Chapter Four

Knowledge and the Conceptual World

Theory of Knowledge

The quest for knowledge is unending and when this search matures it turns from a still fragmentary view of world to an examination of the processes through which this view develops. Unnumbered phenomena may be examined without regard to the ways of knowing, and most of the monumental accomplishments of mind are attained without specific reflection upon the intellectual processes by which they were achieved. Indeed, the mind that is intensively pursuing a particular problem is likely to find that to reflect upon methods of thought is a hindrance and a distraction from its task. Responsible and intelligent thinkers often disdain the inquiry concerning knowledge. Such distrust of epistemology seems to have reached a new height in our own day when even men who profess to be philosophers and who claim the theory of knowledge to be their proper business abandon it as a poor cause and advise the aspiring student to devote his time to more useful enterprises. Yet to the uncommitted mind, neglecting the theory of knowledge will still seem incongruous if not downright irresponsible when virtually all our intellectual activity presupposes ~~requires~~ that knowledge should be valid. Considering what importance both public and private knowledge hold for the life of the mind, can we conscientiously refuse to examine knowledge? May we blithely endorse it for what it appears?

The circumstances of historical development have raised the problem of knowledge to a new pitch of difficulty. The technological revolution whose beginning coincides with the invention of the printing press has vastly multiplied the treasury of factual knowledge accessible to every individual. Before our own eyes, more advanced inventions such as that of microphotography and electronic computation have served to increase both the amount and the availability of knowledge. The very profusion of facts and their impressive technical usefulness appear to warrant their truth. The pragmatic value of factual information has created an atmosphere of opinion in which it seems trivial to ask about the meaning of knowledge. At the same time the accumulation of innumerable facts in many diverse fields of study has made the general inquiry into their meaning all the more difficult. Yet when new facts are discovered, new problems appear with them, and as facts multiply, so do their uncertainties. The growth of knowledge itself creates the ever more urgent need for a theory of knowledge. Epistemology* is not on the agenda of contemporary research because the rules for applying new knowledge arise out of the circumstances in which this knowledge is discovered. Epistemological problems are seldom stated explicitly because they are everywhere adjudicated by practical necessity, by convention and custom. When

* This term is used interchangeably with theory of knowledge.

our interest in knowledge demands more than its technical usefulness, epistemological problems that had been ignored in practice become explicit in theory. The individual for whom knowledge is more than an instrument will sooner or later arrive at the point where epistemology is not only no longer irrelevant but becomes indispensable to further understanding.

Inasmuch as knowledge seems to exist in the organization, integration, and application of facts, a theory of knowledge that proceeds from experience might be expected to examine directly the facts themselves. Indeed, most theories of knowledge that have been developed appear to be oriented toward the supposed facts of some scientific system with which the investigator considers himself more or less familiar. In our day knowledge of a scientific sort is commonplace, and it is elaborately if not always convincingly demonstrated in the multitude of textbooks. However, the reliance upon facts is not so safe as it seems: invariably facts are defined only in the context in which they are presented. The field of knowledge to which a presumed fact belongs is never entirely or consistently mapped out. A given fact is inevitably qualified and occasionally negated by other facts no less valid but only less apparent. The very multitude of facts serves only to puzzle us. In their totality, facts are incomprehensible; in isolation they lose

their force. We understand the particular fact as a congruent particle in an inclusive scheme. Its significance depends primarily upon the framework within which it appears. Facts only become meaningful within a frame of reference which as a rule is hypothetical and undefined. Our acceptance of the background against which facts become meaningful is a disguised prejudgment of their validity.

The discrete facts that are thought to be the building blocks of science are elusive. When such a 'fact', arbitrarily isolated, is subjected to closer scrutiny, its meaning is found to be quite inseparable from the logical scheme to which it belongs and from the habits of thought by which it is usually evaluated. That facts should exist in isolation is an amateurish notion, unconvincing to anyone who has ever studied their origin and their meaning. Statements of fact that may impress the casual reader will hardly satisfy the scientist. For him the fact is not a self-sufficient proposition, but an instrument with which he works, a tool that is itself invented, utilized, and ultimately superceded. Therefore it is incongruous in an epistemological investigation to refer to facts as examples of knowledge.

The elusiveness of facts and the impropriety of relying upon remote and hypothetical knowledge lead us to a very different approach to the theory of knowledge. Evidently knowledge involves two factors: mind which knows and nature which is known. Traditionally epistemology has looked to knowledge for an image or model of nature. In contrast to this accepted approach, we shall attempt to describe the function that knowledge, whatever it may be, fulfills for the inquiring mind. The theory of knowledge must also be framed with a view to consciousness, for it is consciousness that will be gratified with valid knowledge safely possessed or disillusioned by the evanescence of spurious knowledge, however the case may be. An obvious point for beginning is the well-known discrepancy between knowledge desired and knowledge in fact possessed. The disappointment entailed in every serious attempt to acquire and to preserve knowledge is familiar to all conscientious students. The progress of science has never relieved the despair of Doctor Faust. The search for knowledge brings with it disillusionment; the awareness of the limitations of knowledge is a suitable beginning for investigating it. Resentful disappointment no less than a deep and enduring love of knowledge provides a persistent motive for epistemology. One is likely to forget that knowledge is very precious to mind. Not only is it an instrument for improving

and controlling one's environment, it is also an indispensable constituent of each man's personality. To a larger measure than one is usually aware, the mind itself is both manifested and limited by what it knows.

The dependence of mind upon knowledge is obscured by the wide dissemination and the intensive practical application of knowledge that are characteristic of our modern scientific world. We benefit from much knowledge that we do not possess. Knowledge which leaves us material wealth may yet be unable to allay our intellectual poverty. Each one of us is beneficiary to a treasury of knowledge that he himself cannot comprehend and of the existence of which he may not even be aware. In daily life we constantly rely upon instruments and appliances whose construction requires skill and knowledge that only few individuals possess. Even fewer are capable of the invention and discovery that makes such instruments possible. Although foreign knowledge possesses value, it will hardly satisfy the mind's need for its own private knowledge. Our intellectual poverty is usually obscured by the benefits that we derive from borrowed knowledge. Our education does little to help us; more often than not it trains us to be specialized technicians as if what little knowledge we finally came to possess were merely ours to hold in trust for the benefit of society. Each technician sees only

his own part of knowledge; his view of the entirety is hazy and hypothetical, for him a matter of faith not of experience. This society of technicians has puzzling conventions. It matters only that some particle of knowledge should be known by someone, be he a teacher in a university, a technician in a laboratory, a physician or a lawyer whose skills are for hire. The mere existence of such alien knowledge seems to bring it within the compass of individual possession. In this way the administrators of industry and government utilize such knowledge as they have virtually borrowed from the scientists whom they employ. Even the scientist himself comes to rely heavily on the knowledge and skills of others in all fields that are not specifically his. His own proficiency will be limited to a very narrow region of the hypothetical totality of knowledge. As his peculiar abilities benefit other members of society, so he himself profits from the specialized knowledge that they possess. The usefulness of foreign knowledge persuades us to endorse it as true. The equation between technical value and truth is plausible, perhaps inescapable. However, there is another sense in which we may not apply the criterion of truth to knowledge remote from us, but only to that knowledge which is now before the mind. These two different kinds of truth must be distinguished.

That knowledge should become beneficial to many individuals who do not possess it is one of the unrecognized virtues of society. Yet the benefits of borrowed knowledge must not be confused with the value of possession itself. Ultimately, knowledge is the function of each individual mind; no matter how useful another's knowledge may become to me, it can never substitute for what I know myself. Therefore to the conscientious mind knowledge ultimately always becomes an individual problem. The problem about knowledge concerns not what other men know or what may ultimately be known by the human race or what might be intelligible in another world. The question about knowledge is simply: "What do I know?" This question is in the present tense; it ought not be confused with the question about knowledge in past or in the future. What must matter is only what I know at this moment. When this question is asked with the urgency that is its due, it will penetrate professional pretensions and shatter the conventions of higher learning. To inquire searchingly, "What do I know?" is to recognize an old problem in a new light. The purpose of the present chapter is to present the question about knowledge in this new way and to pursue some of its answers to their radical implications.

To transform the question "What is knowledge?" to the query "What do I know?" is a more difficult undertaking than might be supposed. Knowledge has become strikingly public in the

contemporary world. The free exchange of information, the ease of publication, the almost unlimited dissemination of scholarly and technical books, have made the intellectual culture of our time a truly common one. Each day this universality of knowledge seems to bear new fruits of success. This unitary conceptual world in which we all trust is an awesome accomplishment of the human mind, and we must hesitate to disparage what we cannot but admire in amazement. Dependent as we are upon this conceptual world for the support of all intellectual activity and for many practical advantages of life, we may appear to have embarked upon an insincere if not nefarious undertaking when we presume to draw into question even a single aspect of this common achievement. Yet reluctance to accept the common conceptual world as adequate to the requirements of the individual mind is not without precedent in our intellectual tradition. From time to time this conceptual world has been critically tested and its sufficiency to individual thought has been rigorously examined. This sort of inquiry Socrates practiced upon the Athenians. Descartes' rhetorical decision to suspend his acceptance of all knowledge remote from consciousness suggests a similar concern. The 'Epoche' of modern phenomenology is a contemporary attempt to establish a comparable attitude. The individual's desire for knowledge is frequently assuaged by the rationalization that something which is 'known' might be known

by me also except for the accidental limitations of time and place. The illusion is rife that if only the individual had adequate opportunity he might appropriate all knowledge to himself. In practice it happens that a man devotes himself to some particular segment of knowledge in which he becomes proficient. Then his mastery in a limited field gives him the symbolic satisfaction of controlling the whole. On frequent occasions, however, that adaptation fails and the individual mind can no longer acquiesce in the limitations of its knowledge. Then begins a restless search for new knowledge which serves to mitigate the dissatisfaction with what has already been discovered. The disillusionment with one's own knowledge is not so rare as we might think. If we but look beneath the surface of academic convention, we will see many men of intelligence yearning for knowledge that they cannot have and dissatisfied with that which they possess.

From an uncritical point of view, knowledge appears as a reflection only of the natural world, quite independent of the knower. As such, knowledge presents itself as the partially successful attempt of mind to comprehend the reality of nature. The characteristics of nature are presumed to be the sole determinant of the content of knowledge, to which the quality of self is thought to be quite irrelevant. Paradoxically, such absolute neglect of self in constructing an explanation of knowledge implies

the absolute presupposition of qualities of self unrecognized and undefined. If knowledge is an activity of mind, then the exclusion of mind from the analysis of knowledge implies that mind was taken for granted. Potentially or actually knowledge must always be known by myself or someone like me. Therefore self, whatever it may be, is essential to knowledge. Whatever is essential to the argument and is yet excluded from it, is implicitly posited as absolute to the argument. If the qualities of self affect knowledge and are nonetheless omitted from its analysis, then such analysis presupposes undefined qualities of self. This fact escapes those ambitious thinkers who advocate excluding all non-objective elements from knowledge. They are trapped in a methodological error that leads them by a back door into the very same metaphysical asylum from which they were trying so desperately to escape. Knowledge will inevitably be distorted unless it be interpreted in conjunction with the mind that knows. To regard knowledge without reference to self is no less incongruous than to consider it apart from its object in nature.

