common root. They are the product of the same vision of the world; they represent the same hierarchy of values. It is not surprising that the development of science in modern times coincided with the rise of the notion of progress to its present preeminence. The belief in progress provided the impetus for furthering science; in turn, the success of science and technology reinforced the belief in progress. The positive feedback existing between them has produced the world we live in. Together, science and progress form a system. This is why the waning of the uncritical attitude towards progress coincides with the demise of the belief in science as the miracle cure for all human problems.

The rise of modern science and the belief in progress were consequent upon a fundamental change in views about the nature and purpose of knowledge. With the new perception of knowledge went a new attitude towards nature. Together, they produced a new *Weltanschauung* which became the mindset of modern times. The new conceptual framework resulted in the most remarkable development

which humanity has known in its long history. We glorify the achievements of the modern era, but we forget that they were the product just of the Western culture, not of the whole of humanity. They benefited that culture and gave it its dominant position. Unfortunately, they were not equally beneficial to other cultures. Many of the problems which humanity now faces are the direct consequence of this fact. Let us try to see in more detail the nature of the intellectual developments which ushered us into the new age.

When the initiators of the modern era—for instance, Francis Bacon, the great prophet of the modern age—began to reflect on the situation of humanity they realized two things, one which was common knowledge and the other new. Not only did they clearly perceive the misery of the average individual and the wretched situation of humanity as a whole, but they boldly affirmed that it could be improved. Bacon pointed out humanity's subjugation to nature as the principal cause of its predicament. The subordination of humans to a force whose finality, if any, did not quite coincide with their desires, and, more often than not, appeared as opposed to them, was seen as responsible for peoples' privations, their sufferings and, in general, their inability to realize their dreams of happiness.

On the other hand, Bacon realized that nature, when properly used, could be a source of immense riches and could be made to work for humanity. To achieve this aim it was necessary to develop an efficacious science of nature and, generally speaking, to turn the mind away from "sterile" reflection on abstract problems as had been the custom until then and to employ it gainfully in the development of practical knowledge. Consequently, he substituted for the contemplative, a practical ideal of knowledge. Our discussion of the distinction between theoretical and practical knowledge may help us to understand how revolutionary Bacon's ideas were.

Two centuries later Auguste Comte expressed the new ideal of knowledge in his famous dictum: "To know in order to foresee so as to be able to do." Once the ideal of practical knowledge had been formulated, an approach to the solution of the problem of the condition of humanity and the choice of a means followed logically. It is important to stress that both the approach to the problem of knowledge and often the choice of aims of cognition have exercised a definitive influence on the generations after Bacon and have shaped modern, Western culture. The acceptance by Western man of the Baconian paradigm was a clear indication of its timeliness, and its success was considered as a proof of its theoretical and practical value. The solution of the problem of the condition of humanity was to consist in the betterment of living conditions through the conquest of nature. The consequences of this shift of perspective were very far-reaching indeed.

Although science in Bacon's view retained its Aristotelian aspect of the knowledge of the laws of nature, its aim was to be eminently practical. Namely, it was to enable humans to master nature and put its wealth at their disposal.

This pragmatic approach resulted in the reversal of positions of humans and nature in their relationship. Nature was degraded from the position of lawgiver to that of primary resource. Thus from the position of master, nature fell to the rank of servant, while man, from his former role of subordinate, rose to become master of the natural, if not cosmic order. The humans "liberation movement" freed people from subjugation to nature and from old beliefs as well. Man the maker and man the master became free, powerful and rampant. His action changed the surface of the earth and the situation of humanity.

Such a dramatic change has had, of course, many consequences. One of them is the ecological predicament. Another, equally important but less advertised, is the growing inequality among nations. There exists, however, still another result which is even less obvious, though not less important, and of great relevance to our discussion. It is the subordination of humanity to the idea of progress and to the process and activity of progress with all that it entails in terms of conditions and consequences. We shall discuss these consequences in greater detail in further chapters.

The liberation of humans from the bonds of nature and the development of the demiurgic ideal went hand in hand with a radical change in the field of philosophy. Aristotelian realism with its idea of subordination of the knower to the object of knowledge and with its insistence on sense perception as the source of information about external reality has been rejected together with the scholastic "*Weltanschauung*." Modern philosophy has developed on the Cartesian assumption, namely, the principle of immanence, that intellectual knowledge is formed within the limits of the intellect without any intrinsic relationship to, and dependence on, sense perception. Descartes conceived the intellect as a self-contained, self-sufficient spiritual substance, knowing within itself the perfectly intelligible ideas. This quasi-angelic notion of the intellect resulted in the thesis of a radical separation of the mind from the body and in an "inward look" in the theories of knowledge. Intellectual knowledge came to be viewed as being detached and independent from sense knowledge. Consequently intellection ceased to be seen as being subordinated to the extra-mental object. In this perspective, the classical definition of truth as consisting in the adequation between the judgement and its object lost its justification and had to be altered. Truth was not to be sought in the conformity with sense data and with the external world, but in the clarity of ideas, i.e., in subjective certitude.

Whether in the continental form of the rationalistic-idealistic tradition, or in the British empiricist version of modern philosophy, knowledge was viewed in this subjectivist perspective. The external world was thought to be either unknowable as for Hume or Kant, or created by and conforming to the intellect as in Hegel's philosophy. In either case, the knower neither had to conform to, nor was he a subordinate part of, the external world or of the cosmic order. Consequently, the act of thinking was viewed as a fully autonomous, knower-centered activity. In this perspective, thinking was a *sui generis* activity, standing in no relation to anything outside of itself and not a part of a greater whole. Thus, thought was justified in and by itself, not through its conformity to and participation in the universal order of being. Enclosed in his own mind, the knower becomes independent from the world and master of his sphere of knowledge. With Hegel, the subjectivist point of view reached its climax. The subject became the maker of the object and the object had to conform to the intellect, its maker. Freed from subordination to nature, humans embarked on a man-centered development taking themselves for the supreme value and the supreme unit of measurement for evaluating everything outside themselves. Protagoras' old saying about man being the measure of all things seemed to have been fully vindicated. The consequences of the subjectivism of modern philosophy do not end with analogies to the ideas of Protagoras, but extend to the conquest of nature and the contemporary predicament. It is important to understand the relationship between philosophical views and the situation in which humanity now finds itself.

Recently, it has become obvious that if humanity wants to continue to exist it has to come to terms with nature and respect its order. The ecological predicament obliges us to do more than just rethink our high-handed treatment of nature and our physical behavior. The revision should go deeper and involve the rethinking of the basic philosophical assumptions and of the "*Weltanschauung*" which goes with them. Of central interest to us is the problem of the nature and role of knowledge in general and of science in particular. What is needed is a new vision of human knowledge and activity integrated into the context of human existence, and of human existence integrated into its ecological context. The lack of this perception accounts in large part for present-day problems which lead us to question the value of progress and the value of humanity as such. We take fewer and fewer things for granted: this statement applies to our thoughts and beliefs, as well as to basic facts of existence. To find a way out of our present predicament we have, therefore, to replace the act of knowing and its product, the knowledge construct, in their existential framework. This, we shall attempt to do in the following chapters.

CHAPTER IX

KNOWLEDGE AS AN EXISTENTIAL ACT

Knowing as an Element of the Knower

Any discussion of the relationship between knowers and the knowledge construct inevitably introduces the problem of the existential role of knowledge. The question is how human knowing is related to the being of the knower. What, if anything, conditions the act of knowing? How and to what extent? How does knowledge affect the knower and why? Is knowing intrinsic to the act of being or are these two acts only extrinsically related to each other? These questions are not new. Indeed, in one way or another they are as old as philosophy. It is not our intention to discuss all the answers given by philosophers—that would amount almost to narrating the history of philosophy. We have, however, to mention some of the influential doctrines. Let us begin with Plato, because of the enduring importance of his ideas for Western thought. His ideas have also a certain resemblance to those common to various Eastern world views, and thus may be considered as representing not only the Western point of view.

For Plato, *being* in the strong sense of the word, namely, that which lies hidden behind sense images, is spiritual and perfectly intelligible. Being is truth and is identical with perfect knowledge. Being is knowledge and knowledge is being. In his view, true knowledge is supportive of the act of being and vice-versa. Of course, Plato saw being and knowledge in the purely immaterial context of Ideas. The development of knowledge was a process of recall of the knowledge which humans naturally had as denizens of the world of ideas before their earthly birth. Plato's doctrine is well-known and so is its impact on Western thought. One does not have to subscribe to the theory of ideas to draw a lesson from Plato's thought. His insights concerning the nature of knowledge have a lasting relevance. More precisely, it is his perception of the relationship between being and knowledge that we find particularly valuable. If there is some truth to the affirmation of this relationship, and we believe that there is, then it is plausible to draw a very important conclusion. Namely, it is possible to affirm that every act of human knowing, imperfect as it may be and certainly far below the Platonic ideal of true knowledge, is, nevertheless, an act supporting, actualizing and developing the human knower.

The massive and overgrowing impact of knowledge on human life which we now observe attests to the plausibility of the above conclusion. Because of its impact, knowledge has an existential

dimension which goes beyond the realm of concepts. This fact has far-reaching consequences for understanding the phenomenon of knowledge. The involvement of knowledge in, and its impact on, life cannot be understood if knowledge is studied in itself, without taking into account its dependence on the knowers and their existential condition. This understanding has been lacking in the post-Cartesian idealist and empiricist schools of thought which have dominated the philosophical scene in modern times. In all fairness, one has to admit that a balanced perception of the relationship between thinking and the material frame of thought is very difficult to achieve. Neither the idealist separation of intellectual activity from the life of the body, nor the materialistic reduction of the former to the latter provides a satisfactory explanation of human knowledge.

After three centuries of subjectivist explanations of knowledge and a century of Marxist theories, it becomes imperative to elaborate a new understanding of cognition commensurable with the gravity of problems induced by knowledge. In light of what we have said thus far, it is rather obvious that the new vision must be a holistic view of knowledge and of the human being, respecting the complexity of his intellectual and material dimensions. Not only must it not consider intellection as a kingdom unto itself, but it must also view it as an element of a larger whole, namely, an integral part of human life and of the order of reality of which humans are a part. Let us call this approach "the new realism," or the systemic theory of knowledge. In this approach, intellection is viewed not only as a set of abstract notions, or an autonomous activity of a quasi-disincarnated intellect, but as an activity imbedded in, conditioned by, and in the service of the concrete, total person. Therefore, the act of knowing is perceived as an existential activity producing concrete consequences within and without the knower. Its presence to and interaction with the realm of being is twofold: material and intellectual.

In the systemic view, the act of thinking and its consequences—the conceptual constructs and the sum total of such constructs, the knowledge construct—are seen as influencing the knower and the world around him. Human knowers and their knowledge appear as elements of a system of being. Therefore, rather than being a logical or methodological approach, the systemic approach which we adopt represents a point of view which may be described as ecological, in the most profound sense of this word, or metaphysical. This approach does not consider itself self-sufficient or exclusive. It does not try to negate the other approaches; it simply intends to say something new. The new realism and its preoccupation with and concern for the total human person and his relation to the external world is also a new humanism. What the systemic point of view finds insufficient is Cartesian idealism,

and the subjectivist tradition issued from that thought. The monumental mistake of Descartes consisted in assuming that we think *inter limites intellectus*, as if intellect was a self-sustaining, self-sufficient knowing entity, independent from and unaffected by our bodily frame and existential situation.

Absolutely false theories are hard to come by, if indeed they exist. As usually happens in the case of great insights, Descartes' "brilliant error" had a good part of truth in it. We do think within certain limits. Our intellection is conditioned by what we are and by the complex, intellectual and material, existential situation we are in. The conditioning has complex effects. It provides thought with a basic link with the existential parameters of the knower, thus ensuring a degree of relevance for the knower of the act of knowing. It anchors intellection in the *Lebenswelt* of the knower. Doing this, it structures thought. The process of thinking occurs within certain limits, which give it a personal character. This is why thinking is always an act of a particular individual and why there is no impersonal thought. The question is: what are these limits. Are they provided by the thinking organ, the intellect, or are they broader, encompassing other aspects of the knower?

In light of all we now know about the conditioning of thought through brain research, biological sciences, psychology and sociology, it is possible to affirm with a high degree of certitude that the limits within which our thinking occurs are those of the total individual, not those of the intellect alone. In other words, the entity which directly or indirectly contributes to and partakes in the process of production of thought is the whole person, intellect and body. It is the concrete individual which provides the frame for the process of intellection. We think *inter limites totius personae*, i.e., within ourselves. The knower is a structured subject, possessing not only a determined nature, but also, and because of that, a particular potential for knowledge of everything that exists. The concrete, therefore limited nature of the knower determines the mode of knowing of the individual knower and of the human species, i.e., of human knowledge in general. However it does not preclude the possibility of a conceptual grasp of the totality of being. The above affirmations define the epistemological position from which the present paper is written. This point of view leads to a very different understanding of knowledge from that of Descartes and his followers. It is the present writer's contention that this view of knowledge will allow an integrative explanation of cognition necessary for the discussion of the problem of the ecology of knowledge.

The subject of the act of knowledge is neither the intellect and/or the senses, nor consciousness, but the knower—the total concrete individual anchored in space and in time, circumscribed by the spatio-temporal parameters of his biological existence. Such is the person; such

is the thought. It is to the complex, concrete subject which is the individual that we have to relate the acts of knowledge and to try to understand them accordingly. Knowledge is an organic, systemic process involving the total person and not just his intellect and/or his senses. It is the product of the existential act of the whole individual, of his multilevel, complex immersion in the ambient world. It expresses directly or indirectly the sum total of exchanges which takes place between the knower and the outside reality, and it serves as a mean in maintaining and furthering this commerce of which life is made. To consider knowledge in itself, abstracting from and forgetting about its relation to and its role in the life of the knower, is to take *pars pro toto*.

The intellect is the organ of thought but, as we have already said, it does not operate apart from the rest of the person. Quite the contrary, it is an integral part of the human organism, not only present in it but dependent on it for its operations. It acts in relation to, and with the cooperation of, the whole body. Shall we therefore conclude that knowledge is necessarily not only knower-centered but also unavoidably subjective and independent from the outside reality? Not at all! If knowledge is the product of the given individual, the individual in turn is shaped by the constant intercourse between the self and the ambient world. The latter is composed of other individuals, i.e., society and the physical reality. Both these elements model the individual, but each in a different way. The individual is not an island unto himself. This is especially true on the level of knowledge.

Society and the physical world influence the thought of the individual in his or her very makeup in addition to providing the content of sense data. Physically and intellectually humans live in a feedback relationship with the ambient world. The ambient world may be defined as the portion of reality composed of the sum total of elements with which we are in relation either through knowledge and/or physically, i.e., the things that we are aware of and others which act upon us or on which we act outside of our awareness. So defined, the ambient world is particular to each individual and differs more or less from that of another person. This fact is as important existentially as it is for the understanding of the nature of knowledge. Through sense knowledge, we enter into active relationship with our environment. This apparently obvious fact has been much obscured by the insistence of idealist philosophies on intellectual knowledge. Sense perception, not intellection, is the principal root of the personal nature of cognition. Differences on the level of sense knowledge explain the fact that each knower experiences the world in a slightly different manner. Further differentiation and personalization of the process of knowing is produced by the intellect. Together, sense knowledge and intellection are constitutive elements of the whole which is composed of the knower

and his (or her) ambient world. They are at the same time knower-centered and related to the outside reality. Their mode of operation determines the mode of life of the knower in its specific and individual aspects.

Knowledge affects the knower in his very being. It shapes his behavior by conditioning his attitude to the external world and his participation in it. This is a very complex fact which is of prime importance for our discussion. Although the knower is always involved with the external world whatever the level of his knowledge, nevertheless, the more he knows the richer, the more complex is his involvement. Let us express this situation by means of a law:

Law VII: "All other things being equal, the complexity of involvement of the individual with external reality is proportional to the amount of knowledge he or she possesses."

The progress of knowledge changes not only the amount but also the quality of human involvement with external reality. The radius of activity increases, enlarging the ambient world. As an indication of progress, suffice it to compare the radius of activity of the cave dweller with that of the astronaut, or the reach of the naked eye with that of the radio telescope. The human environment increases constantly not only in size but in complexity, as does our relationship with it. This result of the development of knowledge is all too often overlooked or misunderstood. Our relationship with the external world is a two-way commerce. The more we act on the environment, the more complex is its impact on us. This may sound surprising because the avowed aim of technology is to give us mastery over the environment and shield us from its undesirable influences. In fact, the situation is much more complex. Let us explain.

Nature does not subordinate itself to humans automatically. Nor is their desire of dominion over nature sufficient by itself to achieve this aim. The only natural way humans can subordinate nature and use it to satisfy their needs and desires is by means of gaining efficacious knowledge of the fabric of the universe. The problem is that better understanding of nature requires more active investigation of the world, i.e., greater and more sophisticated, more complex interaction with ambient reality. The more we inquire about the workings of nature and the more we penetrate into its inner structure, the more we have to produce evermore sophisticated mental structures to explain the observed data. To achieve this aim the mind has to adjust itself to the forms of nature which it discovers. The more it does this and the more nature impacts on it, the more it is shaped by the observed.

It would be tempting to conclude that in the process the intellect becomes simply more subordinated to its object. Unfortunately, the situation is much more complex. The study of the subatomic realm makes us aware of the inadequacy of naive realism. However, no matter how important is the role of the observer in the study of microphysics, the resulting knowledge is not a subjective invention. The concrete, practical consequences of this knowledge, such as atomic power, should be sufficient to prove that even in the study of the infinitesimally small, the intellect is not entirely on its own. There, also, it has to respect the data which are not all of its own making. This is why, the progress of knowledge does not consist in the liberation of the intellect from the necessity of submission to its object. No matter how advanced rational knowledge is, the act of knowing remains a process of establishing a relationship with an extra-mental object, and knowledge continues to be the product of this relationship.

Francis Bacon, who conceived the idea of "*imperium homini*," of human mastery over nature, and those who followed in his footsteps perceived this ideal in physical terms of satisfaction of material needs and liberation from material constraints. Because of the prevailing idealist epistemologies, they did not pay sufficient attention to the subordination of the intellect to its object. Consequently, they misconceived the relationship between humans and the external world. They failed to understand that the relative physical independence of humans from natural conditions through the mastery of the physical environment is achieved at the price of greater impact of nature on the intellect. To master nature physically, we have to subordinate to it mentally. This all-important fact can be expressed in the form of a law:

Law VIII: Physical mastery of nature is proportional to the active, intellectual subordination to it.

The law above expresses another aspect of the involvement of the knower with the external reality described by the preceding law. The two laws should be considered together.

In light of these laws it becomes understandable that with the progression of knowledge the Baconian ideal has revealed itself as too simplistic and that it is being replaced by ecological consciousness.

Knowledge, Culture and Nature

It is obvious that the progress of knowledge changes the relations of humans with the outside world. The change is twofold: quantitative and qualitative. It is the qualitative change that is more difficult to grasp. One factor of this change is the growing complexity of

these relations, but this is not all. It will not suffice to say that the growing complexity of relations explains the change. The problem is that the total human environment is not just nature. The environment is composed to a larger and larger extent of two, not one, elements. Namely, it is made up of nature and man-made factors, i.e., nature and culture. Nature was always there and will remain in place as the basic framework of human life. Culture is a different factor. It is a growing element produced by humans for facilitating life. The more advanced is the cultural construct, the more complex it becomes, the more saturated with intellectual and material products of human ingenuity. The more culture is built up, the more it becomes a protective shield for humans and a satisfactory habitat for the human race.

Culture not only facilitates human life, it also enables a fuller development of the human potential. The richer the cultural construct, the more complex is its impact and the more complicated and lengthy becomes the process of acquisition of all the elements of the given culture. The learning process becomes more formal, more time and energy consuming, and more difficult. A greater variety of possibilities of behavior go hand in hand with increased necessity of choices and of specialization. Life becomes physically easier but intellectually more demanding. The relations of the individual with the ambient world change under the influence of culture. The cultural space in which we live adds another dimension to the human environment. It makes the human environment richer and human relations with nature more complex, less natural and generating increasingly more problems.

Because of culture, the physical world is no longer the sole factor determining our existence. We are not in a simple, direct relationship with nature as were our biological ancestors. This has consequences worth exploring. The direct relationship between organisms and nature is the rule in the infrahuman world of plants and animals. They coexist harmoniously with their environment, i.e., with nature, of which they are an integral part. They do not disrupt the ecological balance, their conditions of life and of behavior being determined by nature. A similar situation existed also in the initial state of development of humanoid forms. This is no longer the case for *Homo sapiens*. Because of growing intellectual powers and through the evermore efficient exercise of these powers, the rational animal excluded himself, at least to a certain extent, from the self-regulating "mechanism" of nature. Nature ensures ecological balance and order in the living kingdom, maintaining the size and distribution of living species within certain limits and eliminating excessive growth. Thus the species are not allowed to transcend the carrying capacity of their respective ecological niches.

In contrast to non-rational species, our species continues to grow in size and so does its impact on the environment. Nature does not seem to be able to arrest this expansion. The apparent exclusion of the human species from nature's self regulating "mechanism" is one of the most far-reaching consequences of the creation of culture. The exclusion, let us stress this fact, is not the result of an interplay of natural forces, if by "natural" we understand non-rational factors. It is the product of the development of knowledge. This may sound surprising because we are usually convinced that it is our sex organs which are the cause of the demographic growth. Sex, however, is a necessary, but not sufficient cause of the multiplication of humans. The direct cause of this phenomenon is knowledge and its development. The main condition of demographic expansion is the production of reproducers, i.e., of sexually adult individuals. The principal limiting factor was the mortality of infants. It is this factor that knowledge has succeeded in eliminating to a large extent.

Through knowledge, humans have learned how to protect their young and preserve them until reproductive age, how to provide food, shelter and social organization for a growing number of individuals. Thus, they removed the natural constraints on the size of the human biomass. This fact is of major importance for humans and for nature. Moreover, it has a rather unexpected consequence for the discussion of the status of the rational animal. Ancient thinkers placed humans above the animal kingdom because of their rationality. Now we can provide another argument in favor of the uniqueness of *Homo sapiens*, namely, his ability to overcome the impact of factors regulating the size of the living species and the limits of its habitat. The above argument avoids the difficulty encountered by the traditional argument based on the possession of intellect. The belief in the special nature of human rationality and its consequence, the radical superiority of the rational order over non-rational animals, has been criticized as not sufficiently demonstrable. It may, therefore, be worth pointing out that the argument outlined here is based on verifiable observations.

The unique ability of humans to eliminate, at least to a large extent, the natural constraints on the size of their species is, at the same time, a tremendous advantage and a source of problems. Having elevated themselves above the order producing interplay of the forces of nature, humans cannot return to this level anymore, not because of an unwillingness on their part, but for objective reasons. Namely, nature by its own resources cannot support humanity in its present size, hierarchy of needs and level of consumption. This fact is clearly perceived by partisans of deep ecology. Accepting nature as the supreme value and the preservation of nature as the most important and pressing task, they postulate a drastic reduction of the size of the human species as a

necessary means of restoring ecological balance badly disrupted by human activity. Tragic as the consequences for the human prospect may be for the divination of nature by this neo-pagan ideology, the ideas of deep ecologists make us aware of the non-natural relationship of the human species to its environment. They help us to understand the importance of the intellect and of rational knowledge in the biological expansion of the human race. In light of these theories, the price which humans would have to pay for returning to nature's fold becomes clear. However, such return is neither desirable nor possible. Because of its rationality, humanity has left nature's womb forever. In a further chapter, we shall attempt to say more about this fact which has incalculable consequences for the future of the human species.

The elevation of our species above the play of natural forces producing ecological balance would not be possible without the development of culture. This is evident from what we have said about culture. We may now go a step further and establish the following circular relationship between rationality, nature, and present situation of humanity:

Intellect — rational knowledge — culture — independence (relative)
from the system of ecological balance — environment — problems —
ecological consciousness (intellect)

It is a particular achievement of the rational creature that it has replaced the direct relationship of organism-nature, proper to infrahuman organisms, by a more advanced relationship of humans to nature, namely, humans-culture-nature. In comparison with the former, the latter relationship is more dynamic, more rapidly evolving, increasingly more complex and, all the present ecological threats notwithstanding, more propitious for the development of individuals and of the human species as a whole.

The relationship produced by human rational activity is in fact three relationships in one: a) humans / nature; b) humans / culture, i.e., humans / the sum total of intellectual and material products; c) culture / nature. Let us stress that since the development of culture—and to a larger and larger degree culture is the proper milieu for humans—it has become a habitat for the individual and for society. The complex relationship between humans and culture in general and the knowledge construct in particular is responsible for much of what they do and of what happens to them. The impact of culture on humans is rapidly increasing.

Culture is a historical and social construct. It always has a past and a territory. It transcends the individual both in time and space, having a richer content than any of the individual contributions. Culture

is the common property of a group, and the common bond uniting individuals and introducing a degree of homogeneity in their physical and mental behavior. Being the common denominator, culture facilitates intra-cultural communications, broadens the scope of exchanges between members of the same culture, puts at the disposal of the individual the common patrimony of society and thus facilitates personal development. From the ecology of knowledge point of view it is the influence of culture on knowledge that merits our attention. Among the factors influencing thought there is, in the first place, the *Weltanschauung*, with its point of view, basic ideas, hierarchy of values and intellectual tradition habitually shared by members of the group. There is, further, the style of thinking, a predilection for certain types of intellectual preoccupations and some degree of consensus. These are all well-known aspects of the intellectual life of a community. What interests us here in particular is the mechanism of the development of these communal aspects of the life of the intellect and the laws which underlie it.

