Abstract: A Reconstruction of C.I. Lewis' Lectures on Epistemology

Lecture notes taken at Harvard by the editor in the Fall of 1951 served as the basis for this reconstruction of Lewis' classroom presentation of his theory of knowledge in Phil. 152. In addition to its possible historical and conceptual value, this edition of Lewis' lectures has special interest in the respect that it clearly exhibits Lewis' remarkable understanding of, and relation to, Berkeley, Kant, absolute idealism, and skepticism of the Humean sort. (A detailed reconstruction of discussions by Lewis of European philosophy before Kant is included in "A Reconstruction of C.I. Lewis' Lectures on Kant" as published in Philosophy Research Archives.)
Introduction: A Reconstruction of C.I. Lewis' Lectures on Epistemology

I.

C.I. Lewis was both a leader in the evolution of modern epistemology and a master of the art of the lecture. Although his lectures on the philosophy of Kant are probably more often referred to—and emulated—than those in epistemology, the latter themselves presented a unique intellectual experience to their listeners. Through their medium, Lewis could not only present his concepts and arguments directly to an audience of students and scholars, but he could also represent those ideas against a backdrop constituted by the philosophical heritage of Berkeley, Kant, and absolute idealists, and—the real enemy—Hume.

Although these two facts—the one respecting delivery, the second respecting form—would tend to make the lectures take on a special value and to make them worth recording, my principal, if personal, concern in the preparation of this reconstruction is to realize two objectives. The first is to record the subtlety with which Lewis represented his concept of the activity of the mind in its role relative to the merely sensuous givens of experience. The second objective, and the more important because of its relation to the logic behind the practice of philosophy, is to record—in Lewis' own words, when that is possible—the strategy and tactics of his radically experiential methodology in epistemology.

II.

The first eight lectures in Phil. 152 were given over almost entirely to a review of the historical evolution of epistemology. Most of that material has been included in my reconstruction of Lewis' lectures on Kant, and is not here repeated. I have instead chosen to include, as part of this introduction, some of Lewis' remarks on David Hume. However much the lectures were intended to represent the substance of Lewis' epistemology, clearly one of Lewis' principal concerns in the lectures was to reply to a skepticism of the Humean sort and, to a lesser degree, to reply to the more openly naturalistic skepticism of George Santayana.

Although I believe, and have argued elsewhere, that Hume is the author of a generally adequate phenomenology of belief, I can find no trace in Lewis' lectures or publications that his concept of Hume's thoughts was of anything but that of a thorough-going skeptic. My professional judgment is that the incorporation into Lewis' philosophy of a phenomenology of belief such as Hume's would greatly have strengthened Lewis' position; directly expressed, I
believe Lewis made too much of his epistemology depend on the concepts of expectation and prediction, and too little depend on our undeniable sense of something's being real: not, for example, only the pencil in one's hand but the tea kettle unseen behind the closed cupboard door. In this context, however, I shall merely report Lewis' early (in the lectures) representation of Hume's position, after first expressing the hope that the thoughts of these two giants someday be brought together.

At the close of his lecture on October 3, 1951, Lewis presented the three criteria by which Berkeley distinguished between valid and invalid ideas:

1. Clearness and vividness, as in the difference between seeing and imagining,
2. Independence of the will ("Look at the desk, and try to see white."), and
3. Function as a sign of what is to come: that is, a predictive character within our own experience.

Lewis, in closing, noted that day that "...Berkeley left the door open for Hume's skepticism."

Lewis returned to this topic in the latter half of his lecture of October 8 and said he would present "an argument which Hume did not use."

To Hume's point that we learn relations from experience by generalization, by the association of ideas on the basis of conjunctions in past experience, Lewis replied by asking rhetorically: How is one who was impressed by dreams of flying to learn the law of gravity? Although data are found in experience, we must first "go through" experience and "throw out" the non-veridical" items. A "good" (mere-?) empiricist can not avoid that fact. There is need for "a super-empirical critique."

To Hume's points (as represented, of course) that we merely expect that which held in the past to hold in future experience, and that knowledge is but animal faith, "a habit of which we cannot divest ourselves," Lewis replied "But that is not knowledge!"