Knowledge is a relationship between mind and nature the specific qualities of which remain to be defined. Whatever knowledge may prove to be, we may expect it to reflect characteristics both of self and of world. Is it possible to explain

knowledge without first obtaining an adequate apprehension of its subject, mind, and of its object, world? Is the analysis of knowledge to become the source of certainty concerning both mind and nature? The history of modern philosophy is the account of repeated attempts to found our understanding both of self and of world upon the analysis of knowledge. Therefore the theory of knowledge is usually presumed to criticize and to correct other intellectual endeavors. Probably such presumptions are responsible for the significance attached to the theory of knowledge on the one hand and for the contempt that it so frequently evokes on the other. Consistent with its critical presumptions, the theory of knowledge has asked: "How do we know?" and "How is knowledge possible?" Kant phrased these questions in his Critique of Pure Reason and many thinkers have followed him in his formulation of the problem. They all assume that the valid existence of knowledge was beyond inquiry. The fact and the extent of our knowledge seems so evident as to admit no doubt and to require no explanation. Insight into the structure of knowledge is thought to lead to its refinement and correction.

From our point of view, the traditional theory of knowledge is at once too credulous and too presumptuous. On the one hand, we consider it imprudent to assume that we possess knowledge at all in the conventional sense of the term. The term knowledge

is burdened with many vague connotations. We must clearly keep in mind what the conventional use of the term knowledge implies, and these implications we must compare with the content of knowledge actually accessible to us. It may then appear either that we possess no knowledge at all, or if we wish to preserve the term knowledge to apply to what we possess, that the definition of knowledge should be radically revised. On the other hand, we recognize that the processes of knowledge, whatever they be, have been the practical concern of the most intelligent of men in all branches of learning. One will surely make himself ridiculous by presuming to invent a logical ladder to lift him above the practical concerns of learning. Knowledge is real, tangible, and will not permit itself to be deprecated. If the theory of knowledge must not reasonably be expected to contribute to the improvement of practical knowledge except indirectly, perhaps it will prove to have other benefits. If the theory of knowledge is to be meaningful, it must be consistent; and if it is to be consistent, it must begin at the very beginning. It may not assume that we know. It must ask whether we know. Initially it must draw into question the very fact of knowing. Subsequently the theory of knowledge might proceed more confidently to examine what we know, if anything, and then, how we know it.

We ought never rely on the theory of knowledge to improve the content of knowledge. The attempt to employ theory of knowledge to correct our notions of self and world is redundant; it represents a logical circle. To understand the processes of knowledge, we must first understand both ourselves and our world. All attempts to explain the nature of knowledge which presume uncritically the reality of self or of world are predestined to failure. Before we can say what knowledge is, we must determine what we, who know, are, and what the world is, which is known. If there were an error in our knowledge of world or in our application of that knowledge, then that error would never be revealed by the study of knowledge but only by the study of world itself.

It is wise to keep our minds open to the possibility that knowledge might not be at all what it appears. Problems of theory of knowledge seem to be at the root of the modern philosophical dilemma; to speak more accurately, they are in fact at its surface and they prevent our penetrating to more significant problems. Questions about knowledge are at the surface insofar as they presume that we 'know' what in fact we do not know. So long as we rely on the belief that ~~the~~ knowledge such as it is taught in schools and colleges is valid as it represents itself, we become trapped in numerous problems that are insoluble

merely because the premises on which they rest are false. Our prejudices concerning knowledge derive tenuous and insecure protection from our belief that the functional validity of knowledge assures the conceptual correctness of our ideas both about self and about world.

Historical circumstance has shaped the problem of knowledge. We have witnessed a revolution in our relationship to nature, and we have not yet invented patterns of thought to give consistent explanation to the new order. For better or for worse, this revolution has been brought about in the name of knowledge, although 'knowledge' perhaps is not so much its cause as its consequence. Experimentally established methods have given us incredible power for exploiting and manipulating nature. The very effectiveness of this utilization of nature induces us to assume that the knowledge instrumental to our efforts is valid in all its pretenses. However it is conceivable that knowledge should be functionally effective, yet conceptually incomplete. It is possible to do the right thing for the wrong reason. Unless effectiveness and truth were to be equated, knowledge might well be effective without being true. When the structure and function of knowledge are rigorously analyzed, the concept truth may find more cogent applications.

Knowledge as Function

Our habits of speech themselves suggest the distinction between knowing how and knowing that. Knowing how refers to functional knowledge; knowing that implies conceptual knowledge. In practice functional and conceptual knowledge are usually so mingled that they are difficult to separate. Our colloquial use of the term knowledge refers indiscriminately to them both. Knowledge as it is preserved in textbooks would seem to be primarily conceptual, but we shall show that even conceptual knowledge is cogent only where it is functional, i.e. capable of influencing other thought or action. The reverse is not the case. Functional knowledge is not dependent upon concept; it is self-sufficient; it is practical quite apart from conceptual formulation. Functional knowledge is the expression of our ability to learn, to fit our skills to a problem, to apply ourselves to a purpose. We may learn <u>how</u> to do something without ever translating our knowledge into logical definition. Thus functional knowledge appears as an original faculty of mind, comparable to the faculty of speech or of vision, comparable again to the faculty of conceptual thought. Because functional knowledge is found to some degree in many circumstances where concept cannot possibly apply, we consider it prior to conceptual knowledge. Functional knowledge is a faculty essential for human life; among the animals we recognize abilities analogous to it.

Functional knowledge is implicit in all activity to which the phrase 'knowing how' is applicable. The bird knows how to fly, how to sing, and how to build his nest. It will be argued that these abilities require only instinct and that the term knowledge is applied to them only metaphorically. Yet the line between instinct and functional knowledge would be hard to draw. The new-born child, for example, knows how to suck, how to breathe, and how to cry. He knows 'how' long before he knows 'that' he is crying. We call these abilities instinctive, and perhaps we consider them related to knowledge at all only because we happen to use the word 'know' to describe them. More likely the distinction between instinct and knowledge is arbitrary. It may not be possible to distinguish generically between knowing how to cry and knowing how to sing, between knowing how to mutter sounds of emotion and knowing how to talk, between knowing how to move one's arms or legs, and knowing how to walk or dance. The more primitive of such functions appear to be acquired by the individual even without instruction; others must be taught and inculcated by practice. The child who is deliberately taught learns to speak more readily than he who is left to learn solely by imitation. The child who is totally isolated will never learn to speak at all. Functional knowledge is acquired when natural ability and environmental nurture reinforce each other. Perhaps in studying man's nature we have traditionally made too rigid a distinction

between him and his environment. Probably we should consider the natural and social world no less a part of human nature than the physical endowment through which heredity is expressed and upon which the environment acts. The functionally meaningful interaction between man and his environment must be understood as an integral part of human life.

Functional knowledge is instinctive only in part; much of it is acquired by learning, deliberate or unconscious as the case might be. The beginning of the learning process is the propensity to imitate. We unconsciously identify ourselves with the individual whose activity we observe. We desire that his doing should become our doing also. Then we imitate him and his activity becomes our activity, and we, incidentally, become like him. This ability to imitate explains our need of teachers in all areas of endeavor. The many manual skills with which we are familiar, the ability to play upon musical instruments, the use of native and of foreign language, are examples of functional knowledge acquired by imitation. Probably the larger part of imitation is unconscious. The child imitates the facial expression of his parents, their habits, their posture, and their language. The student imitates his teacher's thought and style. Imitations of expression, of feeling, of physical motion, of thought and of speech may be recognized. Such imitation is so common as to be

taken for granted. At the same time it is one of the primary characteristics of human nature. In view of its fundamental importance, it is strange that the mechanism of imitation should not have been more thoroughly studied.

The action that is initially acquired by imitation is confirmed by repetition. To repeat an action that we have once performed is literally to imitate ourselves. Our action then will no longer be dependent upon the particular circumstances in which we first learn. Henceforth our activity will proceed as it were from within ourselves. We then say that we possess ability; we have acquired functional knowledge. This process of learning we take for granted and we fail to credit it with the vast importance in shaping our lives that belongs to it. This ability to learn must be understood as one of the most fundamental of biological characteristics, comparable to the capacity of perception and to the power of locomotion. The psychologists or the biologists may analyze the power of imitative learning further. For us it is sufficient merely to recognize its existence.

Our capacity to imitate and to repeat, to learn and to remember, soon creates numerous situations where knowledge once acquired is strengthened by other knowledge. Ability fosters ability until we have become masters of a complex hierarchy of skills. All such abilities are examples of

functional knowledge. To list them is to make a catalogue of the actions that comprise our lives. In our own abilities we then become representatives of that knowledge which we may transmit to others by example and by instruction. We recognize ourselves to be the heirs, the guardians and teachers of a large and varied treasury of functional knowledge. We learn to use and to transmit this knowledge, frequently unaware of the value of what we receive and what we give.

The origins of functional knowledge must be sought in the biological adaptability of the organism, in its capacity to profit from trial and error. The scope and effectiveness of functional knowledge is much enhanced by our ability to acquire it at second hand. We do not always need to learn from our own mistakes; we may imitate the examples set by a teacher or we may follow his verbal instructions. Our ability to derive functional knowledge from the spoken word and from the written document makes it possible for us to profit from the knowledge of powerful minds far removed from us in space and time. In this way knowledge that has been gleaned under the most diverse circumstances accrues to him who is able to read. Once language is established, the large number of skills that are acquired by experience may be more readily disseminated. Transmitted from generation to generation, they enable one century

to build upon the foundation laid by the previous one. The ability to form concepts and to express them in language gives a new dimension to functional knowledge. Language makes possible the dissemination, preservation, and communication of functional knowledge in an extraordinarily effective way. So efficient is language in this respect that knowledge has become closely identified with it. When we refer to knowledge, we usually mean the totality of the linguistic tradition that is instrumental to our acquiring and preserving such functions. Frequently we forget that knowledge also has its non-linguistic components. The knowledge that is expressed in language (and in the symbols of mathematics) possesses such great significance that it must be studied in its own right. We shall call it conceptual knowledge, thereby distinguishing it from the more inclusive term.

That part of functional knowledge which we call conceptual we recognize to be an unusually effective phase of our functional capacity. Conceptual knowledge arises from the particular affinity of language and mind for one another; it is the consequence of the unique role of speech in our intellectual life. The spoken and the written word have the capacity to replace the objects of world as stimuli to action and as images of reality. This remarkable situation determines the pattern of our

intellectual existence. We must accept the function of language as a natural characteristic of our minds. When we reflect upon the remarkable facts of language, we realize that we had underestimated its power. Not only are we able to talk to one another; we continuously speak to ourselves as well. The same mind produces and understands language, spinning for itself a delicate and intricate web of concepts where it will then be thoroughly at home, attention rushing from one filament to another like a spider upon silken threads. Our words represent for us simultaneously both action and perception. Words are the decisive instruments by which the mind is committed to action. Whether they linger in our memory or whether we are presented with them as a written record, our words return to our minds as distinct and separate entities from ourselves. Conversely the language of others entering into the sphere of our own understanding can become more intimately associated with us and with our activities than virtually any other expression of our fellow men. Language fills consciousness and occupies mind; it distracts from the physical reality which would otherwise be most immediate to us. It substitutes its own fancy for the givenness of nature. The spell that is cast over a childish mind by a fairy tale, the power of an incantation over the mind of a believer, are not isolated instances of the control that language possesses over our minds. Language

may effectively substitute for the natural world both as the stimulus and as the substantiation of thought. This substitution of language for nature is all the more compelling inasmuch as mind is able to create and fashion language according to its specific needs and is capable of reproducing it at will.