In this respect, knowledge in general, i.e., the knowledge construct, is the result not only of the intellectual activity and personal qualities of individuals, but also of the human group as a group, its shared values, goals and actions. There exists, of course, a hierarchy of groups from the family up to the culture group which may be multinational as in the case of Western culture. Each group facilitates communications proper to it and each group level has a specific potential for communications. The group which is of greatest importance to us is the one at the top of the group hierarchy, namely, the culture group. Because of the number of individuals within its reach, it has the highest potential for communications and for the development of knowledge. The personal and the social aspects are both constitutive elements of the knowledge construct. In this respect, the most fundamental fact is the demographic one, namely, the very multiplicity of individuals in the group. The existence of a plurality of knowers is an essential condition of the existence and development of the body of knowledge. Because of the plurality there exist exchange of information, confrontation of judgements and verification. The result of this is inter-subjectivity and objectivization of elements of knowledge. The following law may be formulated expressing this:

Law IX: "There exists an interdependence between the size of the human group, the amount of communications within the group, the spread of inter-subjectivity of the knowledge construct and the progress of knowledge."

The interdependence is characterized by the two-way causality of the feedback relationship. Each factor influences other factors and is in turn influenced by them. Generally speaking, the larger the community, the more communications are necessary and the greater the chance of divergence of opinions and possibility of confrontations. All other factors being equal, the greater and more complex the sphere of inter-subjectivity, the greater the need for and possibility of forming objective, verifiable judgements, the more rapid the development of knowledge. The greater the knowledge, the greater the means of sustaining greater numbers of people; the larger the community . . . and so on; the cycle can begin again. Of course, it would be a gross error to consider all these relations as automatic and univocally applicable to all human communities. The fact remains, however, that the individual knower is part of a community—of several communities to be exact. For instance, an educated individual, besides being a member of a family, is a member of a culture group, of a nation, of a social class, of an intellectual group, which is, first of all, that of the educated people in the nation. If a scholar, he or she is, moreover, a member of the group of persons of similar education involved in the study of the same field of knowledge. The latter group, by the way, may be international in scope. The inclusion in each group is expressed by the inter-relations and the interdependence which exist between the individual and the group.

The role of the group as a group in the phenomenon of knowledge is now well-known and extensively studied in the sociology of knowledge. Suffice for our discussion to point out that one of the unavoidable consequences of the role of groups in knowledge is the existence of the consensus of opinion. The consensus is not only essential for the existence of society, it is also important for the advancement of knowledge. Thomas S. Kuhn made us aware of the role of the consensus, which he calls paradigm, in the development of science in this respect. Consensus plays an important role in all branches of knowledge and at all levels of its development. What distinguishes science from other modes of cognition is not the existence of consensus, but the role played by the creative factor which is responsible for the progress of science alongside the consensus. The growth of science leads to the creation of an ever greater number and diversity of branches of knowledge. Each branch having its proper paradigms, the number of paradigms is constantly increasing. As a result, the knowledge construct grows continuously and becomes more and more complex. Let us discuss briefly some of the consequences of the growing complexity.

As we already know, changes in the field of knowledge do not end with knowledge. They always affect concrete human existence in one way or another. Since the knowledge construct is a social fact, the growth of the diversity of branches of knowledge and the concurrent

multiplication of paradigms produces complex social consequences. One of them is the growing multiplicity of fields of specialization and the resulting increase of the variety of professions. This produces a growing complexity of the systems of education, of research and of communication between the professions within the given society and worldwide. The result is the continuous growth of the complexity of social structures which, in turn, requires a more complex system of administration. Let us remind ourselves that the chain of consequences described here is the result of the inter-subjectivity of knowledge. At first glance, there seem to be little, if any, relationship between the inter-subjectivity of knowledge and the size of the administrative apparatus of a country. And yet such a relationship exists, although, of course, the inter-subjectivity of knowledge is not the sole factor responsible for the growth of the administrative structure. Let us represent the relationship in question in a schematic manner:

Inter-subjectivity of knowledge — growth of the knowledge construct — number of professions and paradigms — complexification of the structure of society — growth of administration

Many thinkers, to name but Jean Jacques Rousseau and Karl Marx, dreamed about a return to or creation of a simpler and thereby less oppressive society. In view of the consequences of the development of knowledge discussed above, we may describe the chances of bringing about a simpler society amid progressing knowledge by means of the famous warning which Dante placed over the gates of Hell: "*Lasciate ogni speranza*" which translated freely into less poetic but more understandable American idiom means: "Not a chance in Hell." This conclusion has a message not only for present and future social reformers, but for all of us. There is an important lesson to be drawn from it. If we desire to improve society, we must take into consideration the factor of knowledge and its social consequences in a much more comprehensive way than has been done until now. Otherwise, our plans to produce a more satisfactory society will remain ineffectual.

Let us now look more closely at the problem of communication in the situation of the growing diversity of branches of knowledge and professions. The more knowledge advances, the more complex the system of communications has to become. This is a necessary and irreversible relationship. The more there are different groups in society, the more and the more-varied communications are needed. The situation may be expressed in the form of a law:

Law X: "The need for communication is proportional to the size of the society, the number of groups within the society and the amount of knowledge available."

It is not, therefore, only the very size of the society that counts. The society may be very large indeed, like that of the Chinese for instance, and yet the amount and level of communications generated by it, and the actually felt need for communications, may be less than in a smaller society, such as the American society. Until this century, the problem of communication was not studied sufficiently. The law above explains the present-day preoccupation with this problem in its various aspects. Linguistics and cybernetics find their justification in it. In light of this it becomes understandable why modern philosophers, in contradiction to their ancient and medieval predecessors, have become more and more preoccupied with the problem of inter-subjectivity. Although, technically speaking, the philosophical problem of inter-subjectivity is the result of Cartesian subjectivism, nevertheless its study corresponds to an increasing need to explore the domain of inter-subjectivity. Besides, it could perhaps be argued that Descartes' philosophy itself was an unconscious answer to this need, that it too has been conditioned by the social and noetic development taking place since the Renaissance. The law above makes it plausible to suspect that a correlation may exist between apparently diverse aspects and fields of human activity on the one hand, and the size and physical development of humankind on the other.

If there is some correlation of this kind, then it becomes apparent that not only is the act of knowing of the individual directly related to the concrete, existential situation of this individual, but also to the development of knowledge in general and its direction and quality which is conditioned to a certain extent by the demographic situation of the society. The conditioning is reflected in the areas of prevailing interests, kinds of problems and solutions suggested over more or less extended periods of time. Of course, it would be futile to try to push these correlations too far. We must avoid the danger of oversimplifications to which fall prey monistic philosophies whether materialistic or idealistic. Moreover, it has to be remembered that all these relations must be considered as dialectical, i.e., two-way causalities occurring in an ever-changing situation. This means, among other things, that simple analogies cannot be used as explanatory models in the discussion of the development of knowledge. If, however, there is some such relation as described above, it does offer an important insight into one aspect of the problem of knowledge. Consequently, it should be useful for the discussion of the ecology of knowledge and for knowledge planning.

PART III

KNOWLEDGE AS ONE EXISTENTIAL FACT

CHAPTER X

THE CENTRAL PROBLEM OF OUR TIMES

The situation which humanity faces as a result of the development of knowledge is a novel one indeed. In that mankind is not being confronted with an apocalyptic calamity of biblical proportions; some continent-wide earthquake, a deluge or 'black death'. Humans are not threatened by supra-natural forces or cosmic events. Nature is not viewed anymore as an overwhelming, mysterious force, nor is it worshiped as in the past—at least not in Western culture. What today's denizens of this planet have to contend with is a man-made situation. It is not being confronted with a threat, which is new, but the nature of that threat. Humans have always been threatened by something, whether it be a natural or occult force, animals or their fellow humans. Next to the desire to live, fear has been one of the most pervading and permanent emotions experienced by humanity. The progress of knowledge has almost completely emancipated human beings from the fear of nature and occult forces. Dangerous animals themselves face extinction, obliging us to spend large sums to preserve specimens in zoos and reserves. But now that humans have become masters of the earth, they must face a new kind of threat and a new challenge.

Although the situation is new and unprecedented, it is nevertheless not accidental. To the contrary, it is the logical result of centuries or even millennia of rational, tenacious, well-intentioned efforts by generations of humans laboriously striving to progress so as to liberate themselves from misery, ignorance, fear and subordination to uncontrollable forces. The aim of this striving has been and still is the creation of a more satisfactory, more human condition. Together with the gradual realization of this aim, humans have been fulfilling, more or less consciously, the ancient dream of actualizing in the fullest way possible the powers contained in human nature. One should hardly be surprised by the cumulative consequences of the ingenuity and industry of our species. And yet, the fact is that we are unpleasantly surprised and experience great difficulty in understanding the causes of our predicament.

What makes the present situation so peculiar is the fact that, in contradistinction to preceding generations, humans have to think about themselves in terms of their whole species and envisage the issue of the survival of the species, not just of a particular human group, whether a class, a nation or a culture. They have to face themselves as authors of their predicament; they have to take stock of their own demiurgic powers and the consequences of the exercise of this power. Because of

the development of knowledge and the resulting ability to do things, the rational animal has been confronted with himself in an unprecedented manner. He has encountered himself as a problem to solve on his way to new achievements. Consequently, he has to perceive himself as an increasingly powerful means and, at the same time, as a growing obstacle to his further development. It now becomes evident that, in order to survive, humans have to know and to understand themselves more and more and much better than ever before. Let us express this important fact in the form of a law:

Law XI: "The need of humans to understand themselves is proportional to the level of their knowledge and of their demiurgic capacities."

Such is the price of progress and the condition of further evolution of the rational species. It may well be an evolutionary device, the understanding of which helps to understand the direction in which our species is going.

In previous epochs the threats to human existence were presented from without. Nature was an overwhelming force which humans could worship but not master. Present day challenges, on the other hand, originate in the human being himself. Humanity has become humanity's chief threat and problem. The mastering of outside forces has revealed a set of powers present in the rational animal which he has always desired to have. But once in possession of these powers he was faced with their unforeseen, unintended and surprising consequences. The consequences were not only unforeseen, but were, by and large, the opposite of the rosy expectations of *Homo faber*. Instead of facilitating and simplifying human life, they made life more complex and the survival of the human race more problematic. More than ever before, one can truly say that human problems are chiefly of their own making. This fact expresses the newness of the present situation; it is a measure of the progress accomplished by humans and indicates the need for a new approach to the study not only of knowledge, but also of human activity in general, in particular, of the "problematization" of their existence and of humanity as such.

The growth of destructive powers, the depletion of natural resources, the upsetting of ecological balance, overpopulation, "future shock" and the increasing inequalities of wealth and education among individuals and societies are all results of human rational activity. Obviously, the overcrowding of the earth, the abusive use of natural resources, the upsetting of the ecological balance, and so on, are critical problems which must be adequately analyzed and carefully solved. Much thought is being given to these problems, and many plans are being conceived of in hopes of saving humanity from the impending

doom. But the solution to these problems cannot be found without solving a more fundamental question, one which is at the root of this dilemma. Strangely enough, the often quite sophisticated but partial analyses and predictions have failed to clarify the role of knowledge as the cause of the contemporary predicament. The fact is that all the above problems are the direct or indirect results of the development and use of knowledge. Overpopulation is the consequence of the development of medicine; hygiene and food production; pollution, atomic weapons and the depletion of natural resources are outgrowths of applied science; the inequalities of culture and wealth among individuals and nations are to a large extent the results of world views, applied science and education.

Let us stress again that if mankind is in a predicament, it is because it has developed extremely powerful kinds of knowledge which it has learned to use effectively for the attainment of its concrete aims. It would be tempting but futile to try to single out as the culprit one particular kind of knowledge, for instance, physical sciences or technology. As we are rapidly learning, the so called "soft" sciences are potentially more dangerous than the "hard" ones. The more value-oriented knowledge is, and the closer related its subject matter to the human subject, his nature or his behavior, the greater its potential to influence humans, to help them or to harm them. Suffice to mention the brain-washing techniques developed by psychologists.

In light of what has just been said, and keeping in mind that knowledge engenders the need for more knowledge, it is plausible to conclude that the central issue of our times is the relationship between humans and their knowledge. The future of humanity will largely depend on its ability to solve this problem satisfactorily. Knowledge is developing into an evermore serious problem and is a potential threat for individuals and for humanity as a whole. It is a continuously growing advantage and equally increasing burden, preoccupying an ever larger number of individuals and institutions from local school boards to UNESCO. For a long time now, members of Western culture have been convinced of the value and power of knowledge. Present crises have revealed to them the shortcomings of their knowledge in general and the one-sidedness of their approach to life and their perception of knowledge.

CHAPTER XI

THE EXISTENTIAL SYSTEM OF MAN

In light of what has been said thus far, it is rather obvious that knowledge has an existential function. This is true not only of the act of knowing but also of the knowledge construct. The complexity of the impact of knowledge on humans and the world is becoming better known, but we are far from having fathomed its total extent and the variety of consequences. Let us beware of believing that we have already, or will have in the near future, a global and adequate picture of the phenomenon of knowledge. What can and should be said about the existential dimension of knowledge concerns the relationship existing between knowers and the knowledge construct. Namely, the producers/users of knowledge and the product of their intellectual activity, the knowledge construct, are bound by a feed (feedback, feedforward) relationship, and are intrinsically interdependent, though each one in a different manner.

The interdependence of these two factors is not the only important aspect of their relationship. The other important fact is that together they form a system. The system is dynamic and evolutionary, a true driving force of human evolution. Let us call this system the knowledge system—knowledge system. It is sufficiently complex and important to merit a major study in itself. It is not, however, the only system which should be taken into consideration in the study of knowledge. Important as it is, this system is not self-contained and is not self-explanatory. This is a crucial fact for the understanding of the role of knowledge. The knowledge system is a subsystem of the culture system composed of knowers, the knowledge construct and artifacts/products of all sorts of human activity ranging from material objects like houses or tools, to the immaterial like customs or laws. The culture system is, in turn, an element of the existential system of man—the existential system of man composed of humans, the knowledge construct, products and nature. In other words, the existential system of man is composed of the culture system and nature, this latter term taken in its broadest meaning possible.

This means that the knowledge system is an element of a hierarchy of systems, i.e., of a system of systems. It would be difficult to overestimate the importance of its insertion into this system of systems. Unfortunately, philosophers are all too inclined to view knowledge in itself, as if it existed in and by itself, an autonomous reality, a world apart from the world. The inability or unwillingness to perceive and take into account the relationship of the knowledge system to the more

complex systems makes it impossible to understand the existential dimension of the very act of knowing and of the knowledge construct.

The above description of the existential system of man may appear seriously flawed to believers and/or to those who are aware of the role which the idea of the Supreme Being or of divinities has played and still plays in the development and present life of humanity. The readers should be aware, in light of what has been said thus far, that the author, too, is well aware of that role. The reason there is no direct mention of the Supreme Being in the existential system of man is twofold. The four factors: humans, nature, the knowledge construct and products are evident, verifiable, and, therefore, indubitable—which is not the case with the Supreme Being. Secondly, the notion of the Supreme Being is an idea, and, as such, is part of the knowledge construct, together with all the ideas and systems of ideas resulting from the idea of the Supreme Being, such as religious doctrines, theology and their refutations. Besides, it is a well-known axiom that in philosophy we have to proceed in the light of natural reason and have to respect its limits. Having said this, let us return to the description of the existential system of man.

As its very name indicates, its center, cause, and reason of being, is of course, the knower, or to be more precise, the succession of generations of knowers, i.e., the human species. It is the broadest and most complete context of human life and activity, both material and immaterial. It is, therefore, the framework of, and for, thought. In order to fully appreciate the existential dimension of knowledge, it has to be viewed in the context of this system. Chart I illustrates the existential system of man but one should not be misled by the apparent simplicity of this representation. The situation is not as clear as it appears in the diagram. A picture is said to be worth a thousand words, but a visual image cannot convey adequately all the relations which exist in the existential system of man. In this two dimensional drawing the four constituent elements, appear as equal partners of the system which, in fact, is not the case. They differ by nature, by the causality which they exercise, order of appearance, i.e., age, mode of development and degree of permanence, to mention just some aspects.

Consequences of the Existential System of Man

I. The relationship: nature — humans

- (a) changes
- (b) becomes less direct
- (c) nature becomes less dominant
- (d) growth of the human impact on nature

II. The relationship: humans — knowledge construct

A. General

- (a) growing impact of the knowledge construct
- (b) growing complexity of the impact
- (c) growing dependence on the knowledge construct of individuals, societies and humankind
- (d) growing ignorance of the totality of the knowledge construct by individuals and societies
- (e) growing dependence of individuals and societies on other knowers: individuals and societies

B. Humanization of human: evolution of humankind—increase of:

- (a) personalization of individuals
- (b) differences between humans and other species
- (c) power to think: greater knowledge of the world and of oneself
- (d) power to produce and change humans and the environment
- (e) consequences of human activity: immediate and long range
- (f) creation of, and dependence on, man-made environment:
 - i. knowledge
 - ii. products, including knowledge devices, among which are prostheses of the brain
- (g) responsibility—short and long-range for:
 - i. humans—their state and behavior
 - ii. environment
- (h) mastery of the natural environment
- (i) humans becoming increasingly their own makers and products

C. Globalization of humankind

1. growth of:

- (a) capacity to influence each other
- (b) synergy

2. growth of complexity and interdependence of:

- (a) individuals
- (b) societies
- (c) knowledge
- (d) cultures
- (e) conditions and modes of life

D. Problematization of human existence

The growth of the knowledge construct results in the:

- (a) multiplication of branches of knowledge
- (b) multiplication of professions
- (c) multiplication of differences between humans
- (d) growth of the complexity of the human phenomenon
- (e) growth of the difficulty in conceptualizing human systems
- (f) growth of the difficulty of finding adequate solutions, i.e., in administrating human system
- (g) growth of knowledge requirements for administrating human systems
- (h) growth of the inadequacy of common sense alone for understanding and administrating human system
- (i) growth of inadequacy of existing social and political (right and left) theories and forms of government

E. Relation to time

- 1. growth of the awareness of time
- 2. change of the relationship to time:
 - (a) increasingly more perfect measurement of time
 - (b) increasingly more efficient management of time
 - (c) acceleration of human time (history)
 - (d) devaluation of the past as teacher and guide
 - (e) increase of the importance of the future

All the elements of the existential system of man are related to each other in a two-way, feed relationship, either directly or through the knower. The relationships are in each case different and, although they are two-way relationships, they are not symmetrical relations. This is because of the differences in the nature of the elements. The most complex presence in the existential system of man is humans, who are both the makers of the system and its product. This apparently contradictory situation demands an elucidation. For clarity's sake, let us list the main aspects of the situation in separate points:

- (a) the human in himself is an integrated binary system, i.e., a whole composed of two heterogeneous elements: organism and intellect;
- (b) the system "human" participates in and is dependent on a hierarchy of natural systems: inanimate and animate which form the system "nature";

(c) the system "human" forms with other elements new systems not provided by non-rational nature.

The existential system of man has certain noteworthy characteristics. Let us mention first those which are important from the methodological point of view. Namely, since it is a system, it is a totality which can be viewed as a structured whole and to which apply the general laws of systems. A systemic approach to its study is therefore justified. It will allow the most adequate exploration of the system. The general characteristics of the system may be described as follows: the system is dynamic, self-energizing and transformative—producing constantly more advanced modes of human being and activity, as well as of knowledge and products. The system grows in size, complexity and causality. Moreover, it evolves at an ever faster pace. In short, it is an evolutionary system. The characteristics of the system will become more understandable in light of this and the following chapters.

Any serious discussion of the existential system of man cannot avoid the question of its origin. Fortunately, with regard to this question we are on safer grounds than in the discussion of the origin of humans. Whatever is the origin of the thinking creature, and without attempting to take sides on this issue, it can be stated unambiguously that the existential system of man, as it exists presently, is made by humans and is not a product of nature. The human is the most active and directive component of the system. It is his rational activity that produces the fastest and increasingly more accelerating and more profound changes in the system. Knowledge and artifacts are man's products, not natures. The growth of the system is mainly the result of human activity. The very growth of the system and its causation by humans are major facts indeed. Important as it is, the growth of the system is not the only consequence of human industry. Let us explain.

Humans have not only produced two out of four components of the system. It is obvious that their continuous activity increases constantly the spheres of knowledge and of products. What is less obvious is the fact that this increase changes the relationships between: a) humans and other elements of the existential system of man, b) knowledge and other elements, and c) products and other elements. As we have already explained, through the progress of knowledge, the perception of, and the relationship of, knowers to nature, has changed drastically: from subordination to mastery. The change in the relationship of knowledge to its other elements is, perhaps, less evident. Intellectual knowledge is not a natural factor in this sense that it is an entity which, as far as we can tell, is exclusively a human product. Its appearance and continuous existence depend on the existence of human

knowers. However, it constitutes a different order of reality which exercises continuously expanding causality.

We will discuss the knowledge construct in more detail in the next chapter. Let us mention now that for a very long time indeed, the knowledge construct was not only very small but, moreover, was not systematically developed. Its impact was limited to simple basic survival activities and magic rites unable to change appreciably the conditions and the mode of human life. The activity of primitive humans did not significantly transform the human environment, but maintained societies and cultures in a more or less steady state—a fact to which we will return later in this book. How different is the status and the impact of the knowledge construct today! As far as the change in the relationship between products and the other elements of the existential system of man are concerned, suffice it to compare the stone-age implements with our universe of material artifacts, systems of laws and regulations and their impact on us.

Among the conclusions which can be drawn from the above discussion, two are of particular interest to us. In the first place, it is rather obvious that there exists a relationship between rational activity and knowledge. Let us express this fundamental fact in the form of a law:

Law XII: "Rational activity is proportional to knowledge" and its corollary

Law XIII: "The efficiency of rational activity is proportional to knowledge."

The second conclusion concerns the consequences of human activity for the relationships existing between the parts of the system. Namely, as we have seen, it transforms all these relationships. This fact has far-reaching consequences for the system as a whole and for each element of the system. One of these consequences is of particular interest for our discussion because it concerns our understanding of the existential system of man. The change in the status of the elements of the system and its impact on their relationships makes the understanding of the system particularly difficult. Moreover, it does not allow a definitive description of the system. The changes occurring constantly in the system limit the adequacy of insights and increasingly diminish the period of validity of even the most careful and thorough descriptions, i.e., accelerate their obsolescence. Consequently, in order to be understood, the existential system of man demands a continuous effort involving more and more sophisticated intellectual tools.

One may, perhaps, ask whether such effort is called for, and whether the existential system of man is necessary for theoretical and practical reasons. Humans have to comprehend the relationships existing between the elements of the system if they want to understand the situation they are in, their relation to the ambient world, and if they wish to establish satisfactory relations with the elements of the existential system of man. The present ecological, political and social crisis is the best indication of this need and a timely warning of the risk of ignoring the system and of the relationships within it.

The situation seems paradoxical, to say the least. Human rational activity changes the existential system of man. The more humans think and act, the more and faster the system changes. The more and faster it changes, the greater the challenge it poses to their intellects, and the more they have to think to understand it. Therefore it may be stated in all generality:

Law XIV: "The need to understand the Existential system of man is proportional to the level of knowledge"

The problem is that the understanding gives humans a capacity to act on the system. The more they understand it, the greater becomes their impact on the system and, as we have already said, the more the system changes, forcing them to think even more. And the positive feedback between knowers and the system continues at an ever larger scale and faster pace.

Somebody may object that the above reasoning is not quite correct, because there exist modes of intellectual knowledge which do not appreciably change the existential system of man. Among these types of cognition are contemplation, wisdom and, in general, theoretical knowledge. The objection seems to be valid and demands an answer. Let us begin with theoretical knowledge. As we have seen in an earlier chapter, all theoretical knowledge has practical consequences. One cannot theorize seriously with impunity, expecting that no concrete results will follow from this mental exercise. Wisdom is an ordering, evaluative, judgemental type of knowledge, relating the concrete with the abstract, the singular with the universal, facts with values. This accounts for its role and importance in life. Even if the wise human does not do much himself in the way of practical activity, his or her judgements have far-reaching practical impact. As for contemplation, which played and still plays an important role in the traditional culture of India and in mystical currents in all great religions, it, too, has important practical consequences for the one who contemplates and for others as well. The case of contemplation is, indeed, particular and we will return to it again later.

For now let us state unambiguously—all modes of knowledge impact on the existential system of man, although they do not impact on it in the same manner and with the same results. This is an important fact which is essential for the proper understanding of the existential system of man and which has to be kept in mind in any discussion of the system. This clarification does not alter the fact of the general practicality of knowledge. It is, therefore, not astonishing that the existential system of man changes and changes ever faster, which means that it is an open system. Moreover, not only it is an open system, but its openness grows with the growth of the knowledge construct. The openness of the system is proportional to the level and type of knowledge. It is a precious property of the existential system of man which is at the same time, but under different aspects, the condition and the product of human progress, as well as an indicator of the state of humanity.