(On the general point of inductive extrapolation, Lewis noted that any number of curves can go through all the points plotted on a graph but later diverge from all points subsequently plotted. "We expect nature to have a smooth curve or [at least] one in accord with the same formula or we could not have knowledge. Is nature simple or are we?"

Finally on October 10, Lewis developed, in a polemic against Hume, a point which I then perceived (and still perceive) as being at the very center of his reflections on knowledge: Hume's skepticism failed, on Lewis' account, because the concept of body in his (Hume's) analysis of causality was not available to him for use in experience.
(See A Treatise of Human Nature, Part III, Section II.) In Lewis' lectures the point is made that "...a hypothesis of intervening reality is used by us. To say 'A watch is in my hand' is to make a certain prediction as to possible experience. To apprehend an object depends on an order in my experience. If what is expected in experience were lacking, I should not be able to apply a word or a substantive term. We conceive of the impact of the billiard balls as a causal connection, but the same type of connection is in the perception [of the objects involved in the impact]; that is, an aspect also can be a sign of what is to come... Both the recognition of natural law and the recognition of objects owe their existence to this type of causal connection... [Without that fact,] nothing could be true or false... because there is nothing to talk about. A pure empiricist skepticism will not allow its user to say anything that has a usable meaning. He could not even be able to state this own skepticism."

When Lewis went on to the observation that Kant sees that the question of knowledge is the question of the necessary connection of matters of fact, I believe he was not only introducing Kant—but also Lewis.

III.

The notes used in the reconstruction of Lewis' lectures in Phil. 152, The Theory of Knowledge, were taken by me in the Fall semester at Harvard in 1951. In a few instances, I referred to Mind and the World Order, An Analysis of Knowledge and Valuation, and some of Lewis' papers to fill in small gaps or to check the accuracy of the notes. In some cases where the point made seemed to go beyond the significance or details recorded in the notes, I have included specific reference to Lewis' works.

Perhaps not incidentally, I was at the time of my taking Phil. 152 a junior in Harvard College with a major in philosophy. My grade for the course was B.

IV.

A.I. Melden encouraged me to proceed with the reconstruction of these lectures; I must therefore thank him first of all. The interest expressed by Lewis' son, Andrew K. Lewis, and by Mrs. C.I. Lewis has, at all points been invaluable to me. José Benardete provided advice concerning the lecture on mathematics and geometry. My wife, Arlene, has been patient with me and discerning in her examination of the manuscript as it was prepared. My thanks to all of these persons.
I have had several occasions to express my appreciation of Mrs. Carole Wenthen's expert professional assistance. This time my thanks have a special significance, for without her willingness to transcribe some tapes which I had very poorly prepared, I certainly could not have completed the reconstruction at this time. I therefore write with direct address: Thank you, Carole!

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(Oct. 19) Other geometries exist beyond the Euclidean. Mathematics and geometry are now considered to be analytic. Arithmetic was considered synthetic by Kant, because it has to do with counting which is a construction that depends on the form of time. Non-Euclidean geometers had a problem in mind; their concern was not with a refutation of Euclidean space. That problem concerned the parallel postulate that through a point outside a line only one parallel line can be passed. That does not sound obvious like the other axioms; that consequently drew the attention of various men. Maybe it was not an axiom. They decided it could not be proved. They took other axioms as true, but assumed that two lines can be drawn through the point in question.

Just suppose that. This allows for an infinite number of parallels between the two lines alone. [Lobachevski] Also, no parallels can be drawn through that point at all. [Riemann] The point, logically expressed, is that Riemann and Lobachevski are consistent if Euclid is consistent. A dictionary can be set up which shows a one-to-one correspondence of theorems in all three theories. But in Euclid you have to draw a figure. In the others, the thing is reduced to sheer logic.