It is fascinating to observe how language, dominating our consciousness as it does, usurps in our esteem the positions belonging both to knowledge and to nature. Surely knowledge is much more than mere linguistic or logical expression; likewise nature is infinitely more than the representation of which our concepts are capable. We have referred to the functional value of language: perhaps language fulfills its function all too well and becomes so convincing in its make-believe that we lose sight of the stage upon which it appears. Language itself cannot be understood apart from the experience of which it is an expression. This experience constitutes both the source and the limitation of conceptual knowledge. Only when we recognize the relationship between knowledge and experience will our concepts become consistent.

Knowledge as Concept

To recognize that knowledge has a conceptual and a functional aspect is not to assert that there should be two different kinds of knowledge competing or even contradicting one another. Granted that we learn much by imitation and without reference to concept whatsoever, yet most of the technical abilities that characterize our modern civilization are intimately dependent upon conceptual formulas. Conversely, even the most remote and abstract conceptual knowledge becomes meaningful only by virtue of its function. Frequently the concept determines a specific action; even when it does not do so, the concept must be deemed to control the ensuing course of thought. Thus the function of concept may be effective entirely within the conceptual framework. There is no activity of mind that has not some bearing on subsequent deliberation. In every instance this influence would represent the minimum function attributable to conceptual knowledge.

We must examine the customary definition of concept to see whether it is adequate and consistent with our meaning. As a rule, concept is considered to be the substrate of our words and propositions which makes them effective and potent. This definition seems to follow directly from the apparent superficiality

and lack of precision of language. Whenever we examine our language, we find that it implies much and warrants little. Our propositions and phrases are characterized by uncertainty and evanescence. We reason that if our meaning is to carry weight, it cannot remain dependent upon the frailty of language. Accordingly the words that spring so lightly from the tongue are commonly thought to derive meaning from concepts to which they refer, concepts which are presumed to constitute the inventory of mind. Perhaps we have become accustomed to deceiving ourselves with this reliance upon concept to compensate for the triviality of words. What reason have we to assume that if words and propositions altogether accessible to our thought are insecure, the inaccessible concepts behind them should be more valid? If we cannot supply meaning to words in constant use, dare we attribute meaning to concepts whose existence can only be inferred from our use of language? Can we avoid dismissing concept as it is customarily defined as a jejune attempt to conceal the inadequacies of thought? Indeed, as soon as we construe language not as an independent entity, but as a mere instrument of communication, we require no concepts behind our words to sustain their meaning. When we no longer insist on a unitary definition of each word, when we accept the fluidity of meaning that language invariably exhibits, then concept is no longer required to strengthen our words in their weakness. The term concept may then be invested with a new and perhaps a more meaningful definition.

How then shall concept be defined? When we reflect upon our perceptual experience of nature, we discover that the continuous stream of apperception condenses into identities of numerous kinds. We see objects and groups of objects; each group constitutes a unity, and each object is constituted of a group of subordinate parts. In our image of reality, there appears a constant interchange of parts and wholes. The object that we recognize as one is always on the point of disintegrating into many parts, or on the threshold of fusing into a yet larger whole. We propose to apply the term concept to all unities or identities that arise in our apperceptive and intellectual activity. Without such unities, mind would seem unable to function. We may illustrate by an example this process of identification through which such unities or concepts arise. Assume that you are looking from the window of a train which is moving so rapidly that all the landscape is blurred. Then as the train slows you begin to be able to distinguish individual objects, first trees and houses because they are the largest, then automobiles and people, finally dogs, birds, and even insects. Ultimately a detailed and definite picture lies clearly before your eyes. The progress of thought is quite comparable to the clarification of vision that accompanies the slowing of the train of our example. Mental activity in the absence of specific ideas may well be compared to the blurred landscape

that is seen while the train is in motion. As mind becomes mature, it recognizes a surprising variety and number of entities. These include not only physical objects, but also their ordered relationships to one another. From the window of that imaginary train you see not only the house, but the house being built or torn down; not only children, but children awake or asleep. Of course the analogy lags because the variety of processes that mind is able to recognize and to define has no equivalent in our imagined panorama. Let our illustration suffice merely to explain the process of concept formation. We would do well to shun all preconceptions about the sort of identities that mind may yet discover in its progressing examination of world. Such identities we call concepts, and as they become familiar elements in our conceptual knowledge, we give them names.

With this definition we have greatly enlarged the spectrum of possible concepts. One might reasonably object that if any identity in perception or thought were to be called a concept, why should one bother to speak of concepts at all? But the value of our definition of concept becomes apparent soon enough. For concepts now include not only the elements of pure thought, but the numerous unnamed entities that we discover in perceptual experience as well. Among concepts we should now include not only

the idea or the definition of this table, but also the particular momentary image which I obtain of it from a particular angle of view. While there must be assumed a hierarchy of intellectual activity extending from the humble sensation of a physical object to the rationalization of a complex idea, our proposed definition of concept implicitly denies that there should be an absolute qualitative distinction between the two. We argue that experience does not justify the separation of intellect from the so-called senses. To learn to see and to hear are intellectual processes not radically to be distinguished from learning to add or to subtract. Experience gives no cause for limiting the term concept to non-sensory intellectual activity. The perceptive discovery of a tree or of a mountain, the recognition of a cell under the microscope, or of a galaxy through the eyepiece of a telescope are each of them intellectual activities no less than the more abstruse mathematical or logical rationalizations. What right have we to deny the intellectual quality of the functions of eye or ear? The images they discover are concepts no less than the conclusions of abstract thought. Indeed, if we would consider visual and auditory images as the prototypes of concepts, their ready accessibility to our study should greatly aid our understanding of more concealed intellectual processes.

The construction of concepts then appears to be an unavoidable concomitant of all activity of mind. Concepts are defined through their characteristic identity, and this property of remaining one and unchanged characterizes their role in the functioning of mind. By way of contrast, it is the implication of all our experience and without exception it is the conclusion of scientific studies that the world is continuingly in process of change. Many events in nature occur so rapidly that without suitable instruments we cannot even recognize their motion, the oscillations of sound and light for example. Other changes, such as the movement of the sun across the sky, the aging of our own bodies, the disintegration of many physical objects, occur so gradually that we recognize them only by inference. Between these two large areas of motion the one too rapid, the other too slow to be recognized by us, there is a narrow area of change proceeding at such rates that we are able to follow with our senses. And from the careful observation of our apperception of this the most readily recognized rate of motion, we may deduce the unique function of concept in our intellectual activity. What do we mean when we say that we can see the arrow in motion? When the arrow is moving very slowly, we perceive it as remaining in the same place, until after a discrete interval in time, we notice it to have moved. This is the way

we notice the movement of the hour hand of a clock. It is essentially such process of inference by which we understand all slow motion. If on the other hand, the arrow travels very fast, we either do not see it at all while it is in motion or we see it blurred. Nor, strictly speaking, do we see the arrow blurred. When it is blurred, we do not see the arrow, rather we see the blurr, and we infer the moving arrow to be its cause. Inasmuch as we could not recognize the arrow blurred, such distortion indicates that the limits of our perceptual acuity had been exceeded. When the arrow moves fast, we then infer its flight from its sudden, unexpected appearance in a new resting place. Essentially, this is the way we recognize all motions too rapid for us to follow. (Rotary and oscillating motions, and the movements of minute particles are excluded from this consideration which is intended to be suggestive rather than definitive.)

Let us assume, however, that the arrow flies neither too slowly nor too fast, but at such a rate that we can follow it with our eyes, as for example we usually follow the flight of birds. Then we are immediately conscious of motion. Then there occurs a peculiar rhythmic motion of our eyes which the physiologists, who call it nystagmus, have compared to the nodding of the drowsy mind. When the mind is at the point of

falling asleep, it experiences brief lucid moments of recognition separated by intervals of confusion and unawareness. As our eyes follow the arrow in flight with a series of sharp jerking motions, they fix upon that object at successive locations in its movement. When we recognize the arrow in the central field of vision, it is always seen as standing still. As a matter of fact, we are unable to identify a moving object, unless we are able to bring its image onto the central area of our retina for a minimum period of time. If the object is in motion, then we must follow it by moving our eyes or our head. As a result, the object itself is clear, the background is frequently blurred. We have learned to infer from this blurring that we are looking at an object in motion. Actually the blurring of the background is a result of the motion of our visual apparatus required to keep the moving object relatively motionless compared to the central field of vision. Thus we recognize motion in two ways: either as an inference from the relative shift of position, or, when we follow a moving object with our eyes, by physically following its motion by the rotation of our body. (For the sake of completeness, it should be noted that we do recognize motion as such in the peripheral field of vision, but there we cannot recognize the object whose motion we perceive. When we gaze at the sky looking for a bird, for example, our first awareness of it is in the periphery of sight.

There we cannot recognize it, but its image causes us to move our eyes until we have fixed it in the central area of vision. Thus it remains valid to say that the object recognized is always seen as stationary.)

Our digression into the physiology of vision suggests that all our recognition of constancy may be the imposition of a physiological necessity upon physical reality. The change of slowly altering objects is recognized by inference. The change of rapidly altering objects is likewise inferred. We do not recognize motion as such except by imitating it. Those objects whose motion we are able to follow with our eyes, we recognize as stationary objects at various points of their trajectory even while they are in motion. Is it not reasonable to conclude that perhaps none of our images are exact equivalents of nature? Is it not plausible that our minds might impose upon a world in continuing change an identity indispensable for their intellectual function? If this has been shown to be the case with visual images, might it not be true also of other concepts? The image of the physical object may well be accepted by us as archetype of all the concepts that mind entertains. The image, at any rate, is closest to nature. The image clearly never corresponds exactly to the moving object. We have every reason to assume that whether slowly or fast, objects are always moving. It is then

not reasonable to suggest that likewise concept in its identity should perhaps never correspond absolutely with any equivalent entity in nature? Our minds may well require such entities in order to function, but what ~~independent~~ reason have we for projecting the unity that our minds demand into nature? ~~In any event~~ We must postulate an inevitable discrepancy, large or small as the case may be, and qualitatively undefined, between the concept and the natural object which it intends. The identity of the concept provides mind with an opportunity for accomodating itself to its environment. Until it has succeeded in isolating such concepts, mind will be quite unable to accept, to evaluate, and to respond to the world about it. Once concepts are invented, mind begins to understand its surroundings and to react to them with purposefulness and precision. Probably ~~in~~ our time has seen only the beginning of what mind through its concepts may accomplish in the natural world. The entity of concepts is, of course, only one of their characteristics, albeit a significant one. The evident discrepancy between the identity of concept and the processes of nature at once establishes the discontinuity of conceptual knowledge from reality. Identity as a property of concept is surely derived from mind, and whenever we take concepts to represent nature, the mind projects at least this one of its characteristics upon the world. ~~Probably~~ It may be presumed that other specific properties of concept are likewise projected by mind upon nature.

If all the properties of concept were derived from mind, then mind would be able to know nothing outside itself. On the contrary, mind does perceive a reality distinct from self; the existence of nature is the primary testimony of experience. Each moment of consciousness assures us of the reality both of self and of nature. Consequently at least some of the characteristics and relationships of concepts must be determined not by mind but by the reality toward which mind is directed at the moment of consciousness. Thus there is some justification to the naive assumption that our knowledge is not only an expression of mind; it is also a reflection of the object before us. It is a pregnant conjecture that if the entity of concept is a projection of mind upon nature, the external relationships of those unitary concepts among themselves might reflect the influence of nature upon mind. In other words, if the moving arrow is visualized by our minds at one station of its trajectory as if it were at rest, then the relationship of subsequent locations of that conceptual image is a decisive representation of the motion that the arrow, recognized only as stationary, does in fact undergo. Indeed, many mathematical techniques might be construed as procedural reconciliations of the static conceptualism of our minds with the otherwise incomprehensible dynamics of nature.