Since the openness and the rate of change of the system are proportional to the knowledge construct, they are proportional among themselves. The rate of change is proportional to the openness of the system. Thus, we arrive at the same conclusion as earlier in this chapter, namely, that the more the existential system of man develops, the less is any given state of the system permanent and able to serve as a basis for a definitive description of the system as a whole or of the human species. Interesting consequences follow from this situation. The first conclusion which we can draw concerns the future states of the existential system of man. The more there is knowledge and the more it impacts on the system, the more they become different from any present state. Consequently, they become increasingly more difficult to predict adequately. Paradoxical as it may sound, the greater the knowledge, the more unpredictable becomes our human future. Apparently, the rational powers produce a situation of humanity bearing some resemblance to the Heraclitean world in which everything changes and nothing remains the same. Such a state of affairs augurs badly for futurology and for our ability to direct the development of humanity on a large scale. Our human future may be more and more rational, but we cannot predict it rationally.

Change is the enemy of certitude and of universalizations. Science is possible to the extent to which we can discover regularity and permanence in nature and express it formally by means of precise laws and equations. The conclusion which we have reached above about the predictability of future states of humanity explains why the project of Auguste Comte to create the formal and predictive science of social physics has never become a reality and why, all the developments in social sciences notwithstanding, his project has even less chance of realization today than in his time.

Although we cannot create a science of social physics, we can state with certitude that humans become an increasingly important and determining part of the existential system of man. Because of their continuous and increasingly more powerful activity, the system becomes more and more man-made. Humans reproduce, but unlike other animals, humans assure their off-spring ever better chances of survival, development and reproduction. As we have explained in an earlier chapter, knowledge is a life-enhancing factor. Through rational knowledge, the rational animal succeeds not only in perpetuating its species but in increasing its biomass as well. In an effort to build an environment fit for humans, the rational animal produces culture with its hierarchy of values, social systems, laws, customs and artifacts, and in the process, transforms the natural environment. Doing all this, it unintentionally builds up the Existential system of man.

When one looks at the existential system of man it seems to be a logical purposeful creation, but this impression is largely misleading. It is, therefore, important to stress that although particular human activities have been rational, thought out and even planned, the system as a whole was not. Not only have humans not planned the system as a system, they have ignored it and still largely ignore its existence. The existential system of man is man-made not because it was or is the intended aim of human activity. As a system it is an unintended by-product of that activity. Humans have known for a long time now the four elements of the existential system of man, but they were largely unaware of their interdependence and the systemic nature of their relationships, i.e., they did not understand that they form a system. Even today the nature of the system is far from comprehensively known. As we have explained earlier in this chapter, the chances of ever acquiring a definitive knowledge of the system are practically nonexistent.

Unable to provide a satisfactory description of the existential system of man, we may talk about some of its aspects with which we are familiar, in particular about the sphere of culture and of its role in the system. A discussion of culture in this context is necessary because, as far as humans are concerned, the most important consequence of the system is its impact on them. The system is the result, though unintended, of the efforts of humans to satisfy their desires, to better their chances of procreation and to improve the conditions of life in general. When sufficiently developed, the system replaces nature as the direct human environment and becomes the everyday habitat of the rational animal. As such, the existential system of man is increasingly more essential for the existence and further development of humans. In particular, the man-made elements of the system, i.e., the knowledge construct and products, become evermore influential factors, making possible increasingly more advanced forms of human life.

It is one thing to state that the existential system of man makes possible the human mode of life and its evolution; it is another thing to understand how this influence works in detail. In the continuously evolving situation which is the mode of existence of the existential system of man, the causal impact which the system exercises on all its component parts is not only complex but changing as well. The impact is a function of the impact of the totality of the system as a totality and of the impacts of its component elements. As we know, each element is of a different nature, produces different effects and evolves at a different pace. This is why the relationships of the four elements to each other and to the system are continually changing. Let us remember that the changes and the resulting growing complexity of the system are mainly unintended results of human rational activity. This fact is sufficiently fundamental and universal in its consequences to be expressed in the form of the following laws:

Law XV: "The size and complexity of the existential system of man are proportional to the level of rational activity."

Law XVI: "The impact of the existential system of man on humans is proportional to its nature—size and complexity."

Law XVII: "The level and complexity of human life and problems are proportional to the existential system of man."

The above-mentioned laws have been grouped together because of their relatedness. They all point to a common factor increasingly influencing human life, namely, knowledge.

As we know, knowledge is a change-inducing factor. It changes knowers themselves and the world around them. Because of rational knowledge the world with humans is different from the world before the appearance of the thinking creature. The Existential system of man is unlike nature in itself as it was before humans or is still outside their physical reach. If nature and its ways may be termed natural, the existential system of man is non-natural, or, perhaps it would be more proper to say, unusual, because of the difference in the causality exercised by it and by what we consider as infrahuman nature. It is not a product of that nature, and because of the rational factor present in it, it transcends that nature in modes of being and causality. It is and it produces a different type of environment from that provided by nature for animals. It simply cannot be identified with nature without negating the specificity of the rational factor.

The existential system of man is not only more complex than the environment of animals, more heterogeneous and faster changing. It

also is more demanding on their brains, forcing humans to adjust evermore rapidly to new situations and producing obsolescence in the intellectual sphere and modes of life and activity. Many interesting consequences follow from this. In the first place, the existential system of man elevates humans above nature. Somebody may, perhaps, object that this is not what lifts them to a higher level of life, but their rationality. The objection is partly true and partly false. It is rather evident that without rationality, humans would be but another animal species. However, rational capacity by itself is not sufficient to produce the human mode of life as we know it today. As we shall explain in more detail in the next chapter, it requires a group effort extended in space and in time aided by more and more sophisticated means and a propitious environment. In other words, the creation of the specifically human mode of life necessitates a properly developed existential system of man.

It is interesting to compare this to an animal habitat. Animals develop in response to challenges of the environment and are determined by them. With the exception of social insects such as termites or bees, they do not form environments of their own. They simply fit into the existing conditions, their mode of life being the result of environmental challenges and opportunities. Because of natural selection animal species have specific ecological niches of their own. In contradistinction to animals, humans do not have a natural niche of their own. They have to produce one and contrary to those of animals, it never has one definitive form. The truly surprising fact about the existential system of man is its state of incompleteness and its inability to satisfy all human desires. Contrary to what one would expect, the more humans know and the more they can do, the more they find the existing state of the Existential system of man unsatisfactory and the more and the faster they want to improve it. This important fact may be expressed in the form of a law:

Law XVIII: "The satisfaction with the existential system of man is inversely proportional to the capacity to change it."

The interesting question is whether the building up of the existential system of man will continually involve the transformation of the natural environment, and to what extent nature can accept the demiurgic activity of humans and continue to provide the necessary support for the existence of the human species.

In the case of animals, nature assures the overall stability of the conditions of life and provides the parameters of their behavior. Due to their rationality humans cannot content themselves with the environment provided by nature. Whatever was the situation at the

beginning of the human adventure, nature is no more the proper habitat of humans. It is unable to satisfy all their needs. Humans are not governed by nature in the same way as animals. Consequently, they have to provide their own guidance in the light of reason and with the help of existing knowledge. The more there is knowledge, the more enlightened and sophisticated can be the guidance, and the less it becomes instinctive. The problem is that the intellect transcends nature both in its reach—being able to conceive nonmaterial entities, and in its products—creating a world of its own, namely, the sphere of rational conceptual structures, or, the knowledge construct.

This is not only made of entities different from those composing nature, it is also governed by different laws. Its relationship to nature is neither simple nor automatic. It neither belongs to the order of nature, nor is it a mirror image of nature. For these reasons, whatever its level of development, the knowledge construct does not automatically provide its users with adequate guidance in their dealings with nature. This conclusion seems to be contradicted by the growing awareness of ecological problems and better knowledge of nature, its laws and constraints which it imposes on human activity. We must remember, however, that our knowledge of nature is far from definitive, while our ability to act increases continuously. The more we can do things, the more we impact on nature and even our best intentioned activities, for instance, the cleaning up of the environment may produce unforeseen and unintended adverse effects. Better knowledge of nature is not a fool-proof insurance against errors.

Unpleasant as the above affirmation may sound, it illustrates the complexity of the relationship existing between humans and the existential system of man. Generally speaking, it has two seemingly contradictory effects on humans: one obviously positive, the other apparently negative. On the one hand, the system acts as a life protector and facilitator. The more it is developed, the more efficient is its positive causality. It makes possible the growth of the human biomass, it makes human life easier and richer and it stimulates the growth of the human potential: biological and intellectual. On the other hand, the system engenders increasingly more complex situations and problems, increases the rate of obsolescence of world views, models and forms of life. Among others, it generates and preserves inequalities among humans, allowing exploitation and social injustice in a manner unknown in infrahuman nature. In both its positive and negative causality, the existential system of man challenges our human will and ingenuity to a continuous effort. It forces humans to adjust to ever new situations and to reach beyond known horizons. This challenge is of fundamental importance for the evolution of humanity. It throws interesting light on

the knower-knowledge relationship. We will analyze it in greater detail further in this book.

CHAPTER XII

THE KNOWLEDGE CONSTRUCT

There are two aspects to knowledge: subjective and objective. The act of knowing is subjective but, because of the insertion of the knower in society, this act is also a social fact. Moreover, knowledge is not only the sum total of subjective acts, it is also their product, namely, the knowledge construct. The body of knowledge is a product of individuals, but it takes more than individuals as individuals to build up and preserve it. It requires the existence of an organized group of peoples, i.e., a society persisting through generations, thus making possible synchronic and diachronic communication and accumulation of knowledge beyond the capacity of memorization of individual minds. The storing and preservation of knowledge is one of the most important functions of society. This function allows us to compare human society with animal societies. Animal societies, even the most developed and structured like those of bees or ants, do not have the capacity of accumulating knowledge beyond the capacity of memorization of individual animals and operate generation after generation on a set amount of information. Human society, instead, makes possible a continuous buildup of knowledge. Consequently, individuals can profit from a steadily expanding body of information.

In light of this, it becomes understandable why animal societies are basically steady state societies with changes being imposed mainly from the outside, while human societies are evolving societies containing an internal principle of change. The above remarks allow us to draw a general conclusion concerning the development of societies. All other factors being equal:

Law XIX: "The development of a society is proportional to its storage and use of information."

The more a society cares about knowledge and develops it, the more efficiently it accumulates it, transmits it from generation to generation and makes use of it, the more it can progress. It is rather obvious that different societies have different attitudes towards knowledge. They care about knowledge to a different degree and they develop different kinds of knowledge: more or less theoretical, more or less pragmatic, and more or less methodical. Their mode of life, their state and rate of development reflect these differences.

In order to understand the role of knowledge in the life of society and its mode of causality it is necessary to realize that the body

of knowledge preserved by society, i.e., the knowledge construct, is something different from personal knowledge. This distinction is also important for the proper understanding of the phenomenon of knowledge in general. The diverse and often baffling effects of knowledge cannot be sufficiently accounted for if knowledge is identified with the knower. Nor can they be explained if knowledge is viewed simply as a product of the rational powers of the knower, totally subordinated to that person, a harmonious extension of the knower and having no particular causality of its own. These remarks allow us to formulate a central thesis of the ecology of knowledge concerning the nature of the knowledge construct. If we want to understand the impact of knowledge on humans, whether on the individual, society, or humankind as a whole, we have to distinguish the body of knowledge from its makers and perceive it as an entity in itself. In order to avoid misunderstanding let us clarify that we do not conceive the knowledge construct as being akin to the Platonic world of ideas. We do not assign to it an other-worldly mode of existence. We view it as a strictly man-made product, dependent on human knowers for its origin and continuous existence.

Conceived as a distinct entity, it may well appear as an unusual idea, to say the least, and goes against deeply ingrained habits of thought, provoking an almost instinctive objection. If we affirm the distinctness of the knowledge construct it is because, first of all, we are convinced of its validity. But this is not all. We also believe that it has to be done for practical reasons as well. Humanity has reached a stage in its development where, because of the growing power and impact of knowledge, it becomes necessary for our survival to gain a better understanding of the phenomenon of knowledge than that which we have had until now. Since the beginning of philosophy, the knowledge of knowledge was a theoretical endeavor. Because of the development of knowledge, it becomes also a practical need of prime importance. We have spoken about this change of situation earlier, but we find it useful to remind ourselves about it again.

Thinkers, intent on preserving the theoretical, contemplative nature of philosophy, may easily be offended by the introduction of a utilitarian argument into the justification of their continuous effort of reflection about knowledge. Let us, therefore, state that all the value of a theoretical approach to the problem of knowledge notwithstanding, knowledge is a means of relating the knower to the outside world and a tool allowing the knower not only to think, but also to interact with this world. Generally speaking, the more powerful the tool, the more it becomes necessary for the sake of the tool-user to know the tool and to understand its nature, its potential and the consequences of its use. This pragmatic need does not make the theoretical approach superfluous but

it does extend the scope of the study of the phenomenon of knowledge. It also reveals the complexity of that phenomenon better than the purely theoretical approach.

Intellectual knowledge is produced in the process of thinking which occurs in knowers, in their psychological interior, at the center of their personality. Thinking is a more personal act than physical activity such as, for instance, walking or doing things with our hands. This is why it is so difficult to look at knowledge as something which may be distinct and different from the knower. And yet, if one wants to study the relationship existing between humans and the product of their most personal and most perfect acts, the body of knowledge, one must grasp the difference which exists between them. They differ by nature and by their mode of being. Although knowledge is produced by humans, for humans and, as far as we can tell, has no meaning or justification outside of humans, it is not identical with humans. This fact has such far-reaching consequences that it warrants much more study than has been accorded it until now. Since knowledge has the personal and social dimension, the relationship between knowers and knowledge has to be analyzed on two levels, namely, personal and social. We have to look at the process of thinking and the knowledge possessed by the individual. But we have also to study the sum total of personal acts of knowledge preserved by society, the knowledge construct, and elucidate the differences which exist between the two forms of knowledge.

The relationship existing between them is anything but simple, and any attempt to simplify it may produce a clearer but false picture. Absolutely speaking, at the basis of any knowledge construct lie personal acts of knowledge. However, although thinking begins at zero level of personal intellectual knowledge, it does not occur in the absence of a knowledge environment. Personal intellectual development would be hardly possible without society and the social knowledge construct. This is well-known and we will not insist on it at the present moment. It is the difference existing between personal acts of knowledge and the knowledge construct which preoccupies us here. The former are produced by and contained within the knower. Each such act adds to the body of personal knowledge. This knowledge is contained in the knower and, to that extent, is dependent on that person for its coming into being and its persistence during the lifetime of the knower. The role played by the social knowledge environment and by the objective stimulus in the production of the personal act of knowledge does not change the dependence of this act on the knower. The act has no autonomous existence and it does not survive its maker. This would hardly be worth mentioning had it not been for the fact that, its existential dependence on the knower notwithstanding, it should not be simply identified with the knower.

Knower-dependent as it is, nevertheless personal knowledge possesses its own distinctness. This is why there can develop a feedback relationship between the knower and his or her knowledge. The relationship plays a central role in the rational life of the knower and is an essential mechanism in the process of that individual's mental development. Without this two-way relationship, human behavior and mode of life would not be what they are. The individual's physical and psychological well-being depends on it, and so too the cultural evolution of humanity. The distinctness of personal knowledge may not be very evident and is, therefore, difficult to admit. The externalized body of knowledge, the knowledge construct, is in a different situation. Its distinctness from individual knowers is obvious. It is not contained as a totality in any one knower's mind, even though it is the cumulative product of the acts of knowledge of individual knowers. As we have already said, it presupposes not only the existence of individuals and their intellectual activity, but also the continuous existence of society. Yet the knowledge construct should be identified neither with the knower, whether individual or society, nor with the act of knowing. This is a crucial fact central to the ecology of knowledge theory and to the understanding of the existential role of knowledge. Let us, therefore, state explicitly what we have already intimated. The knowledge construct is an entity in its own right, distinct from the knower and from the act of knowing.

Being a sum of externalized knowledge, it is not only distinct from knowers, it also has a different nature from them and their acts of knowledge. It has its own existence and power of causality. It is because of its distinctness that it is not automatically perceived and assimilated by individual minds. The difficulty of learning the existing knowledge is a measure of the distinctness of the knowledge construct. It is a being in its own right, much as other artifacts are, though not as tangible as, say, tools or dwellings. Its distinctness has many different consequences. The most important among them is no doubt its capacity to persist beyond the lifespan of individual knowers. Humans are biodegradable, ideas are not. Humanity is not cumulative beyond the span of three or four generations, whereas, as far as we can tell, the knowledge construct is, indefinitely cumulative. This is why knowledge can grow as it does. Knowledge is always an open set; we can always add to the existing knowledge. Not only that, but the greater the knowledge construct, the more can be and is being added to it. We will say more about this fact further on.

It is one thing to state the properties of the knowledge construct, and another to explain their role and meaning. The distinctness and cumulateness of the knowledge construct are not due to chance. They are not the result of random developments within the evolutionary

process. It is obvious that these properties of the knowledge construct are essential for its growth and for the progress of humanity. Their existence is justified by the role they play in the evolution of knowledge. In order to advance knowledge, creative thinking must benefit from existing, i.e., accumulated knowledge. Without the accumulation of knowledge, each act of thought would have to begin at zero level of knowledge, and there would be no progress in knowing, no matter how brilliant were the knowers. Darwin or Einstein would not have formulated their theories without the benefit of the knowledge accumulated in their respective fields before them. Great thinkers are well aware of this fact and acknowledge it willingly.

The affirmation of the non-accidental nature of the distinctness and the cumulateness of the knowledge construct posits a methodological problem which must be clarified. Following Darwin, biologists explain evolution assuming the spontaneous and random nature of morphological variations. In the study of life forms other than our own we are necessarily outside observers. We do not have a direct insight into these life processes and no privileged grasp of the situation. Our explanations cannot but be conjectural and so is our understanding. Although knowledge is an obscure phenomenon and difficult to know, we do have a more direct insight into this phenomenon than into other life phenomena and can evaluate some aspects of it more clearly than some other biological processes. The accumulation of intellectual knowledge, the impact of the knowledge construct on humans and the consequences of this impact, i.e., the role which the development of knowledge plays in the evolution of humanity, are so obvious and indubitable that it would be difficult to explain these facts as products of chance. To deny their finality would defy common sense. Neither individuals as individuals, nor commonly as society, spend effort, time and money to learn, to preserve and to develop knowledge just by accident and for no purpose at all.

The capacity to develop the body of knowledge beyond the limits of memory is so important for the progress of knowledge that it is worth discussing this fact further. As we have already said, the act of thought never occurs in the situation of zero knowledge. In order for the mind to think it has to be stimulated by some perception of an object or an idea either already present in the knower's mind or conveyed by means of language. Knowledge grows on knowledge. The more there is accumulated knowledge, i.e., the greater the knowledge construct, the greater is the potential for the development of knowledge and the more knowledge develops. The body of knowledge has a dual role. It is a store of knowledge and it creates the potential for further development of knowledge. Hence:

Law XX: "The potential for the development of knowledge is proportional to the existing knowledge."

The above law explains why knowledge develops faster and easier in the presence of a large knowledge construct, than in its absence. It is, therefore, not surprising that the progress of knowledge is increasingly more rapid. The law also justifies intellectual and material efforts of accumulating, preserving and making accessible large knowledge constructs. Let us recall here Law V: "Thought induces change." The greater it is, the more we can and do think, and the greater becomes the potential for action and for change.

Thinking is an activity of humans who are organic creatures. One may, therefore, ask whether there is any resemblance between the process of thinking and organic processes. In fact there is an analogy between the two but not an identity. Life depends on life. The more we learn about life, the more we become aware about the conditioning of the organic mode of being in general and its dependence on other organisms in particular. Organisms require living and dead organisms for their existence. They depend on them for the creation of proper environmental conditions and for food. Organic life recycles matter from which organisms are built. It is not by accident that organisms do not survive their death. They have to be decomposed in order to make way for new organisms and to feed them. Organisms have to exist in proper balance with their life supporting environment. Consequently, they cannot accumulate indefinitely and exceed the carrying capacity of their ecological niche. In contrast, there is no such apparent limit to the accumulation of knowledge. But this is not the only difference between organic and intellectual processes.

In contradistinction to organisms, intellectual knowledge does not feed on knowledge, though it presupposes and grows on knowledge. An organism feeds on another organism either by destroying it or by digesting an already dead one. The development of knowledge involves a different relationship to already existing knowledge. There is no destruction of knowledge properly speaking in the progress of knowledge. The attitude of knowers to a given element of knowledge, such as an explanation, may change radically, but that explanation does not cease to exist. A new theory replaces a previous theory, but it does not decompose it, it does not digest it. Nobody today believes that the earth is flat and supported by four elephants, but this explanation remains as a true element of the history of cosmology. It continues to be a part of the knowledge construct, although its place and role in the structure of knowledge has changed. While elements of previous levels of knowledge are often absorbed into new conceptual structures, there is no recycling of knowledge in the biological sense of the recycling of

matter as it occurs in organic life. Instead of destruction of organisms, there is a continuous preservation and accumulation of knowledge with the resulting growth of the knowledge construct.

Thus far we have insisted on the advantages of its cumulativeness. However, it would be very wrong to believe that all the effects of its growth are equally beneficial, or that its cumulativeness is the only aspect of the knowledge construct worth discussing. If there is any justification to the present study and any value to the theory of the ecology of knowledge, it is because the knowledge construct is a very complex phenomenon and its effects are many and varied, as we shall try to explain in this and following chapters. It is the most complex, the most perfect and the most powerful construct ever produced by humans, with the most diverse and far-reaching consequences. Among all human products it is the one which is most specifically human. At the same time, it differs more from our human material frame than any other artifact. It is neither organic nor tangible and poses unique difficulties for its study.

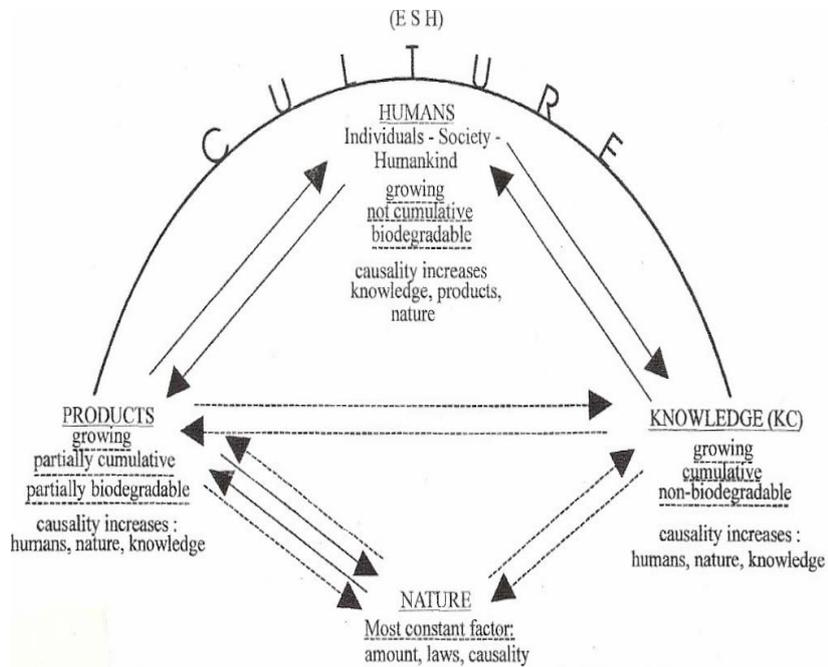
Let us compare the knowledge construct with the brain which, to the best of our knowledge, is the organ of thought. The brain is a concrete entity. It has a certain mass and shape, and occupies a well-defined space. It can be observed, measured, experimented with and is subject to physical laws just like any other material object. Its product, the knowledge construct, has none of these characteristics. This is why it is difficult to imagine that the body of knowledge is an entity existing apart from the act of thinking and, more importantly, that it exercises an all-pervasive, determining influence on humans. Yet, this is precisely the case. Humans produce the knowledge construct and, in turn, it shapes their thinking and behavior on the individual and social level. The greater the knowledge construct, the more complex and the more formative is its impact, and the more humanizing is its effect.

Philosophers have been accustomed to look at ideas as abstract forms, carriers of meanings and logical elements, components of judgements and reasonings. However, ideas are not only a means of understanding whose role begins and ends with understanding. Ideas also play a more concrete role in human life, because understanding does not end with understanding. The understanding determines in a large, though not exclusive measure, the hierarchy of values of the individual and of the society. And, consequently, it guides human behavior. This is why ideas, either in the form of explanations of the scientific type or as beliefs, have a major influence on human life. The shaping impact of ideas can be clearly seen through a comparison of attitudes and modes of life proper to different cultures. The understanding of the formative role of ideas in human life is important not only for the understanding of the behavior of individuals and

societies in a given time and place. It is essential also for the explanation of cultural evolution. Indeed, without the impact of ideas, the advancement of humanity becomes unintelligible. Material factors alone cannot explain it adequately.

The feed relationship between knowers and the knowledge construct is the single, most important "mechanism" in the specifically human mode of evolution. It makes possible the progression from the semi-animal state of early humans to our post-industrial society. It is also responsible to a large measure for humanity's present woes, for the good and bad aspects of progress. Rationality—the possession of a mind and an ability to think—by itself without the feed relationship between mind and body of accumulated ideas, would not be enough to produce the advancement of knowledge and the progression of humanity. Thus, the understanding of this feed relationship is a key for the comprehension of man's rational odyssey since the origin of his species. The understanding of the feed relationship involves, in turn, the grasp of the nature of the knowledge construct as an entity in its own right, distinct from knowers.