Kant's point had been that there is an appeal to an intuition of space needed for some steps in Euclidean proof. Nowadays you add more postulates, and reduce Riemann and Lobachevski to pure logic. When that was tried on Euclid, modern geometry resulted. There was found to be an illicit appeal to intuition or figure; that was removed. The symbolic element is now gone, so Kant has been proved wrong in his insistence on the essential role of intuition in geometry.

As for arithmetic, the main point here concerns a definition of number. One is defined as the first successor of zero. Reduce arithmetic to a series of successors based deductively. [See C.G. Hempel, "On the Nature of Mathematical Truth" in Readings in Philosophical Analysis, H. Feigl and W. Sellars, pages 226-234.] That gets rid of any synthetic element in mathematics. Analytic judgments do not assert anything except that, given these assumptions, the theorems follow.

Modern geometry is divested of considerations of what space itself is like. Pure mathematics is that in which you do not know what terms mean except in connection with others by definition. We do not know whether it is true of any application in experience. Expressions are cut loose from application or denotation. We just have a very complex structure of logically necessary connections. Modern geometry says nothing about existing space.
Which geometry should be used? Poincaré argues that the answer to that question is just a question of convenience. For example, make a sphere big enough and you cannot tell the difference between a Euclidean and a Riemannian straight line. Euclidean geometry is much more convenient and conventional. For example, no similar figures of different sizes can occur in Riemann, but it is convenient for us on most occasions to use similar figures.

The point here as regards Kant is that we cannot decide whether space bends or whether light moves in circles. Space is Euclidean because we cannot imagine non-Euclidean spaces without the thought experiment of putting a sphere in Euclidean space and then considering it in a certain way. [See H. Poincaré, "Non-Euclidean Geometries and the Non-Euclidean World" in Readings in the Philosophy of Science, H. Feigl and M. Brodbeck.] In an empirical application, you are right or wrong,—that is a question of fact. Kant's claim of a ground for a priori truth about actual and real space was based on his belief that no human mind can envisage anything spatial in a different manner. The truth of space is synthetic; since it is a priori, then it is synthetic a priori. No one has proven Kant wrong on this claim. So the discussion of modern questions has no relevance to Kant's treatment of space with his emphasis on it as a form of intuition located in the awareness of the subject.

(Oct. 22) The topic today concerns analytical knowledge. This type of knowledge has to do with relations of meanings, not facts about the world; for example, to be human implies to be an animal. What we have in cases of this sort is a relation of concepts and meanings.

Rules, principles, and general statements of logic have the character of the analytic. That logic is formal means that part of what is said is irrelevant to the character of analytic truths. It is just a general fact that expressions can be put down by means of variables. "Either P or not P" holds because of what "either," "or" and "not" mean. Furthermore, mathematical entities can be defined in logical terms. Mathematical statements are derivable from those of logic. Mathematics is simply very highly elaborated. Mathematical entities can be spoken of by way of logical constants. The analytic can be certified if we have the principles of logic. With logic and a dictionary, all analytic statements can be certified. That much we know a priori, because analytical truth is independent of the question of what is the case with respect to empirical facts. Analytical truth puts no limitation on the empirical world. Some meanings, however, find no application: centaur, round square, sea serpents. The genuineness of empirical knowledge requires limitation in experience with respect to empirical reality if induction is to be valid.
By contrast, the truth of the analytic does not limit. Most meanings do have application. Men classify. To do this, to classify, is to determine that a certain meaning applies to a certain thing. When we classify a thing presented in experience, we have some criterion in mind. What is it? The answer is whatever the disclosure or nondisclosure of that which would settle our classification problem. Meanings operate in mind as criteria for classifying, and to classify is to determine what does or does not satisfy a given meaning. The question of the analytic turns on the existence of statable relations of one meaning to another. Meanings find application because our entertainment of them is an occasion from which we do or do not apply them. Something is either a or not a. If our meaning is clear, the classification comes right off. For example, the meaning of wax operates as a criterion for saying "yes" or "no" in the identification of this particular substance which is before us.