Perhaps a new light will be shed upon the relationship of concept and nature if we attempt to distinguish between a negative regularity and a positive regularity of our concepts. Negative regularity would be attributed to the limitations of mind; positive regularity would be an expression of the lawfulness of nature herself. The descriptions that we have given of concept formation would all be examples of negative regularity. Here the inability of mind to grasp the complexity of the natural phenomenon results in overt simplification. On the other hand, the relationship between concepts might well prove to be an intimation of lawfulness in nature. We discover no intrinsic distinction between the lawfulness of mind and the lawfulness of nature. We have only the inferences of experience to guide us. If under changing conditions a suspected relationship can be demonstrated to be neither constant nor necessary, then we may infer that the regularity of the concept in question was projected by our minds upon nature. On the other hand, until such contradictory evidence appears, we have no way of knowing whether the constancy is negative or positive, subjective or objective. As experience is always incomplete, we will never be able to say with certainty that the regularity of a given phenomenon is positive, but a large accumulation of uncontradicted experience would make it more and more likely.

If in all functions of mind that we experience, we recognize subjective lawful limitation, must we not assume that some regularity would hold also in nature, and that the laws of mind and nature should have some affinity one with another? Ultimately, we have no cause for making a generic distinction between the quality of mind and of nature, because mind is part of nature and we discover ourselves in the midst of her. There is no reason to deny that the structure and function of mind are themselves phenomena of nature. It is all the more remarkable that all our thought should be accompanied by the consciousness of self and by the awareness that this self is distinct from nature. Is it a biological instinct for self-preservation that leads us to this assumption? Is it a divine inspiration, as the formulas of religion have always claimed? Usually we assume that this contrast between subject and object of which we are aware is a division between self and nature. Yet, when we recognize that all our knowledge of nature is a conceptual interpretation, we might ask ourselves whether perhaps it is not the conceptual world that we recognize distinct from self, the actual identity of self and nature remaining undisturbed, indeed perhaps even implicitly recognized?

The likelihood that some correspondence between mind and nature exists follows from the effectiveness of our concepts. If we value our intellectual accomplishments at all, we must make some such assumption. To deny the kinship of mind and nature is to condemn mind to perpetual ineffectiveness. To the extent that we are confident to have already discovered the laws of nature, we cannot avoid the belief that mind and nature coincide. If we believe on the other hand, that the laws in which we trust are projected upon nature by our minds and are essentially alien to nature, it would follow that all our thinking was groping in darkness. Our minds are constantly molded by experience. Perhaps mind is specifically determined by nature to become sensitive and cognizant of nature's laws. On the surface such a contingency appears unlikely, because we always consider mind as already existing, seldom if ever as having been made, and never as presently in process of creation. Yet it is a fact that mind develops in concert with nature. Mind is the product, if we would have it so, of the experience of an animal brain in the natural world. This fact is well illustrated when we consider the development of the eye. The mind learns to see only in intimate contact with nature. When the eye is not exposed to the scenes of nature, it fails to develop its ability to recognize nature's forms. As it is true that we learn to walk by being on our feet, and as we learn to swim

by being in water, and as we learn to see by exposing our eyes to nature, so to a greater extent than we realize, the mind may learn to form concepts and ideas by being exposed to realities of nature which predispose to the formation and development of specific intellectual activity.

Let us consider our conceptual knowledge as a very special adaptation of our minds to nature. In intimate and specific relationship with her our concepts are developed. What is before us is always nature, but what we recognize are concepts. In being stimulated by nature, mind does not reproduce it, but it creates patterns and images corresponding to nature. Our cognition is nothing other than the recognition of images that we create. We compose these images unconsciously in our relationship with nature, in a way similar perhaps to that in which the animal assumes the protective coloring of his environment. If our concepts may be considered images of nature, we must think of them as functional images rather than geometric ones. Our concepts are consequences and sole record of our encounter with nature; consequently our concepts represent to us our sole view of nature, and it is therefore not unnatural that we should confuse the sum of our concepts, which we call world, with nature of which it is in fact only a reflection. What our knowledge comprehends is not nature herself but a conceptual world that we

invent out of our relationship with nature. This thought is disturbing when it first enters our minds, but the distress that it causes us is only a consequence of our habits of thought. To recognize the conceptual world for what it is does not remove nature from our intellectual inquiry. Very much to the contrary, by recognizing the quality of the conceptual world, we learn to understand its limitations, and henceforth we should be able to establish a more accurate and a more truthful relationship to nature. If our description precludes that our thoughts should be equivalents of nature, yet the specific articulation of our concepts, their relationship to one another, and our ability to apply them judiciously and forcefully, give us a most effective access to the workings of nature. In itself knowledge has no value: its value resides in careful, conscientious application. The validity of our knowledge is a functional one.

We may summarize the proposed theory of conceptual knowledge that we have outlined. Self is given to consciousness, and likewise that which is other than self which we choose to call nature. The confrontation of self and nature appears as the proximate basis of consciousness. Consciousness in turn is immediately productive of concepts. Concepts represent both the impression of mind by nature and the projection of mind into nature. We customarily call the most important of these concepts knowledge. It is characteristic of the situation from which concepts arise that

they should, as children of two parents claim an affinity with both. If we lived in the world of the thirteenth century we might well devote the remainder of our exercises to demonstrating that concepts could not exclusively be identified with soul or with God. Characteristic of modern thought is the determination that our concepts, the world of our knowledge, be made expressive of and equivalent to nature. In our day it is more pertinent to show that our concepts, no matter how cogently they be developed, can never reasonably expect to become exhaustively identified with nature. The great technological progress of our day is proof of the extent to which the identification of knowledge and nature has been successful. It is our argument, nonetheless, that knowledge and nature are generically distinct, and that however productive the approximation between them, they cannot be equated.

When the confusion between concept and nature is recognized, it becomes plausible to disparage our concepts because they seem to hide nature from our minds. Then concepts appear as a screen between mind and the reality it seeks. When we thus deprecate the conceptual world we proceed from the unwarranted presumption that we should have an original claim to the comprehension of nature. If we accept the fact that we have no intrinsic right to reproducing nature in our own minds, we no longer have cause

to blame our conceptual scheme for its discontinuity from nature. It is only the presumption that we should be able to comprehend nature that leads us to disparage the concepts that arise from our cognitive activity. Once this presumption is removed, it would appear on the contrary all the more remarkable that nature should be apprehended at all and that between concept and nature there should be any functional correspondence whatsoever. Our great avidity for possessing nature induces us to confuse concept and nature in the first place. For a while we pretend that we should indeed have discovered and defined nature. In order to uphold this bold assertion we sometimes claim perfection for our conceptual world. The most confident thinkers go so far as to deny nature in favor of our presumed knowledge of it; then the inevitable fading of that knowledge leaves us impoverished and disillusioned.

The Effectiveness of Conceptual Knowledge

a) The Concept as Symbol

The qualities of concepts by virtue of which they are capable of fulfilling their remarkable functions require further description. We may now turn to the examination of these concepts to discern, if we are able, what qualities they possess that would enable them to substitute so convincingly for the realities they represent. To this end we consider a) the symbolism of concepts, b) the function of concepts, and c) the ideality of concepts. While these considerations will bring no new topics into the scope of our investigation, they will provide an opportunity to view from a new dimension the difficult hypotheses that we have set forth.

The relationship between concepts and reality may be called symbolic, and conceptual knowledge will become more lucid when its symbolic qualities are demonstrated and understood. The conventional definition of symbol already conceals the anomaly that is the core of the problems of conceptual knowledge. Concepts are often considered symbols of the natural objects to which they refer. However, to say that the symbol stands for another object is to speak in riddles. By its nature an object can stand only for itself and no object can stand for another. Their symbolic quality gives our concepts the appearance of reality, and it is

only the intermittent awareness of the inadequacy of our concepts that induces us to project the reality they imply to an object beyond them. The problem is complicated by the fact that we persistently attempt to identify concepts with particular physical objects. The incongruity of such identification is borne out by its implications. Consider what follows from the absolute identification of the symbol and the physical object. By definition the symbol is known to us. If the symbol were identical with any physical object, that object would likewise be known to us. Thus it would be implied that physical objects were in fact knowable. If this were the case, physical objects might indeed be comprehended without the mediation of symbolic thought and it would be superfluous and futile to adduce concepts as symbols to explain them. But if objects are not themselves comprehended, then to speak of symbols as physical objects would imply that symbols are not comprehended either, a patent absurdity.

If the symbol is known, it is known directly. If we postulated its existence as an object, **we should** find ourselves trying to analyze concepts of symbols, i.e. concepts of concepts or symbols of symbols in a process that might well be carried to infinity. We discover them as phenomena of our perceptive and cognitive activity, and we are unable to demonstrate their being outside the habits of thought.

For example, the four letters h a n d together are symbolic of a part of my body. But their symbolic power is contingent upon my apperception. Independent of understanding such as belongs to me or other minds like mine, there is no reason to assume the existence of such a relationship at all. Nor has the physical characteristic of the letters h a n d any bearing upon the meaning they convey. Neither the type with which they are printed, nor the ink, nor the paper explain the meaning of the letters as they combine to constitute a word. The relationship between the symbol and the object to which it refers is independent of my understanding of the particular object in nature through which the symbol was mediated. The conclusion that seems to follow from these observations is that the definitive quality of symbol must be some faculty of mind that enables it to grasp an otherwise unapproachable reality. The symbol does not, in fact, have any claim to a reality of its own. It represents a habit of mind, a functional definition of specific relationships between self and reality. And, if the symbol does not possess substance of its own, neither is it a warrant of substance in nature. We have previously in chapter three discussed

the problems attending every attempt of ours to define object and event in nature. There we analyzed the content of our cognition without reference whatever to the means by which it was consummated, merely tracing and extending the implications of our cognitive activity. It seemed to follow that there is probably no absolute justification in nature for distinguishing objects and events as we do. Thus we suspect a coincidence between the apparent entities of nature, namely event and object, and the conceptual symbols through which we attempt to understand nature. At this point in the development of our argument, we may assume that the two coincide.

As symbols our concepts are characterized by their discreteness and entity. The unity of the event, the discreteness of the object, seem to have no intrinsic basis in nature; they appear to be projected upon nature from the necessity of our minds. The entity of its objects seems to be an indispensable quality of our thought. (Moreover, such unity seems to be a projection into nature of the unity of consciousness. The event is that constellation in time which we recognize as a potential or actual present; the object is that constellation in space, which by its mere appearance leads us to designate it as one, and induces our eyes to be satisfied with the contemplation of its form.) Unity moreover must be recog-

nized as the source of number, which appears to be a fundamental product of our thought. Some of the rules binding numbers may be expressive of the qualities of mind; other rules regulating the relationships between number may be expressive of the processes of nature from whose phenomena the concept of number appears to arise.

If unity inheres in our concepts, and if the source of that unity is psychological, we have no reason to assert that such unity is an inherent property of world or of nature. None of the objects or events that our concepts designate will ultimately do justice to the unity that we demand of them. Invariably they exceed that unity. Our concepts are always inadequate to our experience; this inadequacy forces us to conclude that the unity of concepts is not strictly applicable to natural processes. Our concepts define conditions of permanence, but nature would seem to be always in process of change. The testimony of our own eyes tells us that metal rusts and flowers fade, fruit decays and coal is consumed by fire. Where our own senses are incapable of detecting such change, scientific instruments will reveal it to us. Geologists, physicists, astronomers tell us that the earth is becoming colder or warmer, that the universe is expanding, and there seems literally nothing which it does not seem likely sooner or later to be discovered in

the process of change. Change appears to be only a matter of time. We know that virtually all objects are unstable in the course of milleniums, even though they possess integrity to our own eyes.