The Existential / Evolutionary System of Humankind



Explanations:

Arrows: Indicate feed (feedback, feed forward) relationships.*

Knowledge: The word is used here in the broadest sense of the sum total of conceptual constructs: subjective and objective, scientific and non-scientific, past and present

Systems:

1. The Knowledge system: knowers – knowledge construct (KC)
2. The culture system: knowers – KC – products
3. The ESH: knowers – KC – products – nature

ESH: The system is dynamic and implosive, self-stimulating and form creative, growing in size and complexity and evolving ever faster. The interactions

* _____ direct relationship
 ----- indirect relationship through knowers

CHAPTER XIII

THE RELATIONSHIP BETWEEN KNOWERS AND THE KNOWLEDGE CONSTRUCT

All is not sweetness and light in the relationship between humans and the knowledge construct. Its distinctness and the cumulateness is not an unmixed blessing. By grasping these aspects of the knowledge construct we can investigate and understand the problems which knowledge and its progress generates. Contrary to what has been assumed in the past and still is generally believed, the relationship between humans and their accumulated knowledge is not simple and uniformly harmonious. If there had been one universal knowledge construct and if everybody had always had equal access to it, deriving equal profit from this access, then the situation would have been much simpler than it really is, and it could then have been regarded as generally positive. This, however, is far from being the case. There are basically two reasons for the complex nature of the human/knowledge construct relationship, namely, the very nature of the knowledge construct and the highly unequal relationship of knowers with the knowledge construct. We are so accustomed to seeing knowledge as a perfection and the acquisition of knowledge as necessary and desirable that we are inclined to overlook the problems which exist in the relationship of humans with knowledge. Let us, therefore, try to say a few more words about the reasons for these problems.

Traditionally, we conceive the relationship between knowers and knowledge as a one-way causal relation: knower—knowledge. Knowledge being produced by knowers, its relation to knowers is one of subordination and dependence. Consequently, knowledge itself, and the relation to, and with knowers, cannot be the source of serious problems; if there are any problems with, or because of knowledge, they are superficial and accidental. They are caused not by knowledge, but by the lack of it. Like ignorance, they can always be overcome by more and better knowledge. Unfortunately, this optimistic view is much too simplistic. It offers a one-dimensional picture of a multi-dimensional situation. In fact, far from being a one-way dependence, the relationship knower-knowledge is a two-way rapport between two distinct and very different entities. It works out differently for each individual and for every organized group of individuals, be it a nation or a business enterprise. We shall discuss this relationship in greater detail in further chapters.

The sources of the difficulty of understanding the relationship between knowers and the knowledge construct come from both sides. There is, on the one hand, the extreme variety among humans—their individual capacities exacerbated by cultural, social, economic and environmental differences. On the other hand, we deal not with one knowledge construct but with a multitude of them of which, moreover, we have a very inadequate knowledge. For the sake of simplicity we may speak of the knowledge construct in general, which is what we have done until now. However, as we have already intimated, what in fact exists is not a universal, unified body of knowledge uniformly distributed throughout humanity, but a variety of knowledge constructs from personal constructs to those proper to a culture. The important development in this field is the rapid growth of Western science and the imposition of this knowledge construct on non-Western cultures. Far from simplifying the noetic situation of the world, the process makes it even more complex and is a source of growing problems.

Besides being many, the knowledge constructs have other aspects which make their study difficult. Seen from the point of view of Western formal logic, they do not form coherent, well-integrated wholes. This is true even of the scientific knowledge construct. Being the cumulative product of many minds, it is not an intellectual monolith. It has not been developed in a consistent way, with a single purpose in mind, by a team working in unison. It is a product accumulated throughout history, the result of intellectual endeavors of various kinds. When it is sufficiently well-developed, like that produced by Western culture for instance, it represents the results of practical and theoretical knowledge. Such a knowledge construct is a repository of the results of efforts of understanding on different levels of intellectual development, from most primitive to the most advanced. And if it is not a comprehensive depository, we spare no efforts to add the lacking elements. Our desire to know our most remote past and to understand the most primitive mentality is proof of our more or less avowed intention to recuperate all the stages of the intellectual evolution and to include them in the knowledge construct.

Human attitudes towards and involvement with the outside world and with themselves are multiform, which the knowledge construct reflects. This is why it may contain side-by-side science and myth, fact and fiction, advanced explanation and non-explanatory magic, the most advanced ideas and the most primitive. Thus far studies of knowledge constructs have been limited mainly to logical studies of thinking or to anthropological studies of primitive mentality. Important as these studies are, they do not give us an adequate picture of a knowledge construct, especially of an advanced one like ours. Much more comprehensive, though done with a different purpose in mind, are

various attempts to classify knowledge, whether for philosophical reasons or for retrieval purposes by librarians and encyclopedists. The knowledge construct is a reality richer than these studies suggest. A comprehensive study of an advanced one, let alone of the global one, does not yet exist, nor is it even clear whether it would be at all possible.

Since neither the sum total of knowledge possessed by humanity, nor the knowledge constructs of particular cultures are fully logically coherent, one may ask whether a greater coherence may not be found on the lower level of their elements. This, indeed, is the case, for their components are often more noetically consistent constructs. The various intellectual structures, be they scientific theories, beliefs, myths or whatever, each possess a degree of internal coherence necessary to give them a certain unity. The coherence may differ from case to case, but is sufficient for creating the distinctness of constructs. Internal unity is a condition of the intelligibility of these structures, but it also has another important consequence. Namely, by giving them their distinctness, it allows us to view them as individual entities forming a population of entities. Consequently, a knowledge construct may be described as a population of such entities, i.e., a population of systems, and laws governing the behavior of populations (such as, for instance, the law of evolution and ecological laws) may be applied to it. Thus it becomes possible and justified to study one from various points of view including statistical, sociological and biological.

The above conclusion may appear rather odd in light of the traditional philosophical approach to the problem of knowledge which centers on the questions of truth and objectivity: a word of explanation and a reminder is in order. The traditional way of analyzing knowledge appears sufficient as long as the body of knowledge is not viewed as a distinct entity, i.e., as a knowledge construct. Once it is perceived as an entity in its own right, distinct from knowers and the act of knowledge, then it becomes apparent that it would not be sufficient to try to understand the nature and the role of a knowledge construct or of one element of it, by viewing it only in light of the notions of objectivity or of truth. In itself, an intellectual construct simply is and it is as it is, before being true or false, objective or subjective.

Because and to the extent that it exists the construct is a fact. As a distinct entity, it has its place in the objective order of things, and in relation to this order it has a truth value. It is true or false and it exercises its particular causality. Its impact over time may differ from the beginning or later, depending on the truth or falsity of the construct. It would simply be wrong to equate the impact of a conceptual construct with its truth value. Otherwise, it would be rather difficult to explain the appeal exercised by constructs which cannot be proven true, like myth, or by those which have been proven false such as "miraculous," pseudo-

medical treatments, or theories such as that of a flat earth. On the other hand, we know that even the most advanced scientific theories are only more or less adequate explanations which, sooner or later, will be replaced by better ones. The quality of the intellectual construct which is most directly appealing to the intellect is not its truth, but its intelligibility and its apparent explanatory value. These qualities give the knower the highly satisfying feeling of intellectual mastery. If this feeling can be coupled with a belief in the material efficiency of knowledge, as for instance in magical formulas, then, of course, the satisfaction is even greater.

It is important to remember that an intellectual construct is a creation of intellect. It is an artifact and as such similar to a painting or a machine. The reason we are not inclined to think of it as belonging to the same class of things as paintings or machines is that it is made of different "material" than these. Namely, it is built of intellectual stuff, i.e., ideas. Being themselves products of intellect, ideas are much more intelligible than things material. This is why intellectual constructs can be so appealing to the intellect. The intelligibility of intellectual products exercises a powerful attraction on thinkers and tempts them to equate ideas with things they stand for, thus giving rise to idealistic theories of knowledge. Indeed, the intellect derives much more immediate satisfaction from dealing with concepts and conceptual constructs than with material objects.

The intelligibility of intellectual constructs is a more complex matter than the intelligibility of concepts. It depends on two factors, namely, on the intelligibility of the elements of the construct—ideas or lesser constructs such as judgements (sentences)—and on the form of the construct, i.e., the manner in which the elements were put together. The form is the artificial product of the intellect: it does not come as such from the outside world; it is not a given. The quality of the form depends in the first place on its creator. The better the construct is formed, the more it is coherent and logically satisfying: consequently, the more it is intelligible and appealing. It is worth pointing out that the intelligibility resulting from the form of the construct is not identical to that of its elements. This distinction harkens back to the classical distinction between the form and matter of a reasoning.

In contrast to the intelligibility of constructs, the intelligibility of ideas depends more directly on the intelligibility of the objects they represent, being their mental image. In the majority of cases the objects are objective entities, elements of the external world. The intelligibility of concepts has its source in the determinations of these entities. If, for instance, the concept "apple" has a particular meaning, it is due to the determined nature of objects which we call apple. If it is worth mentioning this well-known fact, it is to stress the difference in the

sources of intelligibility of concepts and of constructs. As we have said above, the intelligibility of constructs is to a large extent, though not exclusively, the product of the intellect, their maker. This fact has many consequences and is a source of a diversity of interpretations which gives rise to different theories of knowledge. Indeed, it is easier to know than to know how one knows.

The difference in the sources of intelligibility is an important fact and a problem for philosophy in general and for the theory of ecology of knowledge, as well. Theories of knowledge recognize this difference, whether they are of the realistic kind in the Aristotelian tradition, or in the idealist, Cartesian tradition. The difference between these two schools of thought is this: the former recognizes explicitly the two sources of intelligibility and incorporates them in its theory of knowledge, while the latter grasps the problem only obliquely because of its rejection of sense perception as a source of ideas. In the empiricist and idealist doctrines, the distinction between the sources of intelligibility finds its indirect reflection in the distinction between analytic and synthetic judgements. Realistic theories of knowledge do not accept this distinction, considering all judgements as essentially synthetic. The fact is that the objective world and the intellect each have their own principle of intelligibility, namely, form (determination), and contribute each in a different way, on a different level, to the intelligibility of intellectual constructs. Thus constructs have not only their distinctness and their own mode of existence, but also their own intelligibility distinct from that of other entities.

We have said earlier that an intellectual construct is more intelligible than an external object. This holds true even though all constructs are not equally satisfactory as objects of study. There is a difference in this respect between a personal construct, i.e., an element of personal knowledge, and one which has been communicated to many and belongs to the realm of public knowledge. From the methodological point of view, the latter is a more satisfactory object of study than the former for several reasons. An exteriorized construct is an objective entity, knowable to many. The more there are people who know it, the better. To the extent that it is publicized, it is more persistent and more durable than a personal act of knowledge. As an object of knowledge, it transcends the limitations of space and time proper to individuals and their acts of knowledge. It can, therefore, be known objectively and studied at different moments of time by many individuals in different places. Thus, it can be the subject of verifiable propositions. As we know, verifiability is a necessary condition which an object has to satisfy to become an object of science. Externalized intellectual constructs satisfy this condition, making possible, at least in principle, a science of knowledge constructs.

This conclusion is important from the methodological point of view and because of the role played by science in the contemporary world. In modern times, science is the principal cause of the development of the global knowledge construct. Scientific knowledge is so successful that we tend to look at science as the most perfect mode of knowledge in general. In this situation it is important to remember the difference between a knowledge construct as a totality and its elements. The difference which interests us here is that between the Western (or global) one and that of exact sciences, and between the latter and its elements, seen from the point of view of the cumulative character of knowledge. The higher we go in the hierarchy of constructs, the more they are cumulative. The least cumulative are scientific theories. Each new theory replaces the previous one, and even though elements contained in the older theory are found in the new one, the new explanation is different from the one it replaces. The new explanatory structure is not an accumulation of previous explanations. Relativity theory is not simply more of Newtonian mechanics. Nor is modern chemistry operating with the notions of atoms and molecules simply an extension of the phlogiston theory, to give just two examples. Rather, science is cumulative because we continuously learn more and more and science expands, all the time adding to its pool of knowledge new data and their explanations.

The most cumulative of them all is the highest, most complex knowledge construct proper to a culture and, of course, the global one. Outdated modes of knowledge, theories and ideas belong to it, just as do the most advanced elements. Not only do the outdated elements remain in the intellectual patrimony of humanity, but having ceased to play the noetic role which they played originally, they become the object of research for history. Their noetic role has changed, but they continue to have an intellectual role and value. There is in this respect an important difference between intellectual products and material artifacts. In the great majority of cases, material products either wear out and disintegrate, like clothes, or are scrapped and recycled, like bottles or cars. But we do not scrap or recycle ideas or theories as we do clothes and bottles. If someone tries to scrap ideas or theories, as is sometimes done for ideological reasons, sooner or later they are reclaimed and returned to their legitimate status. The preservation of intellectual constructs in the knowledge construct is a very important and general fact. Let us express it in the form of a law:

Law XXI: "An intellectual construct always retains a noetic role."

In other words, an intellectual construct always remains a valid object of knowledge. The desire to preserve them is an integral part of

the desire to recover and to preserve the whole human past. Intellectual constructs are products and preservers of intellectual energy as well as stimuli of intellectual activity. The preservation of constructs is a manifestation of the general tendency of the preservation of energy.

In order for an intellectual construct to retain a noetic role indefinitely, it has to be preserved indefinitely. The law stated above would be rather meaningless had it not been for our capacity to preserve constructs beyond the limits of the physical existence of their makers. The problem of the preservation of knowledge is as vast as it is important. Suffice it for now to mention the fact that an intellectual construct transcending the capacity of individual intellects to memorize, requires, in order to be assembled and to persist, a material support physically independent from knowers. In other words, it has to be externalized and stored outside of knowers. It has to have a material base or container. This statement may appear shocking to those who are accustomed to think of knowledge as a purely intellectual phenomenon. Let us, therefore, remember that human intellects are bound with organisms and cannot operate without their bodily frame, at least not during their lifetime on this earth. Just as the intellect requires the physical support of the body to operate, so, too, a knowledge construct requires an adequate support in order to develop and persist. In the case of a dynamic knowledge construct, its continuous development depends on a parallel development of the material means of preservation of the body of knowledge. Let us express this important fact in the form of a law:

Law XXII: "The level of the material support system for knowledge has to be proportional to the level of knowledge."

What exists in fact in the field of knowledge is a whole composed of assemblages of ideas and their material support. There exists a feed relationship between the development of knowledge and of the support system. The progress of knowledge requires and produces an increasingly more perfect support system and is, in turn, stimulated by the developments of that system. Ideas and their support system form an evolutionary system. Presently, the knowledge construct is a vast and highly sophisticated structure supported by libraries, data banks, information network, etc.

Let us end this chapter by stating unequivocally that it is impossible to understand the phenomenon of human knowledge without realizing the intrinsic relationship between ideas and their material support, be it in the process of formation and acquisition of ideas, or of their accumulation and preservation.

CHAPTER XIV

THE IMPACT OF THE KNOWLEDGE CONSTRUCT

The existence and continuous development of knowledge constructs is a necessary factor of the evolution of humanity. This is rather obvious in light of what we have said thus far. Let us now look at the knowledge construct in a broader context of biological evolution. Its most striking aspect in general is its uniqueness. There is nothing like it elsewhere in the realm of living beings and, *a fortiori* in inanimate nature. From the biological point of view, the appearance of the knowledge construct is a radical novelty or new mode of being. Its existence fundamentally changes the situation of the human species. Giving humans an increasingly greater power to impact on nature, it affects nature as well. Nothing, prior to the appearance of the rational animal, presaged the development of the knowledge construct. There were no early, primitive forms of it in the animal kingdom, no antecedents. We cannot establish a lineage of successive forms of development of the knowledge construct from before, as we can do for the human organism or for knowledge constructs from the primitive to the most advanced.

It is not surprising that at our advanced stage of intellectual development we are aware of the existence of the body of knowledge and study it, or some aspect of it, in a critical manner. The situation was obviously different at the beginning of the human intellectual adventure. Interestingly enough, the newness and the "unnaturalness" of intellectual knowledge has been perceived by humankind since time immemorial. The birth of thought was such an extraordinary event that it found its expression in myth and in basic early religious texts such as the Book of Genesis. Long ago humans understood that knowledge which they acquired was something very special and important, which gave them a unique status and set them apart from other creatures. They were, of course, right. It is easy now to see that knowledge elevates the rational animal above other organisms and transforms him into the most knowledgeable and powerful creature on earth. This is an indubitable fact, but it is far from being the whole story.

All humans think, but all do not think in the same way or have the same attitude towards knowledge and its development. We have said this before, but we find it necessary to repeat it again. Not only have different cultures developed knowledge to a very different degree, they also conceive the use of knowledge differently. In the discussion of the

impact of knowledge on humans we must avoid the oversimplification found all too often in reflections about knowledge, namely, of equating the human's relationship with knowledge with that proper to Western culture. To begin with, only in the most advanced cultures is knowledge thought about and studied, and there is consequently a problem of knowledge. All cultures are concerned with transmitting a body of knowledge from generation to generation, but of their own initiative only a few make a deliberate and sustained effort to develop knowledge systematically. And there are great differences from culture to culture in the kind or kinds of knowledge developed.

The usefulness of intellectual knowledge is evident. Whether the development of rationality was an unavoidable occurrence is another, and as far as we can tell, remains an open question. Armed with hindsight and accepting evolution as a universal phenomenon, we may, perhaps, say that the appearance of thought made sense and is a logical extension of evolution. Even if we admit this point of view, we must be aware of the fact that there is no apparent necessity in such development. There was no royal road leading to the emergence of thinking, no one predetermined way to develop rational knowledge. The diversity of attitudes towards knowledge found in the world today indicates that there was no explicit or tacit agreement on the attitude to adopt towards rational knowledge. Nor could there have been a consensus about the purpose for which that knowledge would be used. If such an agreement, or something close to it could have existed, there would now be in the world no such differences in the modes and levels of knowledge, all the differences in the material conditions of life notwithstanding.

Rationality is the specific, distinctive property of the human species. It is, therefore, tempting to assume that the relationship between humans and the exercise of their rational powers is univocally determined. This, however, is not the case. The fact of the possession of rationality does not determine the use of it, or the attitude towards the knowledge construct. Thinking creatures can adopt different attitudes towards their powers of reason and towards the existing knowledge. It may sound surprising, but the fact is that the relationship of humans with intellect and with knowledge is not deterministic. One may, perhaps, wonder whether this indetermination is not a temporary phenomenon indicative of a still imperfect level of the intellectual development of humanity. This does not seem to be the case. The more knowledge progresses the more different attitudes we can and do adopt towards our rational powers and towards knowledge. The greatest uniformity in this respect is found in primitive societies and the greatest diversity in the most advanced societies. Seen from the level of advanced knowledge, the noetic uniformity existing in a primitive

society is not the result of an *a priori* agreement, but of an inability to look critically at one's knowledge.

The relationship: humans — knowledge is a two-way relationship: humans ↔ knowledge and knowledge ↔ humans.

An indication of the indetermination of the relation between humans and knowledge is reflected in the impact of knowledge on humans. The causality of knowledge is multiform and multilevel. The complexity of its impact is due to the fact that the knowledge construct is an element of the evolutionary system of humankind. Its impact takes place in a process of active existence, highly diversified in time and in space. This process is anything but uniform and the relations between factors contributing to it are also anything but uniform and simple. We in Western culture are accustomed to view precision, logical coherence and clarity as highly desirable properties of knowledge. One is, therefore, allowed to wonder what is the meaning of the indeterminate nature of the relationship, humans-knowledge. Is there a purpose, a value to it, or not? The relationship is, as we have indicated, an element of the evolutionary process, and it is in the context and in light of this process that the meaning of the indetermination of this relationship has to be evaluated.

A certain degree of indetermination of factors and relationships is a necessary condition of evolution. In this sense, indetermination plays a positive role in this process, up to a point. And so it is with indetermination in the noetic relationship. The indeterminateness existing in this relationship is a necessary condition of the evolution of knowledge and of humankind. Equally necessary from the point of view of evolution is the multiplicity and variety of the effects of knowledge and of its development. The indetermination, the plurality and the diversity are necessary conditions for the process of trial and error underlying evolution, and for the emergence of more advanced forms of existence.

There is no animal life without sense knowledge and there is no human life without a degree of intellectual knowledge. Although the relationship, humans-knowledge, is indeterministic, its consequences vary from case to case, but there always are concrete consequences. In order to fully understand the nature and the role of this relationship, it is essential to grasp the extent of the interdependence existing between knowers and knowledge. As we have already said, humans and knowledge are complementary elements of the knowledge system. The fact that it is a system is important because of its evolutionary potential and consequences for humanity. It is also important for methodological reasons. Since knowers and the body of existing knowledge are parts of

a system, the system, like any other system is: (a) bigger than either of the parts, (b) different from them. It is easy to affirm the existence of the knowledge system, once one accepts the notion of the knowledge construct as an entity distinct from knowers. But it is much more difficult to understand the nature and the consequences of this system. The system affects its elements and the outside world. Therefore, the consequences are of two sorts, namely, those found within the system itself and those outside of the system.

Knowledge belongs to the realm of life. It is at the same time a manifestation, a means and a product of the life process. One of the most important facts about the knowledge system is its dynamic nature. As we already know, the elements of this system are bound by a feed relationship. Because of the nature of this relationship the system is never static and never exactly the same. The active element of the system is, of course, the knower, while the body of knowledge may be considered as a passive element. The passivity of the knowledge construct does not prevent it from exercising its causality. The causality of knowledge is subtle, and yet, powerful, though difficult to measure, because material yardsticks cannot be applied to it. The knower thinks and acts in the light of existing knowledge. The body of existing knowledge plays a complex role. Without pretending to know all its aspects, let us mention three which are more or less evident. The knowledge construct serves as a ready-made guide and pattern for coping with everyday problems and situations. Moreover, it is a point of departure for further intellectual explorations, i.e., for the advancement of knowledge. It plays also the role of a common denominator unifying individuals sharing the same one. This latter function is an essential factor transforming individuals into an organized and stable society. In either of these roles, it acts as a formal cause, in the Aristotelian sense of the word.

It is rather obvious that humans would be utterly lost, powerless and incapable of surviving without knowledge. The existential role of knowledge accounts for the constant importance of its causal impact on knowers. Knowers are visible and obvious; knowledge is not of the same category. This is why it is easy to overlook the dependence of knowers on knowledge. Active as they may be, and they become evermore active under the influence of the growing knowledge construct, knowers are not independent agents with regard to it. As we have just seen, they are not the only factor exercising causality in the knowledge system. This fact is essential for understanding of the knower-knowledge relationship. Moreover, the dependence of humans on knowledge has far-reaching consequences, both theoretical and practical. A study of the ecology of knowledge would be incomplete

without a discussion of these consequences. Such a discussion is also important for the understanding of human evolution.

Humans produce knowledge, and knowledge in turn shapes them. We already know this general relationship; let us now analyze it in some detail. What is of particular interest, as far as the growth of knowledge is concerned, is the fact that, as we have intimated above, the existing knowledge influences further acts of knowledge. The more knowledge there is, the more coherent is the body of knowledge, because it is more systematically developed, and the more complex, the more formative is its influence. Consequently, the development of knowledge is, among other things, a function of existing knowledge. In other words, the greater the knowledge construct, the greater the possibility to guide the development of knowledge. It is not difficult to observe that the possibility translates into a desire and an active process of directing the development of knowledge in a predetermined and selective manner. This is done in light of the hierarchy of values of those who make the choices, and it either may or may not reflect those of the society.

The deliberate guidance of the development of knowledge is best seen in advanced societies spending a considerable portion of their GNP on research and development. They do it as a necessary means of furthering their economic well-being and standing in the world community. What interests us here is not the obvious preoccupation of states with knowledge, but the consequences of the influence of the knowledge construct on the development of knowledge. The question is what is the value of this influence? And furthermore, what are its consequences? Surprisingly, the situation is more complex than intuitively it may seem to be, and the answer cannot be a simple positive or negative value judgement. The reason for this situation is to be found in the fact that the influence of the knowledge construct on the direction of research, necessary as it is, is a mixed blessing. This is true even in the case of the most theoretical and disinterested research. This affirmation is sufficiently surprising to call for an explanation.

If the impact of the knowledge construct on the direction of the development of knowledge is a mixed blessing this is because of the very nature of the knowledge construct. It is meant, at least in its basic outline, to represent extra-mental reality. The existential efficiency of knowledge indicates that this is the case, at least to a certain degree. However, we are also aware of the fact that all conceptual structures are not equally true. Approximate, vague or simply false judgements and reasoning are every day occurrences. This means that the knowledge construct is neither identical with what it is supposed to represent, nor is it a perfect mirror image of the outside world. Reality is always greater than our knowledge of it. This is why knowledge can develop and why

it is necessary that it develop. This is also why as an unavoidably partial and imperfect conceptualization of the world it cannot give us an adequate idea of the best direction to take in the development of knowledge. The plain fact is that we do not know what a more advanced knowledge should and would be like. One thing which is certain, and very disturbing for our self-esteem, is that the more advanced knowledge will not be like our present knowledge. It will differ from present knowledge not only quantitatively but also qualitatively, just as modern science differs both in size and in nature from earlier types of knowledge. The objections which this statement is bound to raise, especially among scientifically minded readers, is the best indication of the ambivalent value of the knowledge construct in furthering the development of knowledge.