This activity of classification functions in terms of some type of imagery. If classification is not obtained in any given case, the meaning which was in mind can then be said not to have been precise. The need is to determine whether an expression having meaning does apply to what is found in experience. A meaning is here suggested to be a criterion which involves imagery, imagery which functions in the testing of the application of that meaning. We must be able to signify; that is, we must have a criterion of applicability. If we can tell what is entailed by the meaning functioning as a criterion, we have explicated the meaning and can apply it.

That the sum of the angles of a triangle equals $180^\circ$, according to Kant, comes from imagery; that is, such knowledge is synthetic a priori. Since proof can be done in modern geometry by assuming statements and not using figures, geometry, in fact, can be arithmetized. But try to imagine the same spot as both red and yellow or a figure as both round and square. In the classifications of things in general there is the category of mutually incompatible things such as all the colors together. Given that fact, the question of the synthetic a priori boils down to the question of whether incompatibility of quality is a question of logic, of definition, or of what can or cannot be imagined.

(Oct. 24) The subject of this lecture and some material later concerns absolute idealism.

Fichte thought that Kant knew too much of the thing in itself to hold that absolute reality is unknowable. Even the notion of reality implies that reality is a ground of apprehension. There is thought to be an isomorphism between absolute reality and its appearances according to Bertrand Russell.
Absolute idealism takes its matter from Kant's ethics, namely, the primacy of practical reason. The ultimate imperative resides in the will. In the beginning was the word; later, in the beginning was the deed, the act. The ego, mind in location, posits itself. It asserts itself and recognizes its own existence. The concern here is not with the undeniability of the Cartesian cogito. I assert, posit myself; there would be nothing without the positing of something in the stream of consciousness. In positing the self, the ego posits the other, the non-ego, that which stands against the ego, that which limits and bounds it. To be conscious of self is to be conscious of the not-self, so there must be a positing of the external world. To assert the self is to find it set against the non-self. To become a self is to do, to act against that which is not subject to my will, namely, the external world. The myth of creation is a type of comprehension of what lies at the root of reality: a recognizing of what is non-self. This is the voluntaristic aspect of absolute idealism. [See, for example, J. Royce, The Spirit of Modern Philosophy, pages 159-162.]

There is here evidenced a concern with a manifestation of the spiritual reality. The life of mankind is seen as the manifestation of the absolute spirit. That there is no object without a subject is the root metaphysical thought here. There is no God save in the mind of man, but God is not just an idea in the human mind. The absolute spirit exists, lives, only in its manifestations; in those, it exists in time. Any manifestation which exists does so in time. The conception here is of human history as the manifestation of the cosmic ground of existence, although that cosmic will cannot be fully realized because of its infinite character.

The philosophy of Hegel is a transcendental dialectic; that is, a journey of the human spirit in its self-realization. The dialectic is an antinomial process that goes through a fantastic series of categories. The dialectic is seen as a march toward truth. Actually, all cognition has instruments which realize our purposes. But the body does not fully realize our will. We realize ourselves in the lives of others. We march towards self-realization in society. The absolute stands at the end as the ideal of this process of self-realization. Its manifestations, however, are fragmentary, partial. Subject and object are the two sides of the matter. The left wing of a Hegelianism is Marxism. The right wing includes such figures as Royce and Fichte. That is the difference between a material and a spiritual dialectic.

In the case of some of the idealists, rationality, not an empiricism such as Berkeley's, is central. The root matter in consciousness is form or rationality. Logical form is the imperative of the absolute spirit. There is not a "to be is to be perceived" as in Berkeley here; rather, that which is real is that which would satisfy the rational demand of understanding. Complete and adequate comprehension of a thing would be the identity of mind and reality. The real is what a rational interpretation of experience requires. As such it is an ideal never fully realized. The
concept here is of an essential unity of the whole of that which is real. To drop the chalk is to shake the stars. There are no isolated facts, but only partial comprehensions of actual facts. The here-now character of cognition expresses a limitation of human understanding. To understand adequately would involve the significance of the past, the future, and the rest of space. The real is the ideal.