The unity of concepts seems to be imposed upon nature through the processes of perception and thought (about which we have said that they ought not basically be distinguished one from another.) When we are removed from the tree some distance we no longer see the leaves but only recognize the tree; at a greater distance we can no longer see the individual trees but only the forest. We must note also that although our concepts seem repetitive, they never denote exactly the same object. Whenever we rely upon a concept, we rely upon the tradition of that concept to which we have become accustomed, and the most recent example of a given symbol would appear to be the most vivid member of its class by which that class would then appear to be summarized. Thus, when we use a symbol it superimposes itself upon our memory, blotting out the preceding symbol, so that as a rule we will henceforth be unable to distinguish the prior from the later meaning, or the various meanings one from another.

The entire business of attempting to explain concepts as symbols invented by the mind runs into difficulty. For if it is true that in examining a specific symbol, in understanding its origin, and in describing its relationships, the creative, synthetic function of mind appears to play a dominant role, yet it is incongruous if not absurd to attribute the entirety of the conceptual structure to the function of mind. To do so would be to impute to mind a magical spiritual insight, an irrational recognition of the structure of nature. Otherwise one should be compelled to theorize that the conceptual fabric which we call world was an entirely separate, arbitrary invention of mind without external cause. It is however, not necessary to make a choice between these two unacceptable hypotheses; it is plausible that some intermediate state could indeed prevail, and while some of the components of our conceptual scheme are subjective, others should be the immediate and unshakable manifestation of nature. It is quite likely that each thinker who recognized the subjectivity of the conceptual world and felt bound to criticize its pretensions to reality was not so much carried away by his own argument as he was forced to overstate his case by the obtuseness of the public to which he spoke, a public that then construed metaphorical expressions as literal and subsequently either worshipped or ridiculed their author.

However that may be, it is precisely the non-subjective components of the conceptual scheme that make for its practical significance and validity. Even though it be a physiological characteristic that causes our eyes to form images in the first place, yet the contents of concepts must in some way be related to nature to account for the differences among concepts and their dependence upon the contingencies of experience. Assuming that in any given field of cognition there were two elements: the objective determination and its subjective modification, then we would in the course of normal apperception methodically attempt to eliminate the latter. Thus, through continuing contact with the object there is built up in my mind an image of it which is actually more functional, in the sense that I know what to expect if I look, than it is imitative in the sense that I possess a picture of what is already there. Indeed, if I had to describe this object either by drawing or by writing about it, I would prefer to have it in front of me, in order that I might record step by step my impressions. Failing its immediate presence, my mind would hypothesize a confrontation with the object. Then as I wrote my description, I would imagine the object before me and my mind would rehearse the necessary steps of observation. Evidently the symbol that I have in my mind may be exceedingly complex, but its apparent mystery is removed when it is construed as a synthetic summation of a finite series of discrete moments of apperception.

When we review all that we have said concerning the process of apperception, we discover that we have frequently referred to the component of our symbolic concept that is contributed by the object itself, yet we have never been able to define just what this component should be. And if we now carefully re-examine any number of such images, we are yet unable to define it. The reason for our inability is not that the influence of nature upon our perceptions is negligible or non-existent; the reason is that this determination does not directly enter consciousness. Nature enters consciousness only through the formation of concepts. As soon as nature impresses our thought, it must submit to the characteristic limitation of our minds. Thus, when we deal with nature, we are like men groping in the dark, arranging and rearranging by inference rather than by vision. Everything that is brought to consciousness already bears the stamp of our concepts.

We may now perhaps with some over-simplification describe the scientific attitude as the attempt to discern systematically the impression of nature upon our concepts. The function of science is to minimize the subjective element in cognition and to determine the isolated effect of nature. The paradox inherent in the effort of science is that all of its expression must once more assume the form of human discourse, becoming

subject to the limitation of our conceptual world. Science proceeds by inventing models and theories that attempt to represent the isolated influence of nature in our cognition. These theories and models are deceptive when considered in themselves. They become meaningful in the application that we are able to make of them. They are like keys, but they do not unlock nature herself. They always control only our relationship to nature. Therefore it is an error and a source of great methodical confusion to claim that the scientist should have discovered nature: what he has discovered is how to isolate nature's working in our relationships with her. By the same token, established scientific theories must never be understood to be images of nature herself. If they are images of anything, they are images of our relationship to nature. They become useful as we are able to rely upon them and make use of them in our dealings with nature. Another way to view scientific theory is as a set of corrective concepts. By means of such correction, we would try to eliminate the error that is introduced into our dealings with nature by the limitations of our thought. However, if such error is the unavoidable concomitant of concepts, then concepts, even though they be corrective, can never remove it. At best there can only be a reduction and a control of error.

If, the symbols appear to be more or less haphazard and arbitrary impositions of our intellectual patterns upon nature, then the relationships among symbols take on all the more significance in that they will reconcile the arbitrariness of the concept with the givenness of nature. This apparent necessity has frequently been recognized in the absolute quality of the rules of logic and of mathematics. These laws have been considered laws of nature, unalterable and impervious to the progress of time. It appears likely that the laws of logic and of mathematics are ~~primarily~~ in part rules and regulations of our minds. If they were also necessities of nature, then such necessity might accrue to them in one of two ways: such necessity might be the consequence either of the mind's progressive conformance to a series of natural situations, or otherwise they might prove to be intrinsic laws of mind. Mind being literally co-equal with nature, might conceivably be subject to identical laws, and it is plausible that the necessary relationships between the symbols might indeed possess some cause in nature. However, if such cause did exist, it would be quite inscrutable to us.

The bond between knowledge and nature is therefore not the substance of that knowledge itself, nor is it the structure of nature as it might be apprehended by knowledge. The bond between our knowledge and nature appears to be an intention

of our mind that is manifested not so much by explicit declaration, verbal or otherwise, as by our readiness and willingness to abandon the conceptual definitions that we had only just derived, and by our ability to recognize implicitly, whether or not we give it formal notice, the intrinsic limitation of concepts, which we then correct and revise as the occasion demands. The power of mathematics in our experience may generally speaking be understood to derive from its ability to mediate between the arbitrary and essentially unnatural stasis of concepts in such a manner as to reconcile their rigidity with the dynamics of nature.

b) Concept as Function

From what we have said it will have become apparent that concept is an invention of mind with which it comprehends the flux of reality. As we have repeatedly noted, the intrinsic quality of concept is its unity or self-containedness. Concepts represent the imposition of form upon process. Concepts constitute the inventory of mind; they are also powerful determinants of what mind does. Contrary to appearances, mind itself is not static, but being itself part of nature is continually in active and passive process of change. Concepts formed by mind enter intimately into its activities, and it is always an error to assume that concepts might be products of mind isolated from its activity, like the products of a factory, distinct from the manufacturing process. The function of concepts must be understood as dual: in the first place, concepts determine the intrinsic activity of mind. They are effective in controlling the content and the purpose of mental activity from moment to moment. Thus concept is instrumental in the production, formulation, and determination of other concepts. A concept exists as an interdependent unit in the network of conceptual relations. As it itself is determined by other concepts, so it in turn influences and affects the structure of those that follow it. Thus all concepts entertained by mind must be conceived as being responsible at least in part both for the existence and for the function of the mind in question.

At any juncture the mind's conceptual framework may provoke and determine specific action on the part of the individual. Whenever self acts, it does so in a direction and with a purpose that are directly determined by the concepts that occupy consciousness at that time. Consequently, conceptual knowledge also issues in function, and our initial distinction between functional and conceptual knowledge appears qualified and temporary. The significance of conceptual knowledge must in large part be related to this function, either ~~to the extent that~~ insofar as the concept determines the disposition of self in regard to nature or ~~to the extent that~~ insofar as the concept determines other members of the conceptual system and by extension indeed that system itself. Inasmuch as the conceptual system will ultimately serve to determine the relationship of the self to nature, even those concepts that affect only the conceptual system have an indirect bearing on the relationship between self and nature. The identity of concept appears as an incongruity within the indeterminacy of nature. To the extent that the identity of concept were contrary to nature, the resolution of concept into function would represent the approximation of mind to the reality of nature. Characteristic of concept is its artificial definition. Through the activity of self the artificial definiteness of concept is dissolved into effective and forceful interaction with nature.

c) The Ideality of Conceptual Knowledge

The third explanation for the effectiveness of conceptual knowledge is its ideality. By ideality of concept we mean that quality of concepts by virtue of which they appear more consistent and exhaustive of reality than subsequent examination shows to be warranted. To speak of something as ideal is to attribute to it a degree of perfection that surpasses experience. When we discover ourselves habituated to assigning to concepts qualities of reality and of completeness that these concepts demonstrably do not possess, then we may justifiably refer to the surreptitious hyperbole as an idealism. Perhaps our application of the term idealism differs from the customary one in that usually idealism is applied to concepts evidently extravagant and unlikely; whereas we by contrast consider idealism a quality inherent in some intellectual functions themselves. The recognition and the interpretation of the ideality of our knowledge proves indispensable to our proper understanding of it.

The implications of our knowledge exceed their empirical justifications in two respects. 1.) The isolated fragment of knowledge is never adequate to the object to which it refers. 2) The totality of knowledge pretends to completeness and consistency that it does not possess. When the ideality of knowledge in these two respects shall have been demonstrated, it will appear more important than ever to distinguish clearly between concept and nature.

It is indeed one of the most significant and at the same time one of the least understood qualities of concept that it is able to reflect a degree of certainty, completeness, and power which it does not in fact possess. We have already pointed out that the traditional use of the term concept supplements the evident inadequacy of verbal propositions. When the weakness of our sentences becomes apparent, then we excuse ourselves by referring to the 'concepts' beyond them. The concepts are likely to remain unrecognized for what they are. Perhaps their tendency to deceive is an inevitable concomitant of our invention of concepts. At any rate, it is characteristic of concepts that they should appear to exhaust the objects designated. Invariably concept presents itself as an entity equal if not identical to the object to which it refers.

By virtue of its ideality, conceptual knowledge implies adequacy and perfection far beyond any given experience. Knowledge invariably ~~implies~~ represents more than has ever been demonstrated in the past. There is the subtle implication that conceptual knowledge in its fullness might be empirically demonstrated in the future, but such expectation is never warranted and the attempt to procure such demonstration inevitably leads to disappointment or distraction. The ideality of knowledge is projected upon the individual fact and lends to it an unjustified degree of certainty

that is ultimately inexplicable and incongruous. The individual fact of knowledge is not founded exclusively or even primarily upon immediate and accessible experience. To be sure, the specific fact of knowledge is hypothetically buttressed by the sum of all private and common experience. Yet, in a given instance, it is difficult to see what experience justifies a factual assertion. Between knowledge and the experience upon which it presumes to rely, there remains always an absolute qualitative difference. We would have it both ways: on the one hand we call our knowledge empirical, but on the other hand we wish to make it superior to individual experience. We think of knowledge not only as independent of empirical observations, we even consider it distinct from the particular formula in which it appears to us. Although we accept knowledge in specific propositions, we assume that its 'existence' is not limited to any particular statement, to any language, or to any specific formulas. For that matter, we should like to think that knowledge would not even be dependent upon the existence of any human being or of any particular physical object. The death of any one individual, or for that matter, of any group of men, will neither embarrass the existence of knowledge nor diminish it. The destruction of the physical objects cannot impair knowledge. If we wish to carry our thoughts about knowledge to their logical conclusions, we should have to ask whether even the death of the entire human race or the destruction of all physical objects in

the world should not compromise the existence of the reality of knowledge. If we admit that knowledge was compromised, we contradict the assumptions intrinsic to our thought. If we hold that knowledge was not compromised, we must quickly find some supernatural haven for it. Stated explicitly, the logical implications of our habits of thought strike us as ridiculous. Yet if knowledge possesses the integrity that it claims, it would necessarily exist independent of all historical and physical contingency.