It is an assemblage of true, verifiable statements and others which are not so. Considering the importance which we attach to truth, objectivity and verifiability, we may wonder what effect this has on the impact of the knowledge construct on knowers. Does it diminish the influence or not? Surprisingly, it does not. It is important to realize that its causality is not univocal for all knowers. Different individuals are affected by different elements of the knowledge construct, and the same element may have very different impact on different knowers. Its causality is not bound univocally to its verifiability. This is clearly demonstrated by the sway which ideologies, unverified theories or myths hold over peoples' minds. Besides, verifiability, as it is understood in experimental science, is a precise but narrow notion. It is a limiting factor, delineating the subject matter of verifiable knowledge and the very mode of knowledge to which the principle of verifiability applies. The scientific principle of verifiability is applicable properly only to quantifiable aspects of reality. Consequently, it excludes the non quantitative aspects of the world, especially the vast and rich knowledge of values, crucially important for human life. This is why the criterion of verifiability, important as it is, is not a sufficient yardstick for evaluating the importance and the past, present or future impact of the knowledge construct.

CHAPTER XV

THE KNOWLEDGE CONSTRUCT AS AN ELEMENT OF RATIONAL LIFE

Humans do not live by knowledge alone. The knowledge relationship is only one element of human involvement with the outside world, and the knowledge construct, important factor as it is, is but one component of the human environment. The latter cannot be reduced to the knowledge construct and any attempt to do so is not only unjustified but also dangerous, with the outside reality ending up pinned to the procrustean bed of *a priori* ideas. Since the knowledge construct cannot replace the outside world, knowledge neither can nor should be the only factor influencing its own development. As we remarked earlier, knowledge does not feed exclusively on itself; it is not a kingdom unto itself. It is and has to remain relational, a link between knowers and the world, in order to fulfill its existential role and to justify its existence. Knowledge has to be seen in the context of the dynamic involvement of the knower in, and with, the outside reality. This perspective should not obscure the fact that the knower is an individual and that he thinks as an individual, i.e., a self distinct from everything else.

The individuality of the knower is a fundamental fact which must be fully recognized in the analysis of the existential dimension of knowledge. But, in order to be adequate, this analysis must also give full recognition to the insertion of the individual knower in the system of beings and relations forming the reality of which the knower is a product and an integral part. The acts of knowing and the knowledge which results from them reflect not only the individuality of the knower, but also his insertion in, and dependence on, the environment. If we stress again this fact, it is because all too often we tend to forget it and view our knowledge as if we were sovereign minds, self-contained and knowledge-wise self-sufficient. As we said above, knowledge is relational. In order to serve as a bridge between the knower and the outside world, it has to reflect on its basic, personal level both the individuality of the knower and his insertion in, and dependence upon the environment. It is because of this dependence that the individual is forced to test his ideas and to adjust them to the perceptible outside world existing independently from him. And he has to do this no matter what his or anybody else's thoughts or desires may be. It is in the context of this dependence, and in virtue of it, that humans think, learn and progress. Without this dependence, knowledge would have little if any existential meaning and justification.

The existential dependence of knowers on their total environment balances the impact of the knowledge construct on the development of knowledge. It does not allow the knower to enclose himself completely in the sphere of his intellectual products and remain thus on a given level of development of knowledge, or within a particular manner of knowing, without producing negative consequences for the knower himself and for the development of knowledge. The existential dependence of knowers prevents the closing of the knowledge system composed of knowers and the knowledge construct and keeps open the evolutionary system of man, maintaining the possibility of evolution of humans. Evolution is a systemic process, the product of a system. In order that the process continues, the system must persist and act as a system. This means that its elements must remain interdependent, interactive, influencing each other mutually. Knowers must not exclude themselves from the impact of all elements of their environment by enclosing themselves in the sphere of ideas.

It would seem that rationality, being the most powerful factor producing evolution in the whole realm of living beings, would naturally predispose humans to be synergistic with their natural environment. This, as we know, is not always the case. It often happens that we enjoy the company of our ideas more than that of tangible reality. The situation is further complicated by the exponential growth of the knowledge construct and its growing impact on humans. The growth of this impact is a mixed blessing. On the one hand it changes the conditions of human evolution, making it more and more specifically human, and distinguishes it increasingly from purely biological, infrahuman evolution. On the other hand, it increases the danger of knowers becoming enclosed in the growing sphere of their ideas and products. The fact is, that the greater the impact of the knowledge construct, the greater its power to help humans and to harm them. What does not change in the process of the evolution of knowledge is the ambivalent value of knowledge for humans.

Of all the elements of the human environment, the knowledge construct enjoys a unique status because of its intellectual nature. The power of its impact results from the feed relationship existing between the human mind and ideas. The mind produces ideas and in turn is influenced by them. Thus the furniture of the mind becomes richer, more complex and more man-made. One can, therefore, say that the mind becomes more and more its own maker, with all the good and bad consequences that this fact entails. The impact of the knowledge construct does not end with its influence on the mind itself. Through the agency of the mind it acts on the whole human being and influences individual and group behavior. Indeed, the chain of influences it generates does not end there. Proportionally to the progress of

knowledge, human behavior influences more and more the existential situation of humans, making it increasingly more complex, more unstable and more intellectually demanding. Thus, the changes in the human condition force the intellect to think further and search for new ideas and solutions. The new ideas in turn influence the mind, and so on. The cycle recommences anew. The situation involves essentially four elements: mind, ideas, behavior and human condition and may be represented as follows:

mind ↔ human condition ↔ ideas (knowledge construct) ↔ behavior

Much effort and ingenuity has been spent to find out and/or to prove which of these four elements is the most fundamental and plays the determining role. The answer given to this question has far-reaching consequences, supporting either the spiritualistic or the materialistic worldview. Indeed, it would be interesting to know whether one of these four elements is definitely prior to and more fundamental than others. With which one does the merry-go-round begin. The problem is whether the question thus formulated helps us to explain adequately the nature of the relationship existing between the four elements. In order to understand this relationship it is necessary to realize that the four elements form a system and act synchronically whatever be the order of their appearance on the scene. Being interdependent and complementary to each other, they should be viewed as integral parts of the system.

What matters most is the realization that we deal with a system and that the system is dynamic and evolving. The system itself and its elements are becoming increasingly more complex and its internal and external causality more powerful. The system, being a system, is more than the sum total of its parts. Consequently, it cannot be understood adequately through an analysis of its parts. Moreover, the elements, though interdependent, are not similar in nature or in causality. For this reason, the interdependence of the four elements should not be taken univocally. Each arrow indicates the direction of causality but represents a different kind of causality and a different kind of dependence engendered by this causality. In fact, the relationships transforming the four elements into a system are more complex than the arrows would suggest. For instance, the knowledge construct influences directly the mode of thinking and the contents of thoughts of the individual. Through this action, it impacts also on his psychological state and his physical nature, the two being affected by ideas and by the material products of rational behavior.

If, notwithstanding its apparent simplicity, the diagram under discussion is difficult to understand and gives rise to different interpretations, it is because it expresses relations of interdependence.

The relation of interdependence, transforming elements of this relationship into a system, is always complex and difficult to grasp, especially in this case because we deal here with dynamic factors, producing not a stable state but a sequence of dynamic states, a life process. Confronted by such a situation, one is tempted to make it more intelligible by simplifying it. To do this one has to reduce the relation of interdependence to that of subordination which is the simplest case of interdependence. This temptation is particularly strong in trying to understand the role of the mind in the diagram. The difficulty has essentially two sources: the nature of the mind which is not a material, palpable entity, and its relatedness to other elements of the diagram.

The intellect is influenced in different ways by all the three other elements, but it is not a mirror or a product of these elements. The ideas, judgements and reasonings which it produces are not a mirror image of the outside world, either. The intellect is not a mere receptor, although knowledge, whether on the sense or the intellectual level, always involves reception. The intellect is an active factor; it thinks on the basis of, and from, a given set of data, but is not contained within and by it. The more creative is the mind, the more it transcends the initial situation. The intellect is not only the linchpin of the system under discussion it is also its most, though not absolutely, free and active element, capable of transcending any given existential situation and of changing it by introducing new ideas. New ideas not only help to better understand the situation, they increase also the human potential for thinking and for doing things, the net result being better understanding and more efficient activity.

In contradistinction to animal life, human life depends on ideas, i.e., on the knowledge construct. It is obvious that this dependence is increasing. It is because of this dependence that it can and does influence humans in different ways. As far as this impact is concerned, it is worth repeating that the development of knowledge has two apparently contradictory effects. It allows humans to behave in an evermore efficient way, satisfying an increasing number of continuously more sophisticated needs and desires. The price of this achievement is the growth of the complexity of behavior which instead of reducing, multiplies human problems, as has been implied in Law XVII. At the same time the development of knowledge gives humans the possibility of conceiving the means for dealing with these problems. Whether they are using these means and how they use them is another question. Knowledge, as we know, is a necessary, but not the sole factor determining human actions. Problems of pollution and overpopulation are two generally known and highly illuminating examples of this situation.

It would be quite interesting to try to enumerate all other factors besides knowledge which influence human actions. However, such a project would not only transcend the scope of the present book, it would also go beyond the limits of the knowledge of the present writer. Fortunately, the list of these factors is not necessary for our purpose. What matters for us here is the fact that the net result of the influence of the knowledge construct on knowers is the growing pressure to think more, to know more and to behave more rationally. The need to know more and to think more is a fact of everyday experience and hardly needs demonstration. As far as rational behavior is concerned, one may perhaps have doubts about real progress in this area. The number of atrocities which have been committed in our century and the growing destructiveness of our behavior seem to mitigate against any affirmation of an increase of rationality in human actions. It would be futile to try to engage here in serious discussion of this question without doing injustice to the scope and importance of this problem.

Short of discussing the problem, let us point out two things. Firstly, more advanced knowledge and greater capacity to act are not, unfortunately, synonymous with automatic moral progress. Modern knowledge, which has developed for almost four centuries now, is quantitative, factual cognition which tells us much about how the world is, but little about how we should behave. Questions of value have been intentionally excluded from the purview of research. In light of this situation, the lack of moral progress should not be surprising. Ethical consciousness does not increase when it is not properly cultivated, unless we are confronted by life-threatening situations. Science did not make us morally better but gave us greater power to do things and thereby to increase our capacity to harm ourselves. This statement allows us to introduce the second point concerning the question of the increase of the rationality of human action. It is a sad but true fact that the wrongdoings of the present century were made possible by the progress of knowledge. They are a monstrous but tangible proof of this progress and of the ambivalence of human achievements.

In light of what we have just stated, is it still possible to view the impact of the knowledge construct forcing us to know more and to behave more rationally as positive and desirable? All the negative effects notwithstanding, the greater use of reason is definitively a progress, but it is not an unmixed blessing. Indeed, the more we think, the more problems we have. The description of the impact of the knowledge construct would be incomplete without mentioning the fact that it creates difficulties, but it does not create insurmountable problems. As we already know, problems are proportional to knowledge. Solutions to problems caused directly or indirectly by knowledge and its development can always be found, provided there is

the will to solve them and that one has the knowledge adequate to do this task—which, of course, is not always the case. Problems and the knowledge necessary for their solution do not always coincide in time and in space.

As is well-known, the possession of highly sophisticated and specialized knowledge, which creates many of today's problems and is required for solving them, is not easy to learn nor is it uniformly distributed in the world. Generally speaking, two kinds of conditions have to be satisfied for the possession of this type of knowledge, namely, intellectual and material. First, individuals have to have sufficiently high IQs and be adequately educated. The combination of these two factors is not easy to come by and eliminates the great majority of the world population. Secondly, one must have an adequate research system and financial means to cope with complex problems, such as, for instance, the disposal of radioactive waste. It is obvious that these two conditions exist in very few countries. Other societies are, therefore, increasingly at the mercy of those having more knowledge and a better knowledge industry. This is particularly significant and disturbing in view of the nature of the problems which humanity now faces.

Until recently, humans have been so overwhelmed by nature and so preoccupied with fending off natural dangers that nature, not humans, was seen as the principal source of their problems. This is why it is so difficult to accept the fact that, as we have stated before, the great problems of our times are all direct or indirect products of the development of knowledge. They all result from our constantly growing ability to do things, to impact on nature and to change the natural course of events. Not only are ordinary people a growing source of problems for themselves because of their growing demiurgic power, but the uneven distribution of these powers is an additional source of difficulties for individual societies and for humanity as a whole. Inequalities among individuals and societies are nothing new; they have always existed and were accepted as natural. What is new is the growing awareness of the injustice of this situation and the realization that the inequalities are not only, not disappearing but are increasing.

What is particularly troublesome is the fact that the growth of inequalities is a consequence of the development of knowledge. Notwithstanding the amoral nature of modern science, the general progress of knowledge and of education gives us both a growing sense of responsibility for the situation which we create and a desire to help those in need. Earlier (Law XVII) we insisted on the relationship existing between problems and knowledge. Let us now point out another, perhaps even more surprising relation existing between the progress of knowledge and the number of people in need of help:

Law XXIII: "The number of people in need of help is proportional to the level of knowledge and the ability to act"

The progress of knowledge makes the growth of the world population possible, but it does not decrease the need for help, quite the contrary.

In our analysis of the consequences of the development of knowledge we have not yet discussed the very important issue of moral responsibility which is intimately bound up with rationality. The growth of the sense of responsibility is one of the most meaningful and hopeful consequences of the intellectual evolution. It is a rather surprising consequence in view of the nature of scientific knowledge, which is the principal factor of the progress of knowledge. As we have said earlier, science purports to be a value-free cognition and does not delve into moral issues as such. It has been developed at least in part, as a substitute for religion, and it has little use for traditional, religiously inspired ethics. Yet its growth has led to a greater awareness of the consequences of our activities and to a more adequate understanding of our responsibility for them. Quite unexpectedly and to the displeasure of all those who believed that science would help us solve our problems, ushering us into a golden age of universal human happiness, the very success of science confronts us with the possibility of self-annihilation. Thus, unwittingly, science has made us understand more and more clearly the man-made threats to our individual and collective survival.

Scientific culture did not cultivate moral awareness as such, but it did produce a dramatic development in the scope and complexity of ethical issues. Traditional moral systems arose in response to, and for the purpose of dealing with, problems proper to a much simpler mode of life and were commensurable with a much lesser power to do things. Present moral issues have gone far beyond those of yesteryear. Moreover, the ethical problematic is continuously growing in the number of issues, their complexity and urgency. Machiavelli could claim that moral considerations are of secondary importance in politics. Interestingly enough, the great problems of our times such as overpopulation, pollution, atomic power, etc. . . . are moral, public, universal issues from which there is no escape. They are more and more central to political life on national and international levels, whether politicians like it or not. We must understand that their rise to prominence is intimately bound with our power to do things, which in turn, is related to the knowledge construct. Let us express the all important relationship between the knowledge construct, the power to act and ethics by means of the following law:

Law XXIV: "The moral problematic is proportional to the knowledge construct and to the power to act."

Being a function of the level of knowledge and the power to do things, the scope and complexity of moral problems is not a constant, but a continuously growing variable. It cannot be otherwise because the more we do things, the more problems we create. The scope and complexity of our behavior is proportional to our knowledge and grows with it. The more sophisticated our activity becomes, the greater and more durable its consequences. At the same time our need and capacity to understand them grows, as we have already mentioned. Responsibility for one's behavior is the mark and the price of rationality. The more we know, the more aware we have to become and the more aware we do become of the need to evaluate the short and long range consequences of our acts. And thus grows inexorably the sphere of moral issues. Let us stress again that the growth of ethical problems is not the result of a free decision of humans to become more morally perfect; no such development is visible. The increasing concern with the consequences of our behavior is a systemic phenomenon. The system is composed of humans, their behavior, its consequences for human well-being and survival, and the concern of humans for their future. The survival instinct obliges us to make value judgements; the growth of our demiurgic powers makes them more and more complicated and forces us to make them evermore often.

Morality is not fun. The need to mind increasingly the consequences of one's behavior is a rather unpleasant result of the development of knowledge. The question is whether or not this is an accidental and inconsequential result which, with more knowledge, we would be able to eliminate in the future. Unfortunately for all those who expect knowledge to liberate them from moral obligations, there is no such relief in sight. Not only is the need to mind the consequences of our acts proportional to our demiurgic powers and to the level of knowledge, but the need is an essential device of properly human evolution. It is an inevitable consequence of our rational capacity to distinguish between good and evil; it underlies our choices and is responsible for the ethical dimension of human life. All too often we forget that, all other factors being equal, our capacity to make choices is proportional to our capacity to do things, which in turn is proportional to our knowledge. Let us express this fundamental relationship in the form of a law:

Law XXV: "The capacity to do good or evil is proportional to knowledge."

Indeed, moral discernment is inextricably bound with rationality and the growth of ethical issues is an unavoidable result of the development of rationality. In order to be properly understood, the feed relationship between ethics and knowledge has to be seen as an aspect of the feed relationship between humans and the knowledge construct. As we know, this latter relationship produces human cultural evolution. The ethical dimension of human life, being a necessary element of this relationship, is thereby a necessary condition of proper human evolution. Without the latter humans would never have left the cave or become moral agents.

Humans are by nature social animals. The social dimension of their existence is not an accidental aspect, one which they can do without. On the contrary, it is an essential element, necessary not only for their biological life but for their distinctive, specific quality of humanness and the human mode of life. The importance of the social dimension is quite visible in human cultural evolution. It is both an individual and a social process; one cannot occur without the other. As we have seen, the most important man-made factor which plays an increasingly decisive role in this process is the knowledge construct. In order to better understand this role one has to discuss its social dimension. Society is a structure which encompasses many individuals and lasts for generations. Its principal value consists in this, that it is larger than the individual, both in space and in time, thus making possible cooperation, i.e., synergy among individuals and accumulation of experience through successive generations. The two functions are necessary for its development.

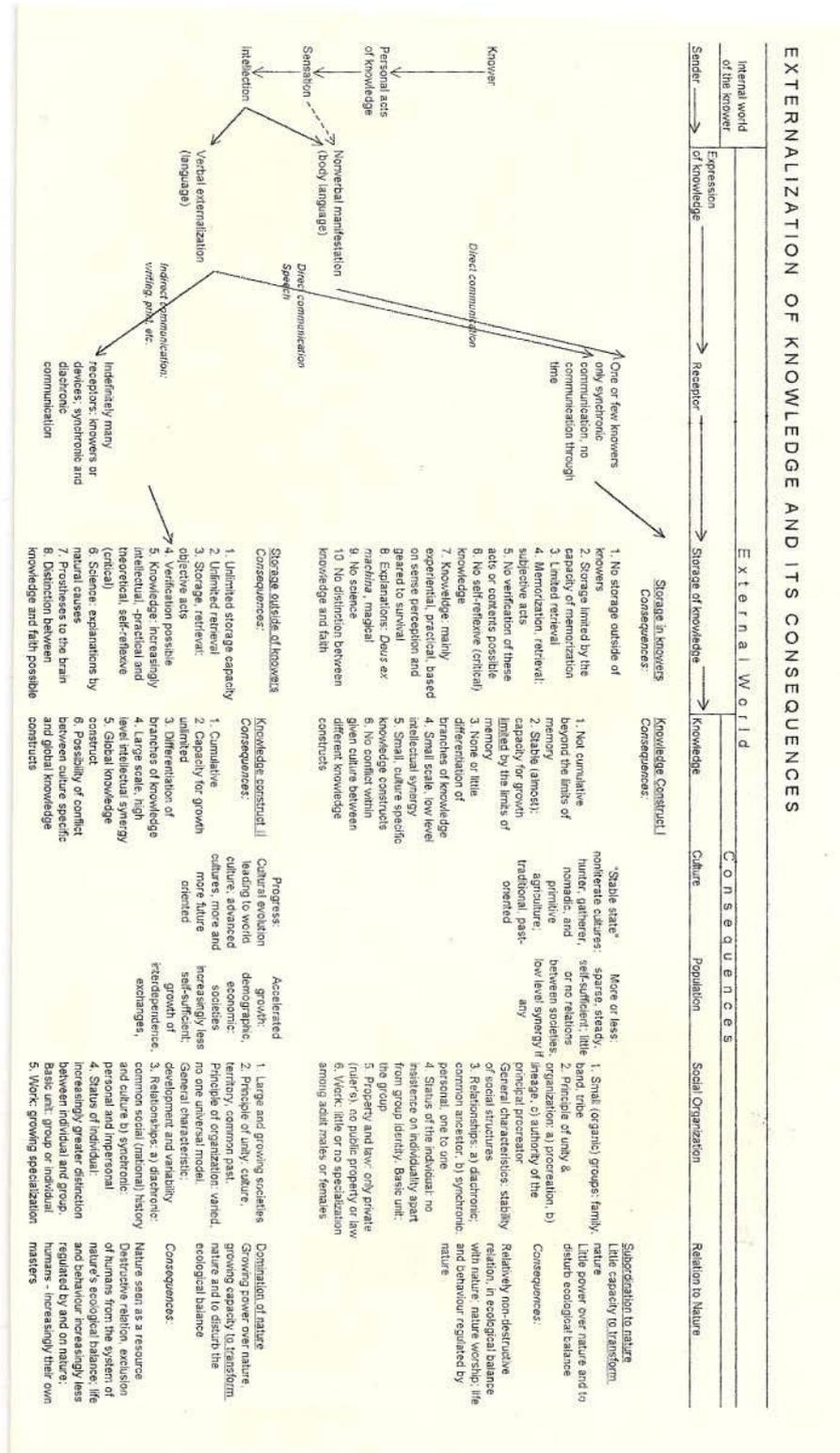
It takes time and many individual contributions to produce a significant body of knowledge. The knowledge construct proper to a human group is not a product of an individual intellect within the limits of a single life. More than one intellect has to contribute to it and more than one generation. This is a well-known fact. Less well-known are the conditions of accumulation of the knowledge construct and the consequences of these conditions. First of all, the knowledge construct is a distinctly social product, requiring synchronic and diachronic relations among individuals. These relations can exist only within an established and preferably stable society. Rational individuals and individual intellectual creativity are a necessary condition for its development, but not a sufficient one. Individuals as individuals are incapable of building one of significant scope. Only society can assume this task, inasmuch and to the extent to which it can make possible the accumulation and preservation, from generation to generation, of the results of individual acts of knowledge. Just as the individual is the knower, so society is the facilitator and keeper of the knowledge construct.

To the extent that it is a social construct, it is impersonal and transpersonal: it does not belong to anybody in particular. The fact that the knowledge construct transcends individuals is essential to its evolutionary nature, which presupposes cooperation on a larger and larger scale. Moreover, it rewards the effort to synergize, offering significant advantages to the builders and users of large knowledge constructs. However, the advantages of possession of a large knowledge construct do not come cheaply for its building is difficult, expensive and takes time. It presupposes a proper cultural and intellectual climate, as well as sustained mental and material input. No two societies have identical attitudes towards knowledge and equal means to develop the knowledge construct. So there are enormous differences of distribution of knowledge in the world and an uneven use of knowledge from country to country. It is difficult to imagine that this situation will change significantly in the foreseeable future. Quite the contrary, the differences, if anything, are increasing. The accumulation and preservation of knowledge becomes a more and more complicated task demanding specialized skills and complex social organization. The larger and more advanced the knowledge construct, the greater must be the intellectual and economic potential necessary to sustain it. Only large, well-organized, efficient and wealthy societies can afford it.

There is a feedback relationship between society and the knowledge construct. The larger, the more stable and more efficiently organized society is, the better it may accomplish the task of building the knowledge construct. In turn the more this is developed, the greater advantages it offers society and the more it facilitates its development. It is not by accident that the development of knowledge always coincides with social and economic development. The development of society is a systemic phenomenon, of which the development of knowledge is an integral and important factor. This explains why small, nomadic, or inefficiently organized societies have never developed large knowledge constructs. It is also understandable why there is acceleration in the development of knowledge and so much competition in this field between states. Nor is it surprising that the most vigorous and massive effort of the development of knowledge of all times is the work of the richest society on earth, namely, the American society.

In light of what has been said here, it is plausible that there is a definite relationship between the size, mode of life, culture and organization of society and the knowledge construct it possesses. Since the development of knowledge becomes evermore costly and demands larger and larger cooperation, it transcends the capacities of any one country. Thus the progress of knowledge is an evolutionary factor producing global interdependence. Seen from the perspective of the development of knowledge, the development of planetary society makes

sense and the globalization of humanity appears to be a logical next step in human evolution.



APPENDIX I

SENSE KNOWLEDGE AND INTELLECTUAL KNOWLEDGE: A Comparison to Old Wine in a New Bottle

INTRODUCTION

Reflection about knowledge is as old as philosophy. Knowledge has always been a major problem for philosophers. In this sense, thinking about knowledge is, indeed, nothing new. What is new and surprising is the fact that concern about knowledge has extended nowadays far beyond the small circle of professional philosophers. Knowledge, its development and its consequences are of growing concern for an increasing number of individuals, governments and world bodies such as the UN and UNESCO. Thus, from being a purely theoretical, not to say esoteric issue, knowledge has become a major, practical problem.

Strange as it may sound, the present public preoccupation with knowledge has surprised philosophers. It found them ill-prepared to cope with this issue, because it results from a different perception of knowledge than that of philosophers. Traditionally, philosophers looked at knowledge as a pure perfection, a product of the most perfect of human faculties, distinguishing humans from other creatures.