The real and the ideal would coalesce when knowledge becomes complete—but it never does. Do not try to separate the chalk from the subject conscious of it; one cannot separate the chalk which we see from the experience in which it is seen. Our usual notion of an individual is of a thing within space-time boundaries. Concerning the concept of an individual thing, infinite questions could be asked. Some of those questions would involve the relation of the subject of the questioning to other things. What the individual is here and now involves its relation to other things, especially its relations to the mind knowing it. The chalk is that by reference to which any question asked about it could be answered. No one essential relation determines the chalk's being uniquely what it is; that is, all relations are essential to this individual thing, this piece of chalk. That fact illustrates the doctrine of internal relations. All relations are internal and essential to a thing's being what it is. From this concept there arises the notion of the coherence theory of truth. Fragmentariness is essentially a character of truth. Ideally all relations of things are penetrable by the human mind. The test of truth belongs to future science which more and more approximates to a larger understanding. That progress means, of course, the achievement of more and more relations. Truth is tested in relation to other truths. A fuller understanding is achieved. Nothing that we know is not in principle subject to correction. Bosanquet's point was that there is no first premise. The coherence theory of truth leads to a skepticism of the absolutely first data of sense. Only coherence is left as a foundation of empirical knowledge.

(Oct. 29) Absolute idealism turns in part on the conception that reality is rooted in the spiritual. That is an interpretation of the nature of material reality, not a denial of it as a type of reality. To assert reality there must be the categorization of experience. Reference to mind is needed for meaningful assertions. The real has the form and structure of knowledge, a fact which, in turn, entails reference to mind. There is an implicit reference in all knowledge to the nature of the knowing mind. Mind is here and matter is out there. A community of knowledge has to be contrasted with idiosyncrasy; the idiosyncratic is the merely subjective. Also, the quality is in the object as it is in our perception of it in the case of knowledge, whereas the quality is only in perception yet with its ground in the object [according to the idealist position?—Ed.]
According to Fichte, there is an act of will at the bottom of the whole business, an act of will in which the mind addresses itself to its own content. The positing ego requires the positing of that which stands against the ego. The thrown, the projected, the over there, the outside, the beyond—this stands against the ego. We cannot act or will without something which stands over and against our will. The evident nature of reality requires reference to its observer. That is the character of thought by which it leads beyond itself. To see as God sees would be an ideal, the ideal of understanding completely that which I now try to understand. The ideal is the absolute from which my mind differs only by its finitude.

In turning to a consideration of a repudiation of absolute idealism, we note that the thought which becomes an argument from the idealist's point of view is his insistence on knowing that the chalk, when dropped, would shake the stars; that is, his insistence on a unity of the universe. Every part of the universe is considered as being implicit in every other. There is an organic unity of reality asserted. Knowing in this sense may exist; that is, my experience can be considered as the center for an infinite questioning. But that is not the sense of knowing in which we can be said to know an individual thing, knowing in the sense of determining whether the chalk will write. A simple observational test is involved as to whether it will write. That sort of thing is a fact about any object, a fact that can be stated in a proposition.

We are concerned with the knowable in that sense of fact. Admittedly, more is involved in the nature of an object that what is of importance in the immediate question. But knowing an object essentially consists only in knowing the facts about the object. The piece of chalk is an existent, not a fact. That it exists here and now is a fact. There is, no doubt, a question of the essential connection between both kinds of knowledge; for example, where does the chalk come from and will the chalk write? The knowing of some aspects of the chalk does not seem to require implicitly the knowledge of all the rest. That would be a "reading in" of logical implication into the notion of an item of knowledge. The flower in the wall might be mutant. It might be unconnected with the past. Maybe nothing is implied.