The idealism of knowledge explains why knowledge should provide such an effective substitute for nature. Knowledge is assumed to duplicate nature in all respects; yet knowledge miraculously seems to avoid sharing its transience and destructibility. It is thought that there should be no aspect of nature unknowable; furthermore such knowledge seems to endure long beyond the brief phenomenon that it describes. For, when nature enters the realm of our knowledge, it appears to become 'factual,' and facts seem to endure indefinitely. For example, the tree in my garden blossoms and bears fruit each year. Sooner or later it will die. Yet the fact of its having flourished this summer possesses a permanence quite incommensurate with the temporary appearance of the flower or the seasonable maturation of the fruit. Thus, whatever is comprehended by knowledge seems as it were to be excerpted from the transience of nature to receive permanent status in the apparently eternal pattern of conceptual reality.

It is not customary to acknowledge the idealism of knowledge upon which we constantly rely, and when we venture to trace the implications of this idealism, we risk the stigma of a discredited metaphysics. It has long since become unfashionable to accept the idealism implicit in our pretensions to knowledge, and to postulate 'being' or 'reality' or 'ideals' possessing an autonomous existence in an independent realm. Plato's theory of forms was a pictorial extrapolation of a potent characteristic of thought. Yet whether or not we recognize the cognitive idealism implicit in our knowledge, we rely upon it nonetheless, and knowledge will remain enigmatic until this reliance is recognized and accepted.

The ideality that we have demonstrated in the relationship between knowledge and its purported object has its counterpart in a second idealistic relationship between knowledge and the man who knows. We are accustomed to think of our minds as containers able to receive and to dispense, and to a lesser extent capable of preserving the knowledge that is offered. We treat knowledge as a discovered treasure rather than as an invented tool. Thus knowledge is thought to exist primarily apart from the individual, who seems to have little to do with the formulation of knowledge inasmuch as he discovers it already existing. Then the possession of knowledge seems to provide mind with

dignity and distinction. Knowledge appears independent of mind, and superficially mind appears independent of any particular fragment of knowledge. More closely examined, the entirety of knowledge is indispensable to the existence of mind. This dependence of mind upon knowledge is one of the focal problems for which a theory of knowledge must provide explanation. Knowledge seems so highly desirable a commodity that the failure firmly to possess a modicum of it is invariably construed as a deficiency of mind. Thus the weakness of an individual's knowledge always reflects adversely upon him, but never becomes occasion for questioning the genuineness of knowledge. Accordingly, the readily demonstrable weaknesses of mind tend to support the edifice of an idealistic system of knowledge. Highly prized as it is, knowledge is held out to the student as the reward of diligence. He is trained to attribute his difficulties with it to his own immaturity, inability, incompetence, and ignorance. By hard work and application he proposes to overcome the barrier that separates him from the presumed treasure. But when he has grown old, if he has not become convinced in a fatuous and foolish fashion of the significance of his learning, when he realizes its fragmentariness and its insufficiency, he no longer has the strength or the courage to look back upon the efforts of a lifetime and to call them vain. Nor will he possess the intellectual or physical stamina to attempt to dismantle what all too

belatedly appears as an error or to build a more rational structure in its stead. He solaces himself with the belief that what he does not know himself might be known by another. Technical achievements in all branches of science seem to vouch for the actuality of a common system of knowledge.

The unqualified validity of knowledge is asserted most aggressively, however, by those who have little claim to it and are half ignorant whereof they speak. The mind that itself never productively contributed to the elaboration of knowledge is usually most eager to insist upon its absolute truth. Those who find their work in the repetition and restatement of what more original thinkers have discovered, indeed have a vested interest in the tangible value of concepts. Boasting as they do of borrowed wealth, their empires would evaporate if 'facts' were no longer true or false, and if the value of knowledge inhered in its discovery and rediscovery rather than in its repetition and possession. Probably the mind that discovers knowledge is better able to recognize the limitations of its thought and more ready to admit the tenuousness of its hypotheses. Once the ideality of knowledge is made explicit, its incongruities can no longer be concealed. Yet even when the evident fragmentariness of knowledge belies its presumptions, we are anything but eager to face the bankruptcy

of such cherished intellectual pretensions. We have come to regard systematic knowledge as the basis of our intellectual world, and we fear that any disparagement of the established conceptual pattern will rob our thought of its foundations. That such an ominous consequence does not necessarily follow will become evident from subsequent considerations.

The ideality of knowledge that we have described is supported by a logical, social, professional and academic apparatus of marvelous efficacy. This apparatus of knowledge has its justification in its usefulness for deriving, preserving, and imparting conceptual knowledge. At the same time, this intellectual order sustains the fiction of an ideal knowledge. Surely there should be no contradiction in accepting this apparatus of knowledge for its pragmatic value without committing oneself to the particular interpretation of conceptual knowledge which it implies. On the contrary, conscientious criticism of conceptual knowledge might enable us to simplify and to strengthen that apparatus to the end of making it even more effective a servant of its valuable functions.

The ideality of knowledge leads also to that curious misconception that we entertain about memory, so often compared to a tablet on which knowledge is written or a treasury where

knowledge is preserved, from which it may be delivered at will. Memory ideally is expected to preserve intact all that has been entrusted to it. Consequently it is thought that knowledge might be reproduced from memory, comparable if not specifically identical with that which was originally committed to it. Most of the teaching in schools and colleges relies upon such assumptions. By dint of great effort, the student is expected to train his mind to reproduce phrases and 'facts' set before it. And it is indeed true that the mind is capable of amassing a quantity of such 'facts,' which it is thereafter able to repeat or to paraphrase. The familiar school examinations presuppose that our possession of knowledge is revealed by our ability to repeat the words and sentences that we have been taught. Thus knowledge is equated with the statement and repetition of propositions. Yet if we applied these assumptions consistently, we would find our knowledge embarrassingly small. Our knowledge would be constantly diminishing as specific memories faded and would, if not constantly replenished by reference to the written word, dwindle with the passage of even a short while virtually to nothing. If we are always capable of learning, we are also always in process of forgetting. The very procedures by which we acquire knowledge no less than our utilization of it serve to confute the ideality to which it pretends.

The Conceptual World

Having described the characteristics of knowledge, we may turn to examine our image of the world. We have already touched upon this image in the preceding chapter. There we analyzed our notion of world for its reality. Now we may consider our notion of world as a structure of knowledge. On topics so closely related, some repetition of exposition will be inevitable. As a matter of definition it should be agreed that knowledge comprises all perceptual and cognitive apprehension of world. In other words, no intimation of nature, however fleeting or however distorted, may be excluded from knowledge. It would be inconsistent to limit the term knowledge, as is so often done, to 'correct' knowledge or 'true' knowledge. We entertain the illusion both as individuals and as a society that the correction of error in knowledge is but a question of time. Such an assumption is obviously trivial, because although some particular fragment of knowledge may be subject to emendation, at any given moment the individual relies upon a pattern of facts the majority of which will never be corrected or even questioned. To the extent that nature is comprehended by our minds, it is comprehended as knowledge.

One of the striking characteristics of our knowledge as we view it critically is its apparent coherence and completeness, qualities that we have already described as the idealism of knowledge. It is one of the consequences of such apparent completeness that we find it difficult to discover a suitable point of beginning for the analysis of knowledge. Our world, complete and self-sufficient as it appears, offers no cleavage planes, no natural divisions that might facilitate our analysis. It is this apparent universality, this seeming self-sufficiency that frequently makes knowledge appear impregnable to analysis. This invulnerability of our world to epistemological criticism is reminiscent of the insuperable obstacles of fairy tale and myth that will yield only to a magic word. Initially the ideality of knowledge seems to preclude all critical analysis. The extent to which this ideality is fictitious will become more and more apparent as our examination progresses.

Our apperception of objects in space is dependent upon our powers of vision, upon sensations of touch, and of the awareness of position and motion that we have of the parts of the body. From these sensory sources each man synthesizes his view of objects in space. Evidently, at every moment each man possesses an image of world that is uniquely his own. At any given instant men are dispersed over the face of the globe,

one man in Cambridge, another in London, one in an airplane, a fourth on the ocean, a fifth at the theatre, a sixth in his study, and so to the end of the situations of the millions of human beings differently displaced and differently engaged from moment to moment. There is a tacit agreement among men concerning the appearance of spatial reality. This agreement was originally established between two men by simple demonstration, by the father who takes his child's hand and points with it at a distant object to the end that both may see alike. To an extent not readily recognized the pictorial arts have helped to create unanimity concerning the appearance of the world in space. In the modern world photographic techniques have promoted a unitary view of nature. We may if we wish entertain the hypothesis that all men would obtain the same perceptual image if they stood in the same spot. Such an hypothesis is not susceptible to proof. The fact remains that men are dispersed, and the scene most telling to each man is that which is now before his eyes. Each man does possess a separate view. If there were uniformity and absolute coincidence in a common view of reality, a circumstance which is unlikely, such a common view could never be more valid than the image which an individual has of the object immediately before him. The capacity to see all things simultaneously is beyond our power. That is the most important of divine attributes. The total view of

nature belongs properly only to the all-seeing one, to God. All theory which is grounded upon the assumption of universal uniformity implicitly relies upon a theological presupposition. While such a presupposition is indispensable in the affairs of daily life and in the investigations of science, we need not subscribe to it for the purposes of the present exposition. In the introductory chapter we noted that we would refrain from endorsing either theological or scientific presuppositions: in the end they come to the same thing.

This isolated view which I have at this moment is essentially fragmentary. In order for it to become useful, it must be completed in two dimensions. My view of this object is confirmed by the view that others have of it; there comes into being, as it were, a hypothetical common view of the object. Some qualities of this common view are demonstrated in artistic or photographic reproductions; most of them, however, remain potential and undefined. In the second place, and of far more significance, is that my view of this object in this place is only a fragment of the image of extended objects that is in my mind. I have seen comparable objects in other places; the memories of those other spatial experiences fuse with the present. As a result the apperception of this particular view is no longer fragmentary, it is integrated with previous experience, and constitutes

a part of a uniquely coherent picture. It is worthy of note that however effective and indispensable these syntheses may be, they are absolutely dependent upon what is before my eyes at this very moment. The momentary, present experience is the indispensable confirmation of all that is projected from it.

Primarily I recognize that which is before my eyes at this instant: this chair, this desk, this typewriter, this paper. The image of what I see lingers in my memory, so that when I glance up from my paper the awareness of its being there does not vanish, but the image of the paper remains in my mind so that when my glance returns to the paper no radically new episode of recognition is required. I am able to resume the apperceptive process where I left off. The same principle applies to objects that I see less frequently, for example the carpet on the floor, the books behind me, for that matter the furnishings of other rooms in this house, or the landmarks of this little village. Having once become acquainted with them, the awareness of their presence lingers in my memory, it is confirmed time and again by repeated encounters with them. This encounter with familiar objects is of utmost importance to the satisfaction and sanity of mind.