Hence, knowledge has been seen as a pure advantage and its development as highly desirable. Any thought that knowledge can be a source of problems and that its development may produce ambivalent effects was foreign to philosophers. Indeed, the realization that this is actually the case will force them to review their cherished assumptions and look at knowledge more critically than they have done up until now.

The present paper is the result of an attempt to understand the reasons for the contemporary unease about knowledge and its growth. It is written from the point of view of the author's theory of the ecology of knowledge. The theory has been developed to analyze the relation between humans and knowledge. The word "knowledge" can essentially mean two things: an act and a process of knowing or the result of this act, i.e., the body of knowledge. Traditionally, philosophers were mainly preoccupied by the former, whether from the epistemological or logical point of view. The ecology of knowledge is concerned with the latter and its relationship with knowers. The theory is based on three fundamental affirmations, two of which are obvious while the third one becomes such upon a moment of reflection:

Knowledge exists.

Knowledge increases.

The body of knowledge, i.e., the knowledge construct is an entity distinct from knowers.

It is the third affirmation which is the defining statement of the theory. Innocuous as it may sound, it allows us to draw many far-reaching and often surprising consequences. Viewing the body of knowledge as an entity in itself, distinct from knowers, one can conceptualize the problem of the impact of the knowledge construct on humans and examine the nature of that impact. This, in turn, allows us to study the consequences of knowledge and its development in individuals, societies and humanity as a whole. Humans and the knowledge construct are inter-related by a positive feedback and form an evolutionary system; let it be called the knowledge system. The feedback relationship is the most powerful factor of the evolution of humanity and a source of the growing problems presently facing humanity, such as overpopulation, pollution, future shock, growing inequalities among humans, weapons of mass destruction, to name but a few. They are all the direct or indirect consequence of the development of knowledge.

Looking at knowledge as an element of the knowledge system permits a more complete perception of the phenomenon of knowledge than in traditional discussions of knowledge. Among other things, it makes possible a more detailed comparison of sense knowledge with intellectual knowledge, which is the subject of this paper.

On Knowing Knowledge

As an object of knowledge, knowledge is obscure, perplexing and difficult to know. It is easier to know something than to know how we know it or the nature of the means by which we know it, i.e., to know the nature of knowledge. This anti-intuitive and confusing situation is the source of the multiplicity of often contradictory theories of knowledge. Since the problem of knowledge is a fundamental issue which no self respecting philosopher can afford to ignore, philosophers have either to invent a theory of knowledge of their own or to accept one of the existing solutions. In the latter case they perpetuate a particular school of thought, be it realism, idealism, empiricism or some other "ism," neatly repertoried in the history of philosophy textbooks.

Among the problems which the knowledge of knowledge creates, perhaps the most important one is the relationship of the two levels of knowledge, namely, sense knowledge and intellectual knowledge. As obvious as is the existence of these two levels of

knowledge, their relation to each other is anything but obvious, as is their relative importance in the process of knowledge. Philosophers have the choice of considering both types of knowledge as meaningful, i.e., as objectively justified – a position taken by Aristotle and his followers, the moderate realists. Or they may choose one type of knowledge as significant, to the detriment of the other type, as is done by most of the other schools of thought. What motivates the choice is, in itself, an interesting question, but is besides the point of the present paper.

The systemic approach to the phenomenon of knowledge chosen by the present writer entails a closer study of the body of knowledge, the knowledge construct. The development of the knowledge construct is the result of the externalization of the consequences of personal acts of knowledge and of their accumulation outside of knowers. It takes time to produce a knowledge construct and many brains. The knowledge construct is the accumulated product of countless generations and of a sophisticated social system making the growth of the knowledge construct possible. Let us mention at this point that intellectual knowledge in itself is not material, but is anchored in materiality. It is an integral part of concrete human existence and impossible without it. The study of the knowledge construct makes us aware of the importance of the externalization and accumulation of knowledge. Taking into consideration these two acts allows one to perceive specific aspects of sense and intellectual knowledge, often overlooked by philosophers, and thus to compare the two levels of cognition more thoroughly than usually is done.

Before attempting the comparison, let us stress that the knowledge construct is a growing and evermore important factor of the human environment, and, in turn, is itself environmentally conditioned. It is an essential device of cultural evolution, i.e., of the process of the humanization. The more knowledge there is, the more knowers can act efficiently, cope with problems and the greater are their chances of survival, in contradistinction to animals. The latter not only have no intellection, but, moreover, live in a steady state knowledge situation. They have no continuously increasing wealth of knowledge to profit from and thereby improve their situation. Inborn knowledge, i.e., intuition, useful as it is, is not an evolving, growing body of knowledge. Animals are locked into an invariant, species specific mode of knowledge. A fly or an elephant today know as much as their ancestors thousands of years ago and behave accordingly in an essentially changeless manner over long periods of time. A comparison of the effects of human knowledge with those of animal knowledge helps to understand the consequences of intellection and to distinguish it from sense perception common to all animals, rational or irrational.

Comparison of Sensation and Intellection as to Their Nature

Let us first of all make it clear that the comparison is mainly made in the context of human knowledge for a better understanding of human cognition, but also will be useful for comparing human knowledge with animal knowledge. Let us hope that the comparison will be a contribution to the discussion of the place which humans occupy in the living kingdom in particular, and in the earth system of which they are an increasingly important part, in general.

First, among the many questions which can be asked about the nature of the two levels of knowledge is which of them comes first, which is more basic. The answer is clear and independent of epistemological preferences. Sense knowledge is more basic. It is first in the order of biological evolution and first to become operative in the growing up of the human individual. It is as old as the animal kingdom and common to all animals. Whether plants have sensation is an interesting but debatable question. Some eastern cultures assume that plants have senses; Western culture rejects this idea. Intellectual knowledge is a newcomer in the process of evolution and is still developing under our eyes. This much is obvious. What is perhaps less easily perceived is the fact that sense knowledge is always individual. It cannot become impersonal, it cannot be externalized as such. (More about this further on.)

Because sensation is always individual, it is "mortal." It is the product of our bodies, it is born with them and dies with them. It is biodegradable, absorbable by nature. There are no depositories of sensations of past generations. A visit to a library suffices to convince us that this is not the case of intellectual knowledge. Indeed, cultural evolution presupposes the ability to externalize acts of thought and preserve them outside of human brains. Thus intellectual knowledge can survive the death of its creators and is not biodegradable. Because of the role of the externalization and preservation of intellectual knowledge, the great stages of the development of humanity are clearly marked by the invention of means of externalization of knowledge such as writing, printing and electronic technology.

Sensation, whether animal or human, is the product of biological evolution over which neither of them have much say and remains the same for the duration of the species. This is emphatically not the case of intellection. Sense knowledge is a means of adaptation of the organism to a natural environment. Intellectual knowledge allows the individual to cope with a natural environment and operate in society. While nature remains essentially the same, the social environment becomes increasingly more complex and imposes on individuals evermore sophisticated challenges forcing them to evolve intellectually.

Sense knowledge is more or less the same across the species whether animal or human. In contrast, intellectual knowledge varies widely due to individual and cultural differences.

Sensation cannot be improved significantly through training. Fortunately, this is not the case for intellection. Nor can sense knowledge be influenced significantly by another knower. No amount of persuasion will change my perception of red or of shape. But intellectual knowledge can, fortunately, be influenced by another knower. Which is why professors can earn their salaries.

Having compared the above aspects of the two kinds of knowledge, let us now concentrate on their cognitive properties. The fundamental and well-known difference between sensation and intellection results from the fact that sense knowledge is a knowledge of concrete material entities. It perceives the singular objects as singular. Thus, it allows organisms to cope with their natural environment, so to say, on equal terms. Organisms are singular and the environment is made up of equally singular objects. When a dog sniffs out a bone, he finds a particular concrete bone, not a bone in general. Such a bone would be of little nutritive value to him. Sensation allows animals to live, but not to explain things. It has the same function in humans. Whatever additional function it has in them, is due not to sensation as such but to intellection. Sensation does not allow, by itself, to form judgements and reasonings. It does not admit logical rules and is not reflexive and self-critical. Instead, sensation is in itself and by itself more certain than intellection. It is more directly related to the outside world than the latter, and more necessary for physical survival. This is why, in everyday life and in science, we verify judgements by perception. The ability to do this assures science its value and makes possible science's advancement.

Intellection is everything which sensation is not. Being abstractive and universalizing it allows the formation of universal concepts, judgements and reasonings. It admits logical rules, is reflexive and can be self-critical. However, being directly a product of the human brain, not of the outside world, it is subject to error, more than sense knowledge. The qualities of truth and falsity apply formally to judgements precisely because they are man-made. There are no judgements in nature, nor in human sensation. The wide ranging consensus about the superiority of intellection over sensation is due not only to the realization that intellection is a specifically human property, or to the fact that it gives humans greater power over the world than sensation. It is also due to the fact that intellection allows us to reflect about sensation but not vice-versa. Moreover, we can increase intellectual capacities through education and acquire more and more

knowledge individually and collectively, but we cannot do the same with sense knowledge.

This last observation brings us to the problem of externalization, communication and storage of knowledge alluded to earlier. The big difference between the two modes of cognition lies in their respective capacities of externalization. Sensation cannot be externalized, i.e., communicated directly in an adequate manner. Sensations of smell, taste or color, etc., remain invariably in the knower. To manifest them one must use words or body language which are indirect expressions. This is why sensations as such cannot be stored outside of individuals and cannot be communicated diachronically. Consequently, they are not additive, nor cumulative beyond the capacities of memorization of the individual. Hence, they do not form knowledge constructs and do not become distinct elements of the human environment.

For the above reasons, there is no feedback relationship between humans and an increasing body of sensations. Sensations do not form an evolutionary system with humans. This is why sensations by themselves do not produce culture nor do they produce in themselves human evolution in a significant manner.

Sense knowledge is insufficient to engender conditions necessary for the development of complex, highly efficient behavior. Thus, it does not allow the rise of large, sophisticated, and evolving societies requiring such behavior, very different from fixed animal societies such as ant and termite colonies. This is also why sense knowledge, by itself, does not alter nature significantly and does not disrupt the ecological balance existing in nature outside of humans. In light of the above, it is understandable that sense knowledge does not elevate humans above nature nor does it allow them to view themselves as being superior to nature. Primitive humans, who rely mainly on sense knowledge, see themselves as being an indistinct part of nature.

In contradistinction to sensation, intellection can be communicated directly and adequately by means of language. In other words, it can be exteriorized efficiently and stored outside of the knower, therefore it can be communicated diachronically. Ideas are additive and cumulative beyond the capacities of memorization of individuals, forming knowledge constructs, which become distinct elements of the human environment. These elements are growing at an ever faster pace and influence human existence evermore profoundly, producing culture, allowing the development of societies and the growth of the human biomass. As noted above, intellection also produces major problems threatening the future of humanity. It is by means of intellection that humans could conceive the idea of human superiority over nature and alter the environment to such extent that they disrupt the ecological balance on which their very existence is based. In light of the

above remarks, it becomes understandable that, from the biological point of view, the two levels of knowledge are not only quite distinct, but, moreover, play different existential roles and have different consequences. They are both vital for human insertion in the ambient world and their well-being. Finally, they are essential for the actualization of the human potential leading to further evolution of the human species.

Earlier in the paper, I said that knowledge, as an object of knowledge, is obscure and difficult to know. Moreover, there is always the danger of looking at knowledge in itself, apart from its existential role, considering this approach as an adequate way of studying the phenomenon of knowledge. As if knowledge were not a part of a bigger totality. But knowledge is an element of the life of an individual, of a concrete being inserted in the ambient world. It fulfills a vital role not only in the life of the individual, but also in the process of evolution. This is why we must not reduce the study of knowledge to logic or to playing games with words. If we care to find meaning in our study of knowledge, we should consider seriously both levels of knowledge. Reducing knowledge to one level may seem a simpler, more attractive solution. But a simpler solution will not explain the phenomenon of knowledge in its existential complexity and its causality.

Philosophers should try to speak to the world. To tell the world something relevant about knowledge, they must acknowledge and explain both the nature and the role of sense knowledge and intellectual knowledge. Knowledge is now too powerful and growing too fast to allow us any alternative.

APPENDIX II

FROM THE EVALUATION OF SENSE KNOWLEDGE TO AUSCHWITZ AND THE GULAG ARCHIPELAGO

The title of the paper is surprising to say the least. What kind of causal relation can exist between sensation and the behaviors of the twentieth century? What have vision, hearing and other senses in common with the production by humans of antechambers of Hell on earth? And what has philosophy to do with this? Strange as it may sound, there is a relationship between the role which we attribute to sensation in the process of cognition and the way we behave. There is also one between our perception of knowledge and evil/criminal attempts to explain this relationship and thereby justify the title.

To achieve our aim we will have to bridge the gap between knowing and doing and to distinguish clearly the difference existing between sensation and intellection as well as between personal knowing and the impersonal, public body of existing knowledge, the knowledge construct. Much of what will be said in this paper will sound odd to philosophical readers, unusual and off the beaten paths of philosophical inquiry; and rightly so. The paper is written from the point of view of the author's theory of an ecology of knowledge. Since readers may not be familiar with this theory and its conclusions, a short explanation is in order.

The ecology of knowledge theory was developed by the author over the past thirty years to deal with the problem of knowledge seen as a source of problems. This required a different approach to knowledge than that traditionally adopted by philosophers. Since the beginning of philosophy, philosophers have concentrated on what we now call the epistemological or logical problématique of knowledge. They were inquiring into questions of the truth and falsity of knowledge, its subjectivity and objectivity, i.e., problems resulting from the relationship between knowers and the object of cognition. Or else, they were analyzing the structure of the process of thinking, establishing logical rules of correct reasonings.

The distinction between knowers and the object of knowledge was obvious, but the relationship existing between them was not. It demanded explanation which philosophers were providing by means of various theories of knowledge. All these endeavors were, of course, eminently well-justified and important. But they left out one aspect of the phenomenon of knowledge which makes it difficult if not impossible

to understand the evermore massive and quite ambivalent consequences of the development of cognition. Among these developments are those we will be dealing with in this paper and they are essential for understanding the problems of the present day world.

If thus far philosophers have not dealt with the negative consequences of knowledge, it is mainly because they have not conceptualized the distinction between knowers and the process of knowing on the one hand and its result, the body of knowledge as an entity distinct from knowers on the other. Consequently, they could not delve into the problem of the relationship existing between knowers and the knowledge construct. Hence, the problématique of the impact of knowledge on humans and on the ambient world remained outside the purview of philosophical analysis. Instead, this problématique is the principal subject of reflection of the ecology of knowledge theory.

It is not an accident that traditionally the philosophical problématique of knowledge was developed as it was, leaving out the discussion of the relationship between the knower and the knowledge construct. There were at least two good reasons justifying this omission. Firstly, all ancient thinkers, of whatever philosophical persuasion, were convinced that the intellect was the highest human faculty and its product, intellectual knowledge, the most perfect human achievement. Secondly, in those days intellectual knowledge had not yet been sufficiently developed to produce perceptibly negative results and appear as a threat. Humanity was small and weak; nature loomed all powerful and abundant. Human activity did not seem to harm it.

The uncritical attitude towards knowledge appeared to be perfectly justified. Unfortunately, today this attitude is no longer satisfactory. Currently, knowledge is the most powerful factor impacting on humans and changing human condition. It is undoubtedly the most impressive human achievement, but its consequences are far from being uniformly positive. In fact, they are more and more threatening. All the great problems which humanity now face are man-made, the products of rational activity, not the products of nature. Overpopulation, pollution, atomic power, future shock or growing inequalities among humans—individuals and societies—to name but these issues, are direct or indirect consequences of the development of intellectual knowledge.

As long as the body of knowledge is not clearly distinguished from the knowers and the knowledge construct is not perceived as a distinct, *sui generis* entity, all the above mentioned knowledge-generated problems remain unexplained and baffling. What is more, the analysis of knowledge itself cannot be advanced significantly beyond what philosophers have said about it already. This situation justifies just such an approach to the problem of knowledge as that provided by the ecology of knowledge.

The theory is based on three affirmations, two of which are immediately evident, while the third one becomes such after a moment's reflection:

- a. Knowledge exists.
- b. Intellectual knowledge grows.
- c. The knowledge construct is an entity distinct from knowers.

The third affirmation is the cornerstone of the ecology of knowledge theory, distinguishing it from all other theories of knowledge. It also makes possible the writing of this paper. It allows us to view the phenomenon of knowledge in a new light and to draw many interesting conclusions hitherto not foreseen by philosophers. Among them is the ability to compare sense knowledge and intellectual knowledge in a more thorough way than has been done before.

Without going into details of the comparison discussed more thoroughly in appendix 1 let us stress two facts, one of which is well-known while the other is less familiar. Firstly, sense knowledge is the older and more basic form of cognition. It arose in the process of evolution hundreds of millions of years ago, as a life enhancing device. Sensation connects us directly with the outside world, gives us the vital information about the environment that makes organic existence possible. Sense knowledge is biologically necessary and determines to a large extent the mode of existence of the given organism. In the context of this general statement, let us explain that there is a particular type of information provided by the senses which is directly relevant for our discussion.

Namely, the senses tell the knower, animal or human alike, about one's measure and how one compares to other things, living or inanimate, in one's environment. The sight informs us that the church steeple is taller than we are; hearing, that the sound of thunder is louder than our own voice; touch warns us against hot objects and so on. The result of the information thus provided is the basic, vital rule of animal behavior: "If the perceived living thing is smaller than myself, I attack it; if it is bigger, I flee it." This sense knowledge serves as an unerring life saver. It also establishes the pecking order in nature.

The senses tell an organism its status in the natural order of things and do not allow it to mistake itself for something bigger than it really is. Scholastics called this function the estimative sense. Unfortunately, modern, post-Cartesian philosophy ignored this aspect of cognition. It is difficult to overestimate the importance of the role which the estimative sense plays in knowledge and, indeed, in life in general, as well as for our discussion in particular. If the discussion carried in this paper sounds to philosophical readers odd and unusual it is because

of the oversight by modern philosophers of the estimative function of sensation.

Having discussed sensation as the more basic form of cognition, let us now turn to the less obvious aspect of sense knowledge. Namely, its inability to form like intellection does a depository of sensations outside the knower, whether irrational or rational. Because intellectual knowledge is made of ideas, it can be expressed in words. Words can be externalized, preserved in a material form outside the knower and accumulated indefinitely whether in writing, print or electronic means, forming a constantly growing knowledge construct. This is why intellectual knowledge can, and indeed does, grow, whereas sensation does not increase in time.

Sensation remains stable in animals and humans alike. It is species specific and steady during the duration of the species. A fly, a cat or an elephant have the same level of sensation as their ancestors thousands of years ago. And so do humans.

As far as we can tell Plato and Aristotle had similar sense acuity as we do. But the knowledge construct to which they had access was infinitely smaller than the present one. We know the ideas of Plato and Aristotle and we discuss them and can grow on them. But their sensations died with them. Sensations are not externalizable, and therefore are mortal. Ideas can be externalized and preserved outside brains, thus surviving the death of their authors. The ability to preserve ideas outside knowers together with their abstract nature and capacity to form explanations makes intellectual knowledge a much more powerful mode of cognition than sensation, and humanly much more satisfying.

Outside extreme, life-threatening situations, whenever humans have a choice they will value intellection over sensation. They have this choice because *intellection in relation to sensation is a semi-independent mode of cognition*. This fact is the source of problems justifying the present paper. The intellect can receive sense data, accept them, thus be measured by them and form ideas and reason accordingly. Consequently the knower will be in communication with the outside world and knowledgeable of one's station in the natural order of things. One will not be tempted by dreams of grandeur and mistake himself for something more than one is.

Above all, the knower will not be imagining that one's intellect is a self sufficient faculty capable of knowing *inter limites intellectus*. However, because the intellect is a semi-independent faculty in relation to the senses and superior to them, humans can conceive the intellect as a fully autonomous and self sufficient entity. As it is well-known, Descartes' contemplation of the stove in one's room came to this conclusion, and, unwittingly, began a train of thought which led to the death camps of the twentieth century.

The founder of modern ideals naively thought of himself as a realist. When a disciple demonstrated on the basis of the Cartesian principle of immanence that the outside world is not knowable, Descartes angrily rejected one's demonstration. And yet it was the disciple, not the master, who was right in this matter. Having transferred the source of certitude from the senses to the intellect, Descartes liberated the intellect from the measure of the senses and ignored the estimative sense and its function. Had the intellect been the only faculty involved in human behavior, the consequences of Descartes' choice would not have been perhaps so drastic.

If it did become drastic, it is because human behavior is the consequence of two faculties: intellect and will. The intellect presents objects or aims as desirable, while the will wills them and makes humans act to achieve them. When the intellect is freed from minding the knower's material conditions, one can overlook one's corporeal limits and forget about one's station in the order of things. Consequently, one can let one's imagination soar freely and satisfy one's deep seated longing for grandeur, reject any submission to a higher authority and view himself not only as master after God but as master without God. This psychologically inevitable consequence of Descartes' principle did happen.

Hegel brought the idea of the independent, self-sufficient intellect to its logical conclusion. Intellect became the source of reality and Hegel's intellect became identical with the Supreme Intellect. This is why, when a student at Berlin University remarked that "facts are against you," Hegel could calmly reply, "the worse for the facts." Overblown ego goes hand in hand with unbridled pride. Their principle victim is morality with its recognition of the distinction between good and evil and respect for objective order of things, justifying the basis of classical logic with its affirmation that "yes" is "yes" and "no" is no."

Having rejected the mind's submission to an objective order of reality, Hegel could invent dialectics and argue that "yes" can be either "yes" or "no." This intellectual device helps to dissolve objective reality thereby abolishing all limits to the ego's whims and desires. Interestingly enough, another victim of Hegel's radical idealism is the individual perceived as less perfect than the state and the glorification of the authoritarian Prussian state. Thus Hegel sets the stage and becomes the inspiration for the twin diabolical ideologies of the twentieth century: Marxism and fascism. Though outwardly different, they both meet in their disrespect for the objective order of things, and of the fundamental value of the human individual as well as their rejection of traditional morality based on an objective order and respect for the individual.

Descartes certainly did not desire nor envisage the gas chambers or the Gulag universe, and would have been horrified to learn that one's ideas had such consequences. Yet having radically separated intellection from sensation one unwittingly opened the door for modern idealism which produced these tragic results. One may of course wonder why Plato's ideas did not yield similar results. What saved antiquity from the horrors of the twentieth century was a much lower level of social and technical development. It takes very big states and advanced technology to kill so many people. In antiquity, knowledge was much less powerful than in the twentieth century.

There are important lessons to be learned from the fate of Descartes' ideas. Ideas do matter, and so do philosophical theories. They are powerful and can be dangerous. This is why when we philosophize we should be aware of the volitional side of our being and keep our hubris under control. Philosophizing is not playing games with words and should never be seen as such. Discussions about counterfactual conditionals may be fun, but they should never replace deliberations about relevant, fundamental problems of existential importance. Philosophers should leave concerns about flies and fly bottles to other specialists. Philosophy at its best has always been, is now and will remain very serious stuff. May philosophers heed this warning!

About the Author

Jerzy A. Wojciechowski, Professor of Philosophy Emeritus, University of Toronto, Canada. He is a distinguished philosopher, lecturer, author and a profound and urgently relevant thinker of our time. His 'Ecology of Knowledge' (EOK) represents a breakthrough in understanding the *sui generis* nature of knowledge, leading to a re-examination of the knowledge construct under which we have been labouring. The laws he identifies, underpinning this knowledge construct, reveal that while thinking has resulted in an ever increasing body of knowledge, there are simultaneously dangers emanating from these processes which need to be responsibly considered.

'Ecology of Knowledge' (EOK), pushes the boundaries of the modern understanding of 'thinking' and opens new horizons in philosophy. It creates the possibility of a newer intellectual space in which to engage with other knowledge constructs and thinking emanating from separate philosophical traditions. EOK makes a critical contribution to the future of humanity at this time of unprecedented inter-cultural exchange between different conceptions of how to think about thinking and the knowledge it produces. It suggests keys to innovation and creativity essential for the continuation of life as we know it. Professor Wojciechowski is recognised as an original thinker and philosopher whose insights led to his inclusion, first, in *Who's Who in Canada* and *America* and then *Who's Who in the World*.

Born in 1925, in Brzesc, Poland, Wojciechowski's wartime service as a cadet officer in military intelligence for the Polish underground established an early appreciation for the power of knowledge. A casual comment and remark by a Nazi officer whose car he was servicing, provided the clue to the next Axis front, which, once relayed, enabled an Allied victory in the Battle of Kursk.

Twice wounded and awarded the Cross of Valour for his part in the Insurrection of Warsaw, Wojciechowski returned to his studies interrupted by the war. Rather than continuing his pre-war engineering studies, the reality of a devastated Europe, the loss of his country and former life and changes in his family circumstances, led him to seek deeper understanding and meaning. He applied to Belgium to study philosophy at the Université de Louvain. Gaining his degree and now fluent in French, Wojciechowski migrated to Canada where he was awarded a Ph.D., *summa cum laude*, from the Université Laval in Quebec City. His thesis was entitled: '*Le problème de Mouvement*', a copy of which is at Harvard's Widener Library.

In 1966, now a full Professor of the Philosophy Department at the University of Ottawa, he married Dr. Cécile Cloutier, a poet and

author with a doctorate from the University of Paris in aesthetics. Dr. Cloutier, herself a full Professor at the University of Toronto and later Professor Emerita, is known internationally throughout literary circles and the French speaking world for her poetry, and dozens of published works. She has won numerous accolades including Canada's highest honour, the Governor General's award for Poetry. Between their hectic inter-city academic schedules and international speaking tours, their family expanded with the birth of two daughters, first Maria and then Ewa Wojciechowska.

Professor Wojciechowski, fluent in Polish, German, English and French, has been at the forefront of many newer and emerging discourses concerned with the philosophy of the sciences, ecology, culture and ethnicity. But knowledge and its consequences remained a central concern for Wojciechowski throughout his distinguished career. He served in various arenas and capacities, travelling extensively as a visiting lecturer and academic to over 60 universities. For his founding service and Presidency of the Canadian Philosophical Association, he was made its first honorary life member. He was Chairman of the 7th Inter-American Congress of Philosophy; presided over the Inter-University Committee for Canadian Slavs and the Polish Canadian Congress with responsibility for relations with the federal government. He also served in a consultative role for several universities to evaluate and shape their graduate programs in philosophy.

In his advisory role to the UN Educational, Scientific and Cultural Organization (UNESCO), he authored leading papers on Multiculturalism and Identity, developed newer thinking and approaches to Civilization, Diseases and the Environment, and contributed to symposia on Genetics and Ethical Values.

From Mexico to Madras, from Beijing to Rome, Wojciechowski has circled the world sharing his thinking and insights within various fora. His work has encompassed the shaping of our future, the philosophical problems in the study of cultures and the challenges presented by advanced studies in systems research and cybernetics. He served with the Board of the Canadian Association for the Club of Rome and as an Executive Board member of the Institute of Polish Christian Culture in Rome, where Wojciechowski served also as a personal advisor to his Holiness Pope John Paul II.

Although officially retired from university life, as a member of the New York Academy of Sciences with an Honorary Doctorate from the International Institute for Advanced Studies in General Systems and Cybernetics, Wojciechowski continues to guide younger minds and to shape the way we 'think about thinking' across the vast landscape of discourse and philosophy.

INDEX

A

animal, 31, 55, 56, 66, 77, 79,
83, 90, 101, 103, 110, 121,
122, 124, 129
Aristotle, 23, 35, 37, 121, 130

B

Bacon, 2, 46, 54
behavior, 5, 6, 16, 26, 42, 44,
45, 48, 53, 55, 58, 67, 71, 79,
86, 89, 95, 108, 109, 110,
111, 114, 124, 129, 131
belief, 8, 15, 25, 36, 40, 41, 44,
45, 56, 96
Berkeley, 19
Book of Genesis, 7, 42, 101
brain, 9, 11, 12, 51, 67, 71, 89,
123

C

change, 2
Christian, 38, 41, 42, 134
Church, 2
Club of Rome, 25, 134
coexist, 55
communication, 60, 61, 83,
124, 130
Comte, 46, 76
conceptualization, 27, 40, 106
consciousness, 51, 54, 57, 111
culture, 7, 19, 25, 26, 27, 28,
31, 35, 36, 37, 39, 40, 41, 42,
44, 46, 55, 56, 57, 58, 59, 65,
67, 69, 75, 77, 91, 94, 98,
102, 103, 113, 116, 122, 124,
134
Curry, 2

D

Darwin, 87
Descartes, 47, 51, 61, 130, 131,
132

E

education, 21, 59, 60, 66, 112,
123
Einstein, 38, 87
Environment, 134
ethics, 113, 115
evolution, 1, 6, 9, 16, 17, 25,
28, 31, 45, 66, 69, 71, 78, 80,
86, 87, 90, 94, 95, 101, 102,
103, 105, 108, 113, 114, 115,
117, 120, 121, 122, 124, 125,
129
Existential System, 69

F

family, 31, 58, 59, 133, 134

G

globalization, 2, 117
God, 6, 40, 131
Greek, 1, 35, 36, 37, 38, 40, 42

H

happiness, 30, 46, 113
Hebraic, 36, 40, 41
hierarchy, 12, 16, 22, 36, 37,
38, 44, 45, 56, 58, 69, 72, 77,
89, 98, 105
history, 9, 15, 16, 17, 21, 31,
35, 41, 42, 46, 49, 72, 88, 94,
98, 120

human knowledge, 1, 12, 48,
50, 51, 99, 121, 122
human situation, 29
humanity, 2, 6, 8, 12, 15, 16,
20, 22, 25, 29, 30, 31, 35, 41,
42, 44, 46, 47, 48, 56, 57, 65,
66, 67, 70, 76, 80, 86, 87, 90,
94, 95, 98, 101, 102, 103,
112, 117, 120, 122, 124, 128,
133

I

ignorance, 9, 65, 71, 93
image, 8, 15, 26, 27, 28, 40, 70,
80, 96, 105, 110
indetermination, 37, 44, 45,
102, 103
information, 22, 47, 58, 83, 99,
129
intellectual, 7, 11, 12, 15, 16,
17, 18, 19, 20, 21, 22, 23, 26,
30, 31, 35, 36, 37, 38, 39, 40,
44, 46, 47, 50, 51, 52, 54, 55,
57, 58, 59, 69, 74, 75, 79, 80,
85, 86, 87, 88, 94, 95, 96, 97,
98, 99, 101, 102, 103, 104,
108, 110, 112, 113, 115, 116,
120, 121, 122, 123, 125, 128,
129, 130, 131, 133
intelligibility, 22, 26, 36, 44,
95, 96, 97
interdependence, 1, 2, 16, 43,
58, 59, 69, 71, 77, 103, 109,
116

J

John Paul II, 2
Johnson, 19
justification, 9, 23, 40, 41, 47,
61, 84, 85, 89, 107

K

knower, 1, 6, 7, 12, 25, 47, 48,
49, 50, 51, 52, 53, 54, 59, 70,
72, 78, 81, 83, 84, 85, 86, 87,
93, 96, 104, 107, 108, 115,
123, 124, 128, 129, 130, 131
knowledge system, 42, 69, 103,
104, 108, 120
Kuhn, 59

L

language, 20, 87, 124
law, 5, 9, 11, 21, 22, 30, 36, 53,
54, 58, 60, 61, 66, 74, 79, 88,
95, 98, 99, 113, 114
Levi-Strauss, 25
linguistics, 11
logic, 9, 22, 94, 125, 131

M

magic, 74, 94
Mardas, 2
Marx, 60
mechanism, 55, 56, 58, 86, 90
mind, 6, 9, 16, 30, 44, 45, 46,
47, 48, 53, 67, 76, 86, 87, 90,
94, 108, 109, 110, 114, 131
Morality, 114
multiplicity, 19, 20, 23, 58, 60,
103, 120
myth, 7, 25, 26, 27, 94, 95, 101

N

nature, 6, 7, 8, 9, 11, 12, 15, 17,
19, 20, 21, 22, 25, 26, 27, 31,
36, 37, 38, 41, 42, 43, 44, 45,
46, 47, 48, 49, 51, 52, 53, 54,
55, 56, 57, 65, 67, 69, 70, 72,
73, 76, 77, 78, 79, 80, 84, 85,
86, 87, 90, 91, 93, 95, 96,

101, 103, 104, 105, 108, 109,
110, 112, 113, 115, 116, 120,
122, 123, 124, 125, 128, 129,
130, 133

O

Objectivity, 39
Old Testament, 27, 40, 41
Olympus, 42
organism, 11, 52, 57, 72, 88,
101, 122, 129

P

paradigm, 26, 27, 28, 46, 59
patrimony, 58, 98
Peccei, 25
perfection, 17, 44, 93, 119
personality, 36, 41, 43, 44, 85
phenomenon, 1, 2, 11, 12, 16,
36, 50, 56, 59, 69, 72, 84, 85,
87, 89, 99, 102, 114, 116,
120, 121, 125, 127, 129
Plato, 12, 17, 35, 37, 49, 130,
132
plausibility, 49
plurality, 19, 20, 58, 103
possession, 2, 56, 66, 90, 102,
112, 116
practical knowledge, 15, 37, 38,
39, 40, 46
pragmatic, 10, 47, 83, 84
predicament, 10, 12, 17, 18, 25,
29, 31, 46, 47, 48, 65, 67
Prometheus, 7, 27
Protagoras, 8, 48
public knowledge, 97

R

rational animal, 77
rationality, 5, 6, 8, 12, 21, 26,
27, 29, 37, 39, 40, 56, 57, 79,

102, 108, 111, 113, 114, 115
responsibility, 16, 31, 71, 112,
113, 134
Rousseau, 60

S

science, 1, 9, 12, 20, 21, 22, 25,
27, 38, 40, 41, 42, 43, 44, 45,
46, 47, 48, 59, 67, 76, 77, 94,
97, 98, 106, 112, 113, 123
subjectivism, 19, 48, 61
Subjectivity, 39
sui generis, 48, 128, 133
Supreme Being, 70
synergy, 71, 115

T

technology, 21, 22, 25, 38, 39,
42, 44, 45, 53, 67, 122, 132
tradition, 1, 35, 41, 48, 51, 58,
97
truth, 17, 47, 49, 51, 95, 106,
123, 127

U

unity, 23, 95

V

value, 8, 15, 17, 27, 29, 37, 38,
39, 40, 43, 44, 45, 46, 48, 56,
67, 84, 89, 95, 98, 103, 105,
106, 108, 111, 113, 114, 115,
123, 130, 131

THE COUNCIL FOR RESEARCH IN VALUES AND PHILOSOPHY

PURPOSE

Today there is urgent need to attend to the nature and dignity of the person, to the quality of human life, to the purpose and goal of the physical transformation of our environment, and to the relation of all this to the development of social and political life. This, in turn, requires philosophic clarification of the base upon which freedom is exercised, that is, of the values which provide stability and guidance to one's decisions.

Such studies must be able to reach deeply into one's culture and that of other parts of the world as mutually reinforcing and enriching in order to uncover the roots of the dignity of persons and of their societies. They must be able to identify the conceptual forms in terms of which modern industrial and technological developments are structured and how these impact upon human self-understanding. Above all, they must be able to bring these elements together in the creative understanding essential for setting our goals and determining our modes of interaction. In the present complex global circumstances this is a condition for growing together with trust and justice, honest dedication and mutual concern.

The Council for Studies in Values and Philosophy (RVP) unites scholars who share these concerns and are interested in the application thereto of existing capabilities in the field of philosophy and other disciplines. Its work is to identify areas in which study is needed, the intellectual resources which can be brought to bear thereupon, and the means for publication and interchange of the work from the various regions of the world. In bringing these together its goal is scientific discovery and publication which contributes to the present promotion of humankind.

In sum, our times present both the need and the opportunity for deeper and ever more progressive understanding of the person and of the foundations of social life. The development of such understanding is the goal of the RVP.

PROJECTS

A set of related research efforts is currently in process:

1. *Cultural Heritage and Contemporary Change: Philosophical Foundations for Social Life*. Focused, mutually coordinated research

teams in university centers prepare volumes as part of an integrated philosophic search for self-understanding differentiated by culture and civilization. These evolve more adequate understandings of the person in society and look to the cultural heritage of each for the resources to respond to the challenges of its own specific contemporary transformation.

2. *Seminars on Culture and Contemporary Issues*. This series of 10 week crosscultural and interdisciplinary seminars is coordinated by the RVP in Washington.

3. *Joint-Colloquia* with Institutes of Philosophy of the National Academies of Science, university philosophy departments, and societies. Underway since 1976 in Eastern Europe and, since 1987, in China, these concern the person in contemporary society.

4. *Foundations of Moral Education and Character Development*. A study in values and education which unites philosophers, psychologists, social scientists and scholars in education in the elaboration of ways of enriching the moral content of education and character development. This work has been underway since 1980.

The personnel for these projects consists of established scholars willing to contribute their time and research as part of their professional commitment to life in contemporary society. For resources to implement this work the Council, as 501 C3 a non-profit organization incorporated in the District of Colombia, looks to various private foundations, public programs and enterprises.

PUBLICATIONS ON CULTURAL HERITAGE AND CONTEMPORARY CHANGE

Series I. Culture and Values

Series II. Africa

Series IIA. Islam

Series III. Asia

Series IV. W. Europe and North America

Series IVA. Central and Eastern Europe

Series V. Latin America

Series VI. Foundations of Moral Education

Series VII. Seminars on Culture and Values

CULTURAL HERITAGE AND CONTEMPORARY CHANGE

Series I. Culture and Values

- I.1 *Research on Culture and Values: Intersection of Universities, Churches and Nations*. George F. McLean, ed. ISBN 0819173533 (paper); 081917352-5 (cloth).
- I.2 *The Knowledge of Values: A Methodological Introduction to the Study of Values*; A. Lopez Quintas, ed. ISBN 081917419x (paper); 0819174181 (cloth).
- I.3 *Reading Philosophy for the XXIst Century*. George F. McLean, ed. ISBN 0819174157 (paper); 0819174149 (cloth).
- I.4 *Relations Between Cultures*. John A. Kromkowski, ed. ISBN 1565180089 (paper); 1565180097 (cloth).
- I.5 *Urbanization and Values*. John A. Kromkowski, ed. ISBN 1565180100 (paper); 1565180119 (cloth).
- I.6 *The Place of the Person in Social Life*. Paul Peachey and John A. Kromkowski, eds. ISBN 1565180127 (paper); 156518013-5 (cloth).
- I.7 *Abrahamic Faiths, Ethnicity and Ethnic Conflicts*. Paul Peachey, George F. McLean and John A. Kromkowski, eds. ISBN 1565181042 (paper).
- I.8 *Ancient Western Philosophy: The Hellenic Emergence*. George F. McLean and Patrick J. Aspell, eds. ISBN 156518100X (paper).
- I.9 *Medieval Western Philosophy: The European Emergence*. Patrick J. Aspell, ed. ISBN 1565180941 (paper).
- I.10 *The Ethical Implications of Unity and the Divine in Nicholas of Cusa*. David L. De Leonardis. ISBN 1565181123 (paper).
- I.11 *Ethics at the Crossroads: 1. Normative Ethics and Objective Reason*. George F. McLean, ed. ISBN 1565180224 (paper).
- I.12 *Ethics at the Crossroads: 2. Personalist Ethics and Human Subjectivity*. George F. McLean, ed. ISBN 1565180240 (paper).
- I.13 *The Emancipative Theory of Jürgen Habermas and Metaphysics*. Robert Badillo. ISBN 1565180429 (paper); 1565180437 (cloth).
- I.14 *The Deficient Cause of Moral Evil According to Thomas Aquinas*. Edward Cook. ISBN 1565180704 (paper).
- I.15 *Human Love: Its Meaning and Scope, a Phenomenology of Gift and Encounter*. Alfonso Lopez Quintas. ISBN 1565180747 (paper).
- I.16 *Civil Society and Social Reconstruction*. George F. McLean, ed. ISBN 1565180860 (paper).
- I.17 *Ways to God, Personal and Social at the Turn of Millennia: The Iqbal Lecture, Lahore*. George F. McLean. ISBN 1565181239 (paper).
- I.18 *The Role of the Sublime in Kant's Moral Metaphysics*. John R. Goodreau. ISBN 1565181247 (paper).
- I.19 *Philosophical Challenges and Opportunities of Globalization*. Oliva Blanchette, Tomonobu Imamichi and George F. McLean, eds. ISBN 1565181298 (paper).
- I.20 *Faith, Reason and Philosophy: Lectures at The al-Azhar, Qom, Tehran, Lahore and Beijing; Appendix: The Encyclical Letter: Fides et Ratio*. George F. McLean. ISBN 156518130 (paper).

- I.21 *Religion and the Relation between Civilizations: Lectures on Cooperation between Islamic and Christian Cultures in a Global Horizon*. George F. McLean. ISBN 1565181522 (paper).
- I.22 *Freedom, Cultural Traditions and Progress: Philosophy in Civil Society and Nation Building, Tashkent Lectures, 1999*. George F. McLean. ISBN 1565181514 (paper).
- I.23 *Ecology of Knowledge*. Jerzy A. Wojciechowski. ISBN 1565181581 (paper).
- I.24 *God and the Challenge of Evil: A Critical Examination of Some Serious Objections to the Good and Omnipotent God*. John L. Yardan. ISBN 1565181603 (paper).
- I.25 *Reason, Rationality and Reasonableness, Vietnamese Philosophical Studies, I*. Tran Van Doan. ISBN 1565181662 (paper).
- I.26 *The Culture of Citizenship: Inventing Postmodern Civic Culture*. Thomas Bridges. ISBN 1565181689 (paper).
- I.27 *The Historicity of Understanding and the Problem of Relativism in Gadamer's Philosophical Hermeneutics*. Osman Bilen. ISBN 1565181670 (paper).
- I.28 *Speaking of God*. Carlo Huber. ISBN 1565181697 (paper).
- I.29 *Persons, Peoples and Cultures in a Global Age: Metaphysical Bases for Peace between Civilizations*. George F. McLean. ISBN 1565181875 (paper).
- I.30 *Hermeneutics, Tradition and Contemporary Change: Lectures In Chennai/Madras, India*. George F. McLean. ISBN 1565181883 (paper).
- I.31 *Husserl and Stein*. Richard Feist and William Sweet, eds. ISBN 1565181948 (paper).
- I.32 *Paul Hanly Furfey's Quest for a Good Society*. Bronislaw Misztal, Francesco Villa, and Eric Sean Williams, eds. ISBN 1565182278 (paper).
- I.33 *Three Theories of Society*. Paul Hanly Furfey. ISBN 9781565182288 (paper).
- I.34 *Building Peace in Civil Society: An Autobiographical Report from a Believers' Church*. Paul Peachey. ISBN 9781565182325 (paper).
- I.35 *Karol Wojtyla's Philosophical Legacy*. Agnes B. Curry, Nancy Mardas and George F. McLean ,eds. ISBN 9781565182479 (paper).
- I.36 *Kantian Form and Phenomenological Force: Kant's Imperatives and the Directives of Contemporary Phenomenology*. Randolph C. Wheeler. ISBN 9781565182547 (paper).
- I.37 *Beyond Modernity: The Recovery of Person and Community in Global Times: Lectures in China and Vietnam*. George F. McLean. ISBN 9781565182578 (paper)
- I. 38 *Religion and Culture*. George F. McLean. ISBN 9781565182561 (paper).
- I.39 *The Dialogue of Cultural Traditions: Global Perspective*. William Sweet, George F. McLean, Tomonobu Imamichi, Safak Ural, O. Faruk Akyol, eds. ISBN 9781565182585 (paper).
- I.40 *Unity and Harmony, Compassion and Love in Global Times*. George F. McLean. ISBN 978-1565182592 (paper).

Series II. Africa

- II.1 *Person and Community: Ghanaian Philosophical Studies: I.* Kwasi Wiredu and Kwame Gyekye, eds. ISBN 1565180046 (paper); 1565180054 (cloth).
- II.2 *The Foundations of Social Life: Ugandan Philosophical Studies: I.* A.T. Dalfovo, ed. ISBN 1565180062 (paper); 156518007-0 (cloth).
- II.3 *Identity and Change in Nigeria: Nigerian Philosophical Studies, I.* Theophilus Okere, ed. ISBN 1565180682 (paper).
- II.4 *Social Reconstruction in Africa: Ugandan Philosophical studies, II.* E. Wamala, A.R. Byaruhanga, A.T. Dalfovo, J.K.Kigongo, S.A.Mwanahewa and G.Tusabe, eds. ISBN 1565181182 (paper).
- II.5 *Ghana: Changing Values/Changing Technologies: Ghanaian Philosophical Studies, II.* Helen Lauer, ed. ISBN 1565181441 (paper).
- II.6 *Sameness and Difference: Problems and Potentials in South African Civil Society: South African Philosophical Studies, I.* James R.Cochrane and Bastienne Klein, eds. ISBN 1565181557 (paper).
- II.7 *Protest and Engagement: Philosophy after Apartheid at an Historically Black South African University: South African Philosophical Studies, II.* Patrick Giddy, ed. ISBN 1565181638 (paper).
- II.8 *Ethics, Human Rights and Development in Africa: Ugandan Philosophical Studies, III.* A.T. Dalfovo, J.K. Kigongo, J. Kisekka, G. Tusabe, E. Wamala, R. Munyonyo, A.B. Rukooko, A.B.T. Byaruhanga-akiiki, M. Mawa, eds. ISBN 1565181727 (paper).
- II.9 *Beyond Cultures: Perceiving a Common Humanity: Ghanaian Philosophical Studies, III.* Kwame Gyekye ISBN 156518193X (paper).
- II.10 *Social and Religious Concerns of East African: A Wajibu Anthology: Kenyan Philosophical Studies, I.* Gerald J. Wanjohi and G. Wakuraya Wanjohi, eds. ISBN 1565182219 (paper).
- II.11 *The Idea of an African University: The Nigerian Experience: Nigerian Philosophical Studies, II.* Joseph Kenny, ed. ISBN 978-1565182301 (paper).
- II.12 *The Struggles after the Struggles: Zimbabwean Philosophical Study, I.* David Kaulemu, ed. ISBN 9781565182318 (paper).
- II.13 *Indigenous and Modern Environmental Ethics: A Study of the Indigenous Oromo Environmental Ethic and Modern Issues of Environment and Development: Ethiopian Philosophical Studies, I.* Workineh Kelbessa. ISBN 978 9781565182530 (paper).

Series IIA. Islam

- IIA.1 *Islam and the Political Order.* Muhammad Saïd al-Ashmawy. ISBN 156518047X (paper); 156518046-1 (cloth).
- IIA.2 *Al-Ghazali Deliverance from Error and Mystical Union with the Almighty: Al-munqidh Min al-Dadāl.* Critical Arabic edition and English translation by Muhammad Abulaylah and Nurshif Abdul-Rahim Rifat; Introduction and notes by George F. McLean. ISBN 1565181530

- (Arabic-English edition, paper), ISBN 1565180828 (Arabic edition, paper), ISBN 156518081X (English edition, paper)
- IIA.3 *Philosophy in Pakistan*. Naeem Ahmad, ed. ISBN 1565181085 (paper).
- IIA.4 *The Authenticity of the Text in Hermeneutics*. Seyed Musa Dibadj. ISBN 1565181174 (paper).
- IIA.5 *Interpretation and the Problem of the Intention of the Author: H.-G. Gadamer vs E.D. Hirsch*. Burhanettin Tatar. ISBN 156518121 (paper).
- IIA.6 *Ways to God, Personal and Social at the Turn of Millennia: The Iqbal Lectures, Lahore*. George F. McLean. ISBN 1565181239 (paper).
- IIA.7 *Faith, Reason and Philosophy: Lectures at Al-Azhar University, Qom, Tehran, Lahore and Beijing; Appendix: The Encyclical Letter: Fides et Ratio*. George F. McLean. ISBN 1565181301 (paper).
- IIA.8 *Islamic and Christian Cultures: Conflict or Dialogue: Bulgarian Philosophical Studies, III*. Plament Makariev, ed. ISBN 156518162X (paper).
- IIA.9 *Values of Islamic Culture and the Experience of History, Russian Philosophical Studies, I*. Nur Kirabaev, Yuriy Pochta, eds. ISBN 1565181336 (paper).
- IIA.10 *Christian-Islamic Preambles of Faith*. Joseph Kenny. ISBN 1565181387 (paper).
- IIA.11 *The Historicity of Understanding and the Problem of Relativism in Gadamer's Philosophical Hermeneutics*. Osman Bilen. ISBN 1565181670 (paper).
- IIA.12 *Religion and the Relation between Civilizations: Lectures on Cooperation between Islamic and Christian Cultures in a Global Horizon*. George F. McLean. ISBN 1565181522 (paper).
- IIA.13 *Modern Western Christian Theological Understandings of Muslims since the Second Vatican Council*. Mahmut Aydin. ISBN 1565181719 (paper).
- IIA.14 *Philosophy of the Muslim World: Authors and Principal Themes*. Joseph Kenny. ISBN 1565181794 (paper).
- IIA.15 *Islam and Its Quest for Peace: Jihad, Justice and Education*. Mustafa Köylü. ISBN 1565181808 (paper).
- IIA.16 *Islamic Thought on the Existence of God: Contributions and Contrasts with Contemporary Western Philosophy of Religion*. Cafer S. Yaran. ISBN 1565181921 (paper).
- IIA.17 *Hermeneutics, Faith, and Relations between Cultures: Lectures in Qom, Iran*. George F. McLean. ISBN 1565181913 (paper).
- IIA.18 *Change and Essence: Dialectical Relations between Change and Continuity in the Turkish Intellectual Tradition*. Sinasi Gunduz and Cafer S. Yaran, eds. ISBN 1565182227 (paper).
- IIA. 19 *Understanding Other Religions: Al-Biruni and Gadamer's "Fusion of Horizons"*. Kemal Ataman. ISBN 9781565182523 (paper).

Series III. Asia

- III.1 *Man and Nature: Chinese Philosophical Studies, I*. Tang Yi-jie, Li Zhen, eds. ISBN 0819174130 (paper); 0819174122 (cloth).