The characteristic methods by which I remain familiar with the objects about me as they have been described apply to all my experiences. And these experiences differ clearly in the degree of familiarity with them. Some men and women I have met only once in my life; with the members of my family I associate daily. In some cities I have spent only a few minutes ~~of my life~~; in this village I have passed many years. In order to elucidate the quality of apperception, it is plausible and helpful to hypothesize a map of all the places that an individual like myself should have been in the course of his life, and a catalogue of all the objects open to his gaze. When such a consideration is entertained, then it becomes apparent what a small fraction of objects which a man considers to be the property of his knowledge, he himself has ever seen. A conspicuous illustration of this circumstance is given in the biography of Kant, a man who is reputed never to have traveled more than a few miles from the boundaries of his city, yet whose knowledge and whose thought encompassed the presumed knowledge of the entire universe. And so it is with each individual and his presumptions to knowledge, because that which each one has witnessed is such a small fraction of the totality of objects in space that he claims to know. Moreover, a man does not know everything that he has seen once. The number of objects with which a man is sufficiently familiar as not to be startled by their newness is even smaller, and smallest of all is that constellation of objects before his eyes at any particular moment.

We should observe that our knowledge of objects that we have not seen is an ingenious projection of comparable experiences. The novelists are adept at describing how our ~~view and~~ attitude toward cities or landscapes, for example, is determined by the prejudices engendered by haphazard experience. The memories that I retain of the cities and landscapes of my childhood have come to present to me the essence of all other cities and of all other landscapes. Whatever I may now be confronted with, I judge in comparison with them. Since all men are different and all have different experiences, their judgments and attitudes even about the same object will evidently be divergent. For this sort of discrepancy, logic and reason attempt to compensate. In point of fact, they succeed, and we learn more and more to control our imaginations and our judgment by rational considerations.

The knowledge of physical reality may be described in greater detail. I am, of course, well acquainted with this house and with ~~this~~ its physical and geographical situation. I would recognize it from whatever angle I might view it as the house in which I live and work. I would recognize many of the other houses in this little village in a similar manner. Of course I could not state the dimensions of any of these houses, their exact locations, the number of them on any particular street, nor their distances

from one another. But if I wished to determine any of these things, I should know how to go about it. I would then return to the respective place and make the observation or measurement desired. The physical continuity of the streets and the plots of land is known to me from experience, and this physical continuity, which would render it possible for me to ascertain any particular measurement that I desired, and at the same time makes it quite superfluous to ascertain any of them in particular except to a specific practical end.

I know from experience that this dilapidated little village is not all the world, and that there are roads leading away from it. To the east, for example, these roads lead through mountains which I have often seen from the highway or from some particular vantage point. Being superficially familiar with the geology and the vegetation of these mountains, I consider them known to me, although I have never climbed them. There is a sense however in which one does not 'know' a mountain until one has climbed it, and those who have climbed mountains say that there are innumerable facets of knowledge beyond. One does not even become aware of one's ignorance until one has left the well-travelled highway and started to climb the unexplored mountains that surround him on every side. To the west and north are the roads that lead most directly to the outside world, to the railroad, to the airport, to the

main highway. I have traveled these roads many times, I know my way as I pass over them, yet the details of their boundaries and curves are not in my memory, and probably not in that of any man. My conceptual knowledge leads me to posit the existence of the goal of my trip, be it far or near at the terminus of some road, and my experience tells me that between here and there a continuity of landscape prevails, so that it is the nature of travel along such a road that one knows the destination, yet that one learns the way only in passing and quickly forgets it.

Our reliance upon maps and upon geographical information in general is a prime illustration of the importance of the social basis of knowledge. My own experience is quite limited; of the cities that are listed on maps I have visited only a few, and of exact locations even fewer are known to me. But given the maps, given the assurance that the towns and cities, the harbors, the oceans, the mountains, the shorelines are 'there,' I anticipate accurately what I should find if I went. The reason for my assurance is that all this territory has been measured and surveyed, and that the maps made from such surveys are accurate and reliable. I imagine those scenes to be comparable to this landscape before my eyes now. The scene before my eyes now is my representation of all the world. The same imaginative projection that is applicable to the field

beyond the hill is applicable also to the contiguous county, to the bordering state, to the neighboring nation, to other continents beyond the ocean. It is in essence this same projection that we apply to astronomical dimensions. We imagine that to the moon, or the planets, for example, belong objects comparable in dimension and structure to those terrestrial ones with which we are familiar. Reliable factual information combined with and confirmed by my own experience gives me knowledge of virtually the entire world.

The reason why I should be able to rely upon the geography of the maps is that I assume them to have been prepared by men with the same intention and the same view of reality as my own, the same understanding of language, and the same sense of truth and integrity. (This is the genuine meaning of truth: the quality of thought that makes it possible for us to rely upon our own descriptions and that of others as the guide of our conduct. Truth makes the conceptual world possible.) It is this assurance that enables me to assume that all the objects that I find described, the rivers, lakes, cities, and landscapes do actually now at this moment while the typewriter hums, exist in the same sense in which the typewriter and the desk and the paper exist. Such an assumption, however, must be recognized to be no more reliable than the reliability of the map-

makers. My reliance upon physical objects in this room, the typewriter, the books, the manuscript, and so forth, is derived from my seeing them so constantly that my memory of them remains very vivid and unshakable. In point of fact, I have no time to forget them. There is no occasion for them to fade from my memory before another encounter with them reinforces that memory. Thus the vividness of experience that is immediate is proof of the potential validity of all the rest.

The description of topological knowledge that we have given provides a striking illustration of the quality of knowledge. I think it is evident that the knowledge which we have at this moment of all objects remote from us can be only a conceptual knowledge, and that if we find that these objects remote from us constitute themselves into a world, then what is our knowledge of this world if not conceptual knowledge, and what is this world if not a conceptual world. Through an understanding of the qualities that make such a conceptual world cogent and effective, we may be reconciled with the apparent absurdity of that notion. Of course, it is foolish to insist without qualification that the earth, that the cities and states, oceans and mountains, stars and interstellar spaces should be 'concepts'. However it is not absurd to say that in this instant of consciousness they are to me mere concepts, and that they become real only

in gradual confirmation through particular experiences. This confirmation is always in progress; it is never complete, but the world seems complete. To the extent of its completeness, the world is conceptual. It is plausible that however real it be in itself, the city which is only a name to me, the street which is merely an address, do remain concepts until I go there and walk through those streets, then, temporarily realizing their actuality. And it is quite conceivable also, that if the name of the street were given to me in error, my mind might invent a fanciful image of it. Yet the concept of that non-existent street would be as compelling to my mind as the concept of an existing street, until experience denied the former and confirmed the latter. The primary test of truth in conceptual knowledge is the congruity of concept and experience. This test is adequate to the many concepts which may be tested in experience. Evidently however, there are many concepts that are inherently incapable of being tested directly in experience. To such concepts we apply functional criteria of truth, and we estimate their correctness according to the adequacy with which they fulfill their roles in the conceptual framework. Nonetheless, the meaning of all concepts must ultimately be referred to experience though often by a circuitous route. The compelling immediacy of experience is expanded by truthful conceptual knowledge to the hypothesis of a real world which in its entirety we have not yet encountered and never will.

The fact that our knowledge is conceptual rather than real is borne out by a review of the knowledge of objects. The definition of objects depends upon their size relative to the dimensions of the eye, upon the distance from which we view them, and upon whatever instruments aid our observation. Since the distance between ourselves and the objects may be varied and the instruments through which we view them may be exchanged, we will obtain different views of a single object. For example a tree may be observed in the forest, its leaves may be studied under a hand lens, or its fibers may be analyzed through a microscope. It becomes a point of semantics whether or not we are studying one and the same or three different objects in this example. The three disparate images are logically related to one another through a practical description of the manner in which each may be obtained. In point of fact, other physical, chemical, or biological studies whose product is not an image but a measurement or a fact stand in comparable relationship to the object studied. The disparity of divergent views of the object creates insoluble difficulties until it is recognized that the objects studied are conceptual. We must question the tacit assumption that the objects with which we are confronted should be naturally defined, 'real' as they appear to us, and that our apprehension of them should be the ultimate definition of their reality. We have noted that the

perceptual image as a product of confrontation is itself conceptual. Consequently the object perceived, however concrete it may appear, must be considered concept no less than the most remote inference of speculation.

The assertion that even my apprehension of the object before me is conceptual implies that absolute reality should be displaced entirely from the field of cognition. We deal not with 'real' objects but with a series of concepts of graded validity and consistency. It is plausible that the physical object should possess but relative reality. This relative reality consists of a conceptual pattern, namely the sum of the different images and concepts of the object that I have apprehended and that I now remember. There is in itself nothing incongruous in separating knowledge from absolute reality, provided that we subsequently provide some mechanism for the reconciliation of the two.

There are two approaches toward bridging the gap between concept and reality. It may readily be demonstrated that our concepts are highly effective in ordering our relationship to nature. Such effectiveness would not be explicable merely through the concepts themselves; it must be attributed to their

functional correspondence with a natural reality. To assume such correspondence is inescapable, although being by definition transcendental to our conceptual world, the functional dependence of our concepts upon nature may only be inferred but never demonstrated.

The pragmatic quality of our concepts leads us to distingish degrees of reality. It is, for example, the pragmatic aspect of our concepts that causes us to attribute more significance to the silhouette of a mountain than to the shape of the cloud hovering over it. Both the outline of the mountain and the outline of the cloud may be perfectly discrete and esthetically sufficient to the definition of unity and object. Yet the cloud is dispersed by the winds and disappears within the hour. Its reality, therefore, is of a different order from that of the mountain which has persisted in its present shape for thousands or millions of years. Yet, if as we believe, in the endlessness of time, the mountain will suffer the same fate as the cloud, it may be that the discrepancy of their realities is merely relative.

There is a second consideration that will tend to bridge the gap between concept and reality. The pragmatic explanation for the apparent correspondence between concept and objective nature may be balanced by a valuative explanation for the correspondence between concept and subjective nature. The

relationship between consciousness and concept is frequently ignored, but it is telling nonetheless and its explicit designation will tend to shed more light upon a difficult problem.

Concepts are usually assumed to be absolutely distinct from self; their unqualified dependence upon consciousness is a source of embarrassment and paradox whenever it becomes apparent. We have already noted that our notion of event is a projection into nature of our experience of action, i.e., ~~or~~ of our awareness of the present. The two are assumed to be equivalent. A comparable explanation for the unity and identity of object may be sought. It is a fundamental characteristic of consciousness that leads us to identify objects as integral and unitary. One might hazard the suggestion that the identity of the object constituted a projection of consciousness into the objective world. The tendency of our minds to bring order and unity into our conceptual activity we call esthetic in the primary meaning of that term.

Traditionally it is assumed that our apperception of physical objects is self-evident. When the problem arises of giving definition or explanation for our knowledge of human personality or of social and political institutions, it is assumed that these institutions should ultimately be explicable on the basis

of the physical entities that comprise them. It would be too far-fetched and in fact unnecessary to give an extensive account of such attempts. We might however point to some salient examples: consider the desperate attempt on the part of neurologists and neuro-physiologists to understand personality in terms of anatomic structure or chemical compound. Consider, furthermore, the attempts of historians to explain the development and form of government or the state, for example, on the ground of economic or physical factors. Or, for that matter, the all-inclusive attempt to construe biological, social, and psychological phenomena to be a result of the mechanical development and adaptation of protoplasm. We shall comment upon these theories no further except to note that if our analysis is correct, our apprehension of physical objects themselves is a conceptual one. It then becomes no longer reasonable to attempt to reduce or correlate all concepts with physical objects. Physical objects will no longer possess the explanatory primacy that has traditionally been attributed to them. The elucidation of concepts shall have to proceed in a more discriminating manner.