- III.2 *Chinese Foundations for Moral Education and Character Development: Chinese Philosophical Studies, II.* Tran van Doan, ed. ISBN 1565180321 (paper); 156518033X (cloth).
- III.3 *Confucianism, Buddhism, Taoism, Christianity and Chinese Culture: Chinese Philosophical Studies, III.* Tang Yijie. ISBN 1565180348 (paper); 156518035-6 (cloth).
- III.4 *Morality, Metaphysics and Chinese Culture (Metaphysics, Culture and Morality, I).* Vincent Shen and Tran van Doan, eds. ISBN 1565180275 (paper); 156518026-7 (cloth).
- III.5 *Tradition, Harmony and Transcendence.* George F. McLean. ISBN 1565180313 (paper); 156518030-5 (cloth).
- III.6 *Psychology, Phenomenology and Chinese Philosophy: Chinese Philosophical Studies, VI.* Vincent Shen, Richard Knowles and Tran Van Doan, eds. ISBN 1565180453 (paper); 1565180445 (cloth).
- III.7 *Values in Philippine Culture and Education: Philippine Philosophical Studies, I.* Manuel B. Dy, Jr., ed. ISBN 1565180412 (paper); 156518040-2 (cloth).
- III.7A *The Human Person and Society: Chinese Philosophical Studies, VIIA.* Zhu Dasheng, Jin Xiping and George F. McLean, eds. ISBN 1565180887.
- III.8 *The Filipino Mind: Philippine Philosophical Studies II.* Leonardo N. Mercado. ISBN 156518064X (paper); 156518063-1 (cloth).
- III.9 *Philosophy of Science and Education: Chinese Philosophical Studies IX.* Vincent Shen and Tran Van Doan, eds. ISBN 1565180763 (paper); 156518075-5 (cloth).
- III.10 *Chinese Cultural Traditions and Modernization: Chinese Philosophical Studies, X.* Wang Miaoyang, Yu Xuanmeng and George F. McLean, eds. ISBN 1565180682 (paper).
- III.11 *The Humanization of Technology and Chinese Culture: Chinese Philosophical Studies XI.* Tomonobu Imamichi, Wang Miaoyang and Liu Fangtong, eds. ISBN 1565181166 (paper).
- III.12 *Beyond Modernization: Chinese Roots of Global Awareness: Chinese Philosophical Studies, XII.* Wang Miaoyang, Yu Xuanmeng and George F. McLean, eds. ISBN 1565180909 (paper).
- III.13 *Philosophy and Modernization in China: Chinese Philosophical Studies XIII.* Liu Fangtong, Huang Songjie and George F. McLean, eds. ISBN 1565180666 (paper).
- III.14 *Economic Ethics and Chinese Culture: Chinese Philosophical Studies, XIV.* Yu Xuanmeng, Lu Xiaohe, Liu Fangtong, Zhang Rulun and Georges Enderle, eds. ISBN 1565180925 (paper).
- III.15 *Civil Society in a Chinese Context: Chinese Philosophical Studies XV.* Wang Miaoyang, Yu Xuanmeng and Manuel B. Dy, eds. ISBN 1565180844 (paper).
- III.16 *The Bases of Values in a Time of Change: Chinese and Western: Chinese Philosophical Studies, XVI.* Kirti Bunchua, Liu Fangtong, Yu Xuanmeng, Yu Wujin, eds. ISBN 156518114X (paper).
- III.17 *Dialogue between Christian Philosophy and Chinese Culture: Philosophical Perspectives for the Third Millennium: Chinese*

- Philosophical Studies, XVII.* Paschal Ting, Marian Kao and Bernard Li, eds. ISBN 1565181735 (paper).
- III.18 *The Poverty of Ideological Education: Chinese Philosophical Studies, XVIII.* Tran Van Doan. ISBN 1565181646 (paper).
- III.19 *God and the Discovery of Man: Classical and Contemporary Approaches: Lectures in Wuhan, China.* George F. McLean. ISBN 1565181891 (paper).
- III.20 *Cultural Impact on International Relations: Chinese Philosophical Studies, XX.* Yu Xintian, ed. ISBN 156518176X (paper).
- III.21 *Cultural Factors in International Relations: Chinese Philosophical Studies, XXI.* Yu Xintian, ed. ISBN 1565182049 (paper).
- III.22 *Wisdom in China and the West: Chinese Philosophical Studies, XXII.* Vincent Shen and Willard Oxtoby †. ISBN 1565182057 (paper)
- III.23 *China's Contemporary Philosophical Journey: Western Philosophy and Marxism: Chinese Philosophical Studies, XXIII.* Liu Fangtong. ISBN 1565182065 (paper).
- III.24 *Shanghai : Its Urbanization and Culture: Chinese Philosophical Studies, XXIV.* Yu Xuanmeng and He Xirong, eds. ISBN 1565182073 (paper).
- III.25 *Dialogue of Philosophies, Religions and Civilizations in the Era of Globalization: Chinese Philosophical Studies, XXV.* Zhao Dunhua, ed. ISBN 9781565182431 (paper).
- III.26 *Rethinking Marx: Chinese Philosophical Studies, XXVI.* Zou Shipeng and Yang Xuegong, eds. ISBN 9781565182448 (paper).
- III.27 *Confucian Ethics in Retrospect and Prospect: Chinese Philosophical Studies XXVII.* Vincent Shen and Kwong-loi Shun, eds. ISBN 9781565182455 (paper).
- IIIB.1 *Authentic Human Destiny: The Paths of Shankara and Heidegger: Indian Philosophical Studies, I.* Vensus A. George. ISBN 1565181190 (paper).
- IIIB.2 *The Experience of Being as Goal of Human Existence: The Heideggerian Approach: Indian Philosophical Studies, II.* Vensus A. George. ISBN 156518145X (paper).
- IIIB.3 *Religious Dialogue as Hermeneutics: Bede Griffiths's Advaitic Approach: Indian Philosophical Studies, III.* Kuruvilla Pandikattu. ISBN 1565181395 (paper).
- IIIB.4 *Self-Realization [Brahmaanubhava]: The Advaitic Perspective of Shankara: Indian Philosophical Studies, IV.* Vensus A. George. ISBN 1565181549 (paper).
- IIIB.5 *Gandhi: The Meaning of Mahatma for the Millennium: Indian Philosophical Studies, V.* Kuruvilla Pandikattu, ed. ISBN 1565181565 (paper).
- IIIB.6 *Civil Society in Indian Cultures: Indian Philosophical Studies, VI.* Asha Mukherjee, Sabujkali Sen (Mittra) and K. Bagchi, eds. ISBN 1565181573 (paper).
- IIIB.7 *Hermeneutics, Tradition and Contemporary Change: Lectures in Chennai/Madras, India.* George F. McLean. ISBN 1565181883 (paper).
- IIIB.8 *Plenitude and Participation: The Life of God in Man: Lectures in Chennai/Madras, India.* George F. McLean. ISBN 1565181999 (paper).

- IIIB.9 *Sufism and Bhakti, a Comparative Study: Indian Philosophical Studies, VII.* Md. Sirajul Islam. ISBN 1565181980 (paper).
- IIIB.10 *Reasons for Hope: Its Nature, Role and Future: Indian Philosophical Studies, VIII.* Kuruvilla Pandikattu, ed. ISBN 156518 2162 (paper).
- IIIB.11 *Lifeworlds and Ethics: Studies in Several Keys: Indian Philosophical Studies, IX.* Margaret Chatterjee. ISBN 9781565182332 (paper).
- IIIB.12 *Paths to the Divine: Ancient and Indian: Indian Philosophical Studies, X.* Vensus A. George. ISBN 9781565182486. (paper).
- IIIB.13 *Faith, Reason, Science: Philosophical Reflections with Special Reference to Fides et Ratio: Indian Philosophical Studies, XIII.* Varghese Manimala, ed. ISBN 9781565182554 (paper).
- IIIC.1 *Spiritual Values and Social Progress: Uzbekistan Philosophical Studies, I.* Said Shermukhamedov and Victoriya Levinskaya, eds. ISBN 1565181433 (paper).
- IIIC.2 *Kazakhstan: Cultural Inheritance and Social Transformation: Kazakh Philosophical Studies, I.* Abdumalik Nysanbayev. ISBN 1565182022 (paper).
- IIIC.3 *Social Memory and Contemporaneity: Kyrgyz Philosophical Studies, I.* Gulnara A. Bakieva. ISBN 9781565182349 (paper).
- IIID.1 *Reason, Rationality and Reasonableness: Vietnamese Philosophical Studies, I.* Tran Van Doan. ISBN 1565181662 (paper).
- IIID.2 *Hermeneutics for a Global Age: Lectures in Shanghai and Hanoi.* George F. McLean. ISBN 1565181905 (paper).
- IIID.3 *Cultural Traditions and Contemporary Challenges in Southeast Asia.* Warayuth Sriwarakuel, Manuel B.Dy, J.Haryatmoko, Nguyen Trong Chuan, and Chhay Yiheang, eds. ISBN 1565182138 (paper).
- IIID.4 *Filipino Cultural Traits: Claro R.Ceniza Lectures.* Rolando M. Gripaldo, ed. ISBN 1565182251 (paper).
- IIID.5 *The History of Buddhism in Vietnam.* Chief editor: Nguyen Tai Thu; Authors: Dinh Minh Chi, Ly Kim Hoa, Ha thuc Minh, Ha Van Tan, Nguyen Tai Thu. ISBN 1565180984 (paper).
- IIID.6 *Relations between Religions and Cultures in Southeast Asia.* Gadis Arivia and Donny Gahral Adian, eds. ISBN 9781565182509 (paper).

Series IV. Western Europe and North America

- IV.1 *Italy in Transition: The Long Road from the First to the Second Republic: The Edmund D. Pellegrino Lectures.* Paolo Janni, ed. ISBN 1565181204 (paper).
- IV.2 *Italy and the European Monetary Union: The Edmund D. Pellegrino Lectures.* Paolo Janni, ed. ISBN 156518128X (paper).
- IV.3 *Italy at the Millennium: Economy, Politics, Literature and Journalism: The Edmund D. Pellegrino Lectures.* Paolo Janni, ed. ISBN 1565181581 (paper).
- IV.4 *Speaking of God.* Carlo Huber. ISBN 1565181697 (paper).
- IV.5 *The Essence of Italian Culture and the Challenge of a Global Age.* Paolo Janni and George F. McLean, eds. ISBN 1565181778 (paper).

- IV.6 *Italic Identity in Pluralistic Contexts: Toward the Development of Intercultural Competencies*. Piero Bassetti and Paolo Janni, eds. ISBN 1565181441 (paper).

Series IVA. Central and Eastern Europe

- IVA.1 *The Philosophy of Person: Solidarity and Cultural Creativity: Polish Philosophical Studies, I*. A. Tischner, J.M. Zycinski, eds. ISBN 1565180496 (paper); 156518048-8 (cloth).
- IVA.2 *Public and Private Social Inventions in Modern Societies: Polish Philosophical Studies, II*. L. Dyczewski, P. Peachey, J.A. Kromkowski, eds. ISBN.paper 1565180518 (paper); 156518050X (cloth).
- IVA.3 *Traditions and Present Problems of Czech Political Culture: Czechoslovak Philosophical Studies, I*. M. Bednár and M. Vejraka, eds. ISBN 1565180577 (paper); 156518056-9 (cloth).
- IVA.4 *Czech Philosophy in the XXth Century: Czech Philosophical Studies, II*. Lubomír Nový and Jirí Gabriel, eds. ISBN 1565180291 (paper); 156518028-3 (cloth).
- IVA.5 *Language, Values and the Slovak Nation: Slovak Philosophical Studies, I*. Tibor Pichler and Jana Gašparí-ková, eds. ISBN 1565180372 (paper); 156518036-4 (cloth).
- IVA.6 *Morality and Public Life in a Time of Change: Bulgarian Philosophical Studies, I*. V. Prodanov and A. Davidov, eds. ISBN 1565180550 (paper); 1565180542 (cloth).
- IVA.7 *Knowledge and Morality: Georgian Philosophical Studies, I*. N.V. Chavchavadze, G. Nodia and P. Peachey, eds. ISBN 1565180534 (paper); 1565180526 (cloth).
- IVA.8 *Cultural Heritage and Social Change: Lithuanian Philosophical Studies, I*. Bronius Kuzmickas and Aleksandr Dobrynin, eds. ISBN 1565180399 (paper); 1565180380 (cloth).
- IVA.9 *National, Cultural and Ethnic Identities: Harmony beyond Conflict: Czech Philosophical Studies, IV*. Jaroslav Hroch, David Hollan, George F. McLean, eds. ISBN 1565181131 (paper).
- IVA.10 *Models of Identities in Postcommunist Societies: Yugoslav Philosophical Studies, I*. Zagorka Golubovic and George F. McLean, eds. ISBN 1565181211 (paper).
- IVA.11 *Interests and Values: The Spirit of Venture in a Time of Change: Slovak Philosophical Studies, II*. Tibor Pichler and Jana Gasparikova, eds. ISBN 1565181255 (paper).
- IVA.12 *Creating Democratic Societies: Values and Norms: Bulgarian Philosophical Studies, II*. Plamen Makariev, Andrew M.Blasko and Asen Davidov, eds. ISBN 156518131X (paper).
- IVA.13 *Values of Islamic Culture and the Experience of History: Russian Philosophical Studies, I*. Nur Kirabaev and Yuriy Pochta, eds. ISBN 1565181336 (paper).
- IVA.14 *Values and Education in Romania Today: Romanian Philosophical Studies, I*. Marin Calin and Magdalena Dumitrana, eds. ISBN 1565181344 (paper).

- IVA.15 *Between Words and Reality, Studies on the Politics of Recognition and the Changes of Regime in Contemporary Romania: Romanian Philosophical Studies, II.* Victor Neumann. ISBN 1565181611 (paper).
- IVA.16 *Culture and Freedom: Romanian Philosophical Studies, III.* Marin Aiftinca, ed. ISBN 1565181360 (paper).
- IVA.17 *Lithuanian Philosophy: Persons and Ideas: Lithuanian Philosophical Studies, II.* Jurate Baranova, ed. ISBN 1565181379 (paper).
- IVA.18 *Human Dignity: Values and Justice: Czech Philosophical Studies, III.* Miloslav Bednar, ed. ISBN 1565181409 (paper).
- IVA.19 *Values in the Polish Cultural Tradition: Polish Philosophical Studies, III.* Leon Dyczewski, ed. ISBN 1565181425 (paper).
- IVA.20 *Liberalization and Transformation of Morality in Post-communist Countries: Polish Philosophical Studies, IV.* Tadeusz Buksinski. ISBN 1565181786 (paper).
- IVA.21 *Islamic and Christian Cultures: Conflict or Dialogue: Bulgarian Philosophical Studies, III.* Plament Makariev, ed. ISBN 156518162X (paper).
- IVA.22 *Moral, Legal and Political Values in Romanian Culture: Romanian Philosophical Studies, IV.* Mihaela Czobor-Lupp and J. Stefan Lupp, eds. ISBN 1565181700 (paper).
- IVA.23 *Social Philosophy: Paradigm of Contemporary Thinking: Lithuanian Philosophical Studies, III.* Jurate Morkuniene. ISBN 1565182030 (paper).
- IVA.24 *Romania: Cultural Identity and Education for Civil Society: Romanian Philosophical Studies, V.* Magdalena Dumitrana, ed. ISBN 156518209X (paper).
- IVA.25 *Polish Axiology: the 20th Century and Beyond: Polish Philosophical Studies, V.* Stanislaw Jedynak, ed. ISBN 1565181417 (paper).
- IVA.26 *Contemporary Philosophical Discourse in Lithuania: Lithuanian Philosophical Studies, IV.* Jurate Baranova, ed. ISBN 156518-2154 (paper).
- IVA.27 *Eastern Europe and the Challenges of Globalization: Polish Philosophical Studies, VI.* Tadeusz Buksinski and Dariusz Dobrzanski, ed. ISBN 1565182189 (paper).
- IVA.28 *Church, State, and Society in Eastern Europe: Hungarian Philosophical Studies, I.* Miklós Tomka. ISBN 156518226X.
- IVA.29 *Politics, Ethics, and the Challenges to Democracy in 'New Independent States': Georgian Philosophical Studies, II.* Tinatin Bochorishvili, William Sweet, Daniel Ahern, eds. ISBN 9781565182240 (paper).
- IVA.30 *Comparative Ethics in a Global Age: Russian Philosophical Studies II.* Marietta T. Stepanyants, eds. ISBN 978-1565182356 (paper).
- IVA.31 *Identity and Values of Lithuanians: Lithuanian Philosophical Studies, V.* Aida Savicka, eds. ISBN 9781565182367 (paper).
- IVA.32 *The Challenge of Our Hope: Christian Faith in Dialogue: Polish Philosophical Studies, VII.* Waclaw Hryniewicz. ISBN 9781565182370 (paper).
- IVA.33 *Diversity and Dialogue: Culture and Values in the Age of Globalization: Essays in Honour of Professor George F. McLean.*

- Andrew Blasko and Plamen Makariev, eds. ISBN 9781565182387 (paper).
- IVA.34 *Civil Society, Pluralism and Universalism: Polish Philosophical Studies, VIII.* Eugeniusz Gorski. ISBN 9781565182417 (paper).
- IVA.35 *Romanian Philosophical Culture, Globalization, and Education: Romanian Philosophical Studies VI.* Stefan Popenici and Alin Tat and, eds. ISBN 9781565182424 (paper).
- IVA.36 *Political Transformation and Changing Identities in Central and Eastern Europe: Lithuanian Philosophical Studies, VI.* Andrew Blasko and Diana Janušauskienė, eds. ISBN 9781565182462 (paper).
- IVA.37 *Truth and Morality: The Role of Truth in Public Life: Romanian Philosophical Studies, VII.* Wilhelm Dancă, ed. ISBN 9781565182493 (paper).
- IVA.38 *Globalization and Culture: Outlines of Contemporary Social Cognition: Lithuanian Philosophical Studies, VII.* Jurate Morkuniene, ed. ISBN 9781565182516 (paper).

Series V. Latin America

- V.1 *The Social Context and Values: Perspectives of the Americas.* O. Pegoraro, ed. ISBN 081917355X (paper); 0819173541 (cloth).
- V.2 *Culture, Human Rights and Peace in Central America.* Raul Molina and Timothy Ready, eds. ISBN 0819173576 (paper); 0819173568 (cloth).
- V.3 *El Cristianismo Aymara: Inculturacion o Culturizacion?* Luis Jolicoeur. ISBN 1565181042.
- V.4 *Love as the Foundation of Moral Education and Character Development.* Luis Ugalde, Nicolas Barros and George F. McLean, eds. ISBN 1565180801.
- V.5 *Human Rights, Solidarity and Subsidiarity: Essays towards a Social Ontology.* Carlos E.A. Maldonado ISBN 1565181107.

Series VI. Foundations of Moral Education

- VI.1 *Philosophical Foundations for Moral Education and Character Development: Act and Agent.* G. McLean and F. Ellrod, eds. ISBN 156518001-1 (cloth) (paper); ISBN 1565180003.
- VI.2 *Psychological Foundations for Moral Education and Character Development: An Integrated Theory of Moral Development.* R. Knowles, ed. ISBN 156518002X (paper); 156518003-8 (cloth).
- VI.3 *Character Development in Schools and Beyond.* Kevin Ryan and Thomas Lickona, eds. ISBN 1565180593 (paper); 156518058-5 (cloth).
- VI.4 *The Social Context and Values: Perspectives of the Americas.* O. Pegoraro, ed. ISBN 081917355X (paper); 0819173541 (cloth).
- VI.5 *Chinese Foundations for Moral Education and Character Development.* Tran van Doan, ed. ISBN 1565180321 (paper); 156518033 (cloth).
- VI.6 *Love as the Foundation of Moral Education and Character Development.* Luis Ugalde, Nicolas Barros and George F. McLean, eds. ISBN 1565180801.

Series VII. Seminars on Culture and Values

- VII.1 *The Social Context and Values: Perspectives of the Americas*. O. Pegoraro, ed. ISBN 081917355X (paper); 0819173541 (cloth).
- VII.2 *Culture, Human Rights and Peace in Central America*. Raul Molina and Timothy Ready, eds. ISBN 0819173576 (paper); 0819173568 (cloth).
- VII.3 *Relations Between Cultures*. John A. Kromkowski, ed. ISBN 1565180089 (paper); 1565180097 (cloth).
- VII.4 *Moral Imagination and Character Development: Volume I, The Imagination*. George F. McLean and John A. Kromkowski, eds. ISBN 1565181743 (paper).
- VII.5 *Moral Imagination and Character Development: Volume II, Moral Imagination in Personal Formation and Character Development*. George F. McLean and Richard Knowles, eds. ISBN 1565181816 (paper).
- VII.6 *Moral Imagination and Character Development: Volume III, Imagination in Religion and Social Life*. George F. McLean and John K. White, eds. ISBN 1565181824 (paper).
- VII.7 *Hermeneutics and Inculturation*. George F. McLean, Antonio Gallo, Robert Magliola, eds. ISBN 1565181840 (paper).
- VII.8 *Culture, Evangelization, and Dialogue*. Antonio Gallo and Robert Magliola, eds. ISBN 1565181832 (paper).
- VII.9 *The Place of the Person in Social Life*. Paul Peachey and John A. Kromkowski, eds. ISBN 1565180127 (paper); 156518013-5 (cloth).
- VII.10 *Urbanization and Values*. John A. Kromkowski, ed. ISBN 1565180100 (paper); 1565180119 (cloth).
- VII.11 *Freedom and Choice in a Democracy, Volume I: Meanings of Freedom*. Robert Magliola and John Farrelly, eds. ISBN 1565181867 (paper).
- VII.12 *Freedom and Choice in a Democracy, Volume II: The Difficult Passage to Freedom*. Robert Magliola and Richard Khuri, eds. ISBN 1565181859 (paper).
- VII.13 *Cultural Identity, Pluralism and Globalization* (2 volumes). John P. Hogan, ed. ISBN 1565182170 (paper).
- VII.14 *Democracy: In the Throes of Liberalism and Totalitarianism*. George F. McLean, Robert Magliola, William Fox, eds. ISBN 1565181956 (paper).
- VII.15 *Democracy and Values in Global Times: With Nigeria as a Case Study*. George F. McLean, Robert Magliola, Joseph Abah, eds. ISBN 1565181956 (paper).
- VII.16 *Civil Society and Social Reconstruction*. George F. McLean, ed. ISBN 1565180860 (paper).
- VII.17 *Civil Society: Who Belongs?* William A. Barbieri, Robert Magliola, Rosemary Winslow, eds. ISBN 1565181972 (paper).
- VII.18 *The Humanization of Social Life: Theory and Challenges*. Christopher Wheatley, Robert P. Badillo, Rose B. Calabretta, Robert Magliola, eds. ISBN 1565182006 (paper).
- VII.19 *The Humanization of Social Life: Cultural Resources and Historical Responses*. Ronald S. Calinger, Robert P. Badillo, Rose B. Calabretta, Robert Magliola, eds. ISBN 1565182006 (paper).

- VII.20 *Religious Inspiration for Public Life: Religion in Public Life, Volume I.* George F. McLean, John A. Kromkowski and Robert Magliola, eds. ISBN 1565182103 (paper).
- VII.21 *Religion and Political Structures from Fundamentalism to Public Service: Religion in Public Life, Volume II.* John T. Ford, Robert A. Destro and Charles R. Dechert, eds. ISBN 1565182111 (paper).
- VII.22 *Civil Society as Democratic Practice.* Antonio F. Perez, Semou Pathé Gueye, Yang Fenggang, eds. ISBN 1565182146 (paper).
- VII.23 *Ecumenism and Nostra Aetate in the 21st Century.* George F. McLean and John P. Hogan, eds. ISBN 1565182197 (paper).
- VII.24 *Multiple Paths to God: Nostra Aetate: 40 years Later.* John P. Hogan, George F. McLean & John A. Kromkowski, eds. ISBN 1565182200 (paper).
- VII.25 *Globalization and Identity.* Andrew Blasko, Taras Dobko, Pham Van Duc and George Pattery, eds. ISBN 1565182200 (paper).
- VII.26 *Communication across Cultures: The Hermeneutics of Cultures and Religions in a Global Age.* Chibueze C. Udeani, Veerachart Nimanong, Zou Shipeng, Mustafa Malik, eds. ISBN: 9781565182400 (paper).

The International Society for Metaphysics

- ISM.1 *Person and Nature.* George F. McLean and Hugo Meynell, eds. ISBN 0819170267 (paper); 0819170259 (cloth).
- ISM.2 *Person and Society.* George F. McLean and Hugo Meynell, eds. ISBN 0819169250 (paper); 0819169242 (cloth).
- ISM.3 *Person and God.* George F. McLean and Hugo Meynell, eds. ISBN 0819169382 (paper); 0819169374 (cloth).
- ISM.4 *The Nature of Metaphysical Knowledge.* George F. McLean and Hugo Meynell, eds. ISBN 0819169277 (paper); 0819169269 (cloth).
- ISM.5 *Philosophical Challenges and Opportunities of Globalization.* Oliva Blanchette, Tomonobu Imamichi and George F. McLean, eds. ISBN 1565181298 (paper).
- ISM.6 *The Dialogue of Cultural Traditions: Global Perspective.* William Sweet, George F. McLean, Tomonobu Imamichi, Safak Ural, O. Faruk Akyol, eds. ISBN 9781565182585 (paper).

The series is published by: The Council for Research in Values and Philosophy, Cardinal Station, P.O. Box 261, Washington, D.C. 20064; Telephone and Fax: 202/319-6089; e-mail: cua-rvp@cua.edu; website: <http://www.crvp.org>.

The series is distributed by: The Council for Research on Values and Philosophy – OST, 285 Oblate Drive, San Antonio, T.X., 78216; Telephone: (210)341-1366 x205; Email: mmartin@ost.edu.