We have shown that the world which we know is a conceptual world. We have proceeded to describe knowledge and its characteristics not with the purpose of formulating criteria by which specific facts should be evaluated, because such criteria must issue from the circumstances and the contingencies out of which the facts arise. Our purpose is not to improve knowledge but to understand it. We have tried to show how the characteristics of knowledge themselves make it possible if not indeed necessary that knowledge should present itself to us as a self-contained, self-sufficient conceptual world. We have hinted at the existence of such a conceptual fabric; we must now give an explicit definition of it. The world that history and science try to fashion is a summary of our concepts; we must not consider it identical with nature. The world of our knowledge is a world created of the cohesive yet flimsy substance of our ideas. Our concepts are derived from our interaction with nature; yet the conceptual world is neither exhaustive of nature nor equivalent to it. Although we are constantly in contact and confrontation with nature, yet nature enters into our apperception only to the extent that it receives expression in conceptual knowledge.

Our concern centers about a problem that has troubled philosophers almost from the time that thought has been recorded. It is this same problem with which Plato contended when he asked whether the wine that tasted bitter to the ill Socrates is the same wine that tastes sweet to him when he is well. Perhaps that is a caricature of the problem. This is the problem which was raised by Descartes in his recursion to the immediacy of consciousness of self as the source of certainty. This is the same problem with which Berkeley struggled in his theory of vision, the same that Kant believed himself to have solved with his tricky distinction between the phenomenal and the noumenal world. To distinguish between the conceptual world and nature is a bold step indeed. Militating against our distinction are all the naive interpretations of our experience. We are always ready to assume that we comprehend with our perceptions the things in themselves; to argue differently, no matter how cogently, is to flirt with absurdity. It is particularly difficult to continue to insist upon the relative unreality of the conceptual world in the face of our absolute intellectual dependence upon our conceptual environment. We are so deeply committed to the acceptance of this conceptual world as real that to deny it seems to be making light both of reason and of experience. It is quite impossible that we should live without such a conceptual world.

On the other hand, we recognize the inescapable cognitive and ontological limitations of our conceptual world. If nature were limited in this way that the world which we know is evidently limited, it would be useless to us. Thus our task presents itself to us as the resolution of a contradiction. The method by which we have proceeded is in every case to scrutinize patiently and unprejudiced the phenomena of nature and of concept as we encounter them in the most diverse situations of our experience. In as much as both the conceptual world and nature are contributory elements in that experience, a conscientious description of experience should without fail remove the ambiguity and resolve the contradiction. The reader may judge for himself the extent to which we have succeeded.

The true quality of the conceptual world and its actuality will only become convincing when we have succeeded in clearly defining its distinction from nature. Confusion between the conceptual world and nature is unavoidable. Whenever we look for nature we become engrossed in the intricacy of thought; we become trapped in our perceptual and logical concepts. Conversely, whenever we analyze our conceptual knowledge, we become so enthusiastic about its reliability and effectiveness that from a purely pragmatic point of view we are prepared to attribute to it a degree of substantial reality, which as we have shown it is unable to sustain. Thus we become involved

in a continuing uncertainty concerning the relationship and the identity of concept and nature respectively. Traditionally one has attempted to solve this difficulty by disparaging conceptual reality for its failure to coincide with nature. We have always demanded that concepts as they appeared deficient should be corrected and improved. In an eschatological expectation we hope and work for the advent of a perfect knowledge. Meanwhile we improvise as best we can.

The entirety of our knowledge and of our perceptions must properly be construed as conceptual. This conceptual world must be distinguished from nature. How then does the awareness of nature arise? What reason if all that we know is concept, have we to postulate the existence of nature at all? In order to attempt to answer this question we must go back to the primitive phenomenon of perception itself and consider what it implies. When we trace the origin of our ideas of self from the phenomenon of consciousness, we note that the very process that distinguishes self, does so by separating self from that which is other than self. In the consciousness of action that which is other than self is the actuality acted upon. In the consciousness of perception that which is other than self is the external cause or occasion of perception. To state it differently: to be aware of self is at the same time to be aware of the limitations of self.

The reality by which self is limited we call nature. Thus the phenomenon of consciousness provides evidence not only of self but also of that which is other than self, i.e. nature. Of course, this primary awareness of self and nature fails to describe their salient characteristics. In particular, it does not assure me that nature as I recognize it independent of me is indeed veritable as I recognize it. As a matter of fact, that which is recognized as nature in a primitive perception is usually hazy and obscure. However, significant is not the particular description of nature at the moment of consciousness, but the mere awareness of nature's existence and the subsequent determination of mind to procure its elucidation.

There appears a cognate relationship between self and nature; they are both immediate products of consciousness and we recognize in them a certain parallelism. We may postulate an awareness of nature corresponding to the consciousness of self. The opposition between self and nature that is implicit in the primary distinction between self and not-self may be traced through the entire pattern of our thought. Some thinkers have resolved this opposition in a dialectical process, valid without doubt, yet a source of chagrin to those struggling with the distinction. What is important is that we should recognize both self and nature to be qualitatively distinct from the conceptual world.

As we have defined it, that conceptual world is the attempt of self to comprehend nature; conversely it is a description of the influence of nature upon self. We recognize a symmetry in the relationship between nature and the conceptual world and between self and the conceptual world. We may demonstrate this symmetry by pointing out that both nature and self are immediately given to consciousness in its primary activity. At the same time, this symmetry is expressed in the circumstance that neither self nor nature should be adequately comprehended in our conceptual world.

From what we have said it follows that we may expect to find a relationship of utter immediacy between self and nature. We recognize an immediate consciousness of nature comparable to the immediate consciousness of self. We frequently deny this immediacy largely because we are chagrined by our inability to obtain an adequate conceptual image of nature. We tend to substitute our conceptual images for nature herself. It follows that we must learn to acquiesce to the necessary limitations of our conceptual world before we are ready to ~~recognize~~ accept the actuality of nature as it presents itself in its immediacy.

We recognize an implicit contradiction between the immediacy of nature as it is given in consciousness and its remoteness from our logical constructions. This contradiction is the consequence of our attitude concerning knowledge. We assume, erroneously I think, that what is nearest and most immediate to us, what is most directly the experience of consciousness should be most accessible and patent to conceptual description and analysis. We should divest ourselves of this notion. The consciousness of self and the consciousness of that which is other than self are both utterly immediate to us; yet our knowledge can adequately comprehend neither. Our failure to recognize the disparity between nature and the conceptual world leads to the artificial and quite unsuccessful attempt to replace nature with concepts. We have already listed some of the unwholesome consequences of such confusion. We should rid ourselves of the notion that nature should necessarily be comprehended by our conceptual knowledge. Likewise we must free ourselves of the idea that our conceptual knowledge should ever possess the substance or the finality of nature. If we are willing to accept a pragmatic justification for knowledge, if we are content to say that knowledge is true because it is effective, if we are ~~willing~~ prepared to abandon the contention that it is true because it is real, then all our knowledge may be freed from a troublesome and distorting burden. For our conceptual knowledge should

then be rid of the pretense of being equivalent to nature; our thought would then be free to reveal itself in the tentative, exploratory aspects which best suit it and which make it most productive. By the same token, our relationship to nature will become less embarrassed. We should, by abandoning the fruitless attempt to duplicate nature in our concepts, obtain a more constructive orientation toward it. An age that is intoxicated with its conceptual discoveries will be loath to admit an approach to nature other than that of attempted conceptual duplication. That direct, non-conceptual relationships do exist, that they are valuable and indispensable, will be the task of the following chapters to demonstrate. If mind were thus able to define its own limitations, it would in truth have surpassed them and opened entirely new realms to our experience.

We may now summarize our discoveries concerning the conceptual world. The world that we know is a world of concepts insubstantial of itself, but sustained by a reality that we must attribute to nature. This reality of nature we have shown to be in conflict with the conceptual world wherever the two intersect. Whatever representation, symbol, model, analogy or description of nature we invent proves to be both a projection of the limitations of our own minds and an inescapable, though often concealed manifestation of the actuality of nature. The way things look to us, the patterns into which

we analyze them, our memories and anticipations for them, the fruits of our historical and scientific investigations: all these are integral constituents of the conceptual world. This conceptual world is the product of the cognitive interaction of self and nature. It is, as we have said, the result of the determination of self to understand nature; it is also the consequence of nature's action upon self. As such it will reflect many of the qualities and limitations of self. It will likewise reflect the reality of nature. This capacity of the conceptual world for reflecting the actuality of nature is a source of great usefulness to us. At the same time that it conceals and masks nature, the conceptual world is a unique instrument enabling us to act purposefully upon nature, to exploit and to control ~~possess~~ it.

The intimate identification of the conceptual world with nature obscures the no less significant relation of the conceptual world to self and to society. One must keep in mind that in spite of the dependence of the conceptual world upon a presumably uniform and consistent nature, and in spite of the social forces that make for uniformity among the conceptual worlds of different individuals, yet ultimately the elaboration of the conceptual structure remains the task of each individual. Thus the conceptual world cannot avoid reflecting

the peculiar abilities and limitations of its owner. To be sure, it is frequently inconvenient and contrary to our immediate interests to emphasize the individual peculiarities of the conceptual worlds of different men. Yet it is extremely valuable to distinguish the views held by different individuals and to recognize that the discrepancies among them are not necessarily either trivial or superficial. This dependence of conceptual construction upon the abilities of self is valuable also in explaining the inevitable limitations of individual theory. Much would be gained for the individual if he might recognize that the discrepancy between his own conceptual world and that of the other man is not only inevitable but indeed desirable. The individual would then the more enthusiastically apply himself to the elaboration of his own conceptual world, and he would be more tolerant of that of his neighbor.

With this understanding of the origin of the conceptual world and of its relationship to nature, we may re-examine also the function of the conceptual world in providing an intellectual and emotional bond among men. The conceptual world is the cement of society. For many purposes it is useful to assume that there should be a public conceptual world. Such a world would be exemplified in the curriculums of the schools and of the colleges, in the stated opinions of the press upon various subjects, in the body

of legal decision, and where it exists, in official propaganda. Yet the effectiveness of such a common conceptual world would be limited by the difficulties of comprehension. Evidently such a public sphere of concepts, even if it existed, could never actually be possessed by any one individual. Even the knowledge of the most learned of men has many lacunae. A common conceptual world might well be a programmatic pattern for instruction, but it could hardly be considered even potentially an adequate representation of the conceptual world of ~~any one~~ the individual. However, the relationship of man to man and the relationship of man to society is never static. It is constantly in process of becoming; and the conceptual world is a pattern by which these relationships are established and guided. Through those elements in it that are common and public property, the conceptual world is indeed a most powerful bond among men. One need only cite the influence of religious dogma and of political propaganda to demonstrate the immense power of common concepts over the individual.

Once we have recognized the conceptual world in its richness and multiplicity, we must beware lest in our satisfaction with what is surely a significant discovery concerning our relationship to nature, we forsake the original phenomenological approach that made this discovery possible. In other words,

however familiar we might become with it, we may never assume that the conceptual world in its entirety, whatever that might be, should ever be present as such to an individual mind. In its entirety the conceptual world is potential; it is a possible pattern of thought which from moment to moment is only incompletely apprehended by each individual. The study of the conceptual world as such is the proper task of hermeneutics, the science of understanding or of interpretation. Such a discipline would be faced with the peculiar difficulty that its topic should by definition be distinct both from self and from nature. Therefore such a discipline would require a new set of presuppositions and a new procedure for investigation. The elaboration of such presuppositions and procedures is beyond the purposes of our present undertaking.

* * * * *