The essential point here is that there are answers to questions about an individual that can be determined by reference to its nature alone. In contrast to that, there is the notion of the individual as being infinitely specific. Regarding the individual, one can ask questions the answers to which categorize, specify, determine one of each pair of possible contradictory predicates. "It wouldn't be this piece of chalk if it didn't have, and so on." That approach, however, does not distinguish between nature and relations. Relations may be included infinitely in the individuality of the chalk in its relation to the rest of the universe. But consider a kidnapped baby. The situation is not implicational. The location of the child cannot be thought out. The test of empirical truth is finally coherence with what is beyond, with the totality of other factualities. A consistent theory of empirical truth is to be probed further.
(Oct. 31) The truth of the theory of internal relations, that is, knowing any object implies knowing the universe completely, amounts to a game of many questions. The doctrine of internal relations is a fact. Critics, however, say that many relations do not make any difference to the concept of an object. This is in contrast to the claim that every character that is a property of an individual is essential to the individual, not merely accidental. One relies on intuition to draw the line between the essential and the accidental characteristics of individuals. Where do we draw the line? If an individual is infinitely specific, it follows that to know the desk completely is to know the universe, especially a certain rock in some distant era that had the same shape as the desk. But this is not what we ordinarily mean in saying, "I know a certain object." Usually recognition is the important element. If I try to claim a watch that is lost, I probably could not remember enough particularities. So we, not nature, put numbers on things. To know an object is to know a certain number of facts about it. We can identify these facts in practice under actual conditions, but not if all conceivably similar things existed. In the type of case at hand, in other words, I know an object if I know certain facts about it. Knowledge of objects may be terribly superficial. Knowing is knowing something which might conceivably be expressed in statements. Knowledge of objects never extends to more than a finite number of facts out of an infinite number of possibly related facts. We know what we know about a particular object, but this does not increase our overall knowledge of the universe. The nature of the universe may be implicit in the nature of the desk as an individual, but the rest of the universe is not implied in what I know about the desk. The truth of the desk as infinite goes infinitely on, but the implications of what I know are limited just as what I know of the desk is limited. The conflict of what I thought I knew with what I now know is a way of discovering mistakes. Mistakes in mathematics are corrected by thinking straight, by pointing out an inconsistency with a priori premises.

Inconsistency in the case of mathematics is in the system. But can coherence in the domain of experience establish truth? A thing's place in the whole of truth would have to be seen. That is an ideal. The whole of truth, however, is forever beyond us. That only the whole truth is wholly true follows from the coherence theorem. The absolute idealists do not describe with precision the coherence theory's interpretation of the relation of coherence. We do not know just what coherence is. The idealists probably mean consistency. However, what we know consists not of statements, but of what is statable.

Consistency holds when what we know of such-and-such does not imply the falsity of thus-and-so. When the statements on hand do not imply the falsity of any others of that set, we have a case that specifies the character of consistency. Also, statements that are true must be mutually consistent. A set of statements is inconsistent as a set if any selection from them implies the falsity of some of them. Consistency then equals the negation of inconsistency. Maybe coherence means consistency. That, however, is a very weak relation.
Is a large system of mutually consistent statements to be considered the truth? Also, the consistency of one fact with what we can find out would increase the probability of truth of what has been newly learned. That which is consistent with the body of all facts about the world would be absolutely true. But this would not imply the existence of any specific truth, although it would tend to establish a probability for such. Think of a very large lie. The original lie might be self-contradictory as in the mathematical example as $2 + 2 = 5$. But this type of situation does not hold of empirical truths or falsehoods. Ask question $p$. Is that so?

The liar in this thought experiment can say "yes" or "no." The lie may not be consistent with $p$, so he says "not $p$." The lie must be consistent with $p$ or not $p$. If the lie is self-consistent, it is consistent with an answer "yes" or "no" to any question, but when a lot of questions are asked, the choosing of a consistent answer is difficult and will also make the lie bigger. The larger lie is self-consistent and the liar can continue to make the choice which would maintain that consistency if he is acute enough and fast enough. Any lie is as consistent with the total block of statements that make up the lie as the truth would be. Consistency, therefore, proves nothing about the truth of any statement. There could be a good test by the laws of chance, but not by the laws of logic or the nature of the world. We're poor liars and poor logicians. We can't do it fast enough.

(Nov. 2) There can now be a further illustration of our criticism of the coherence theory of truth, supposing that coherence is the same as the thorough-going consistency of a set of propositions. One geometry must be true and others false if some specific meaning is given to the concepts mentioned in them. Any theorem is implied by the others, even if the implied theorem has been left out of the initial set. Even such a system of propositions with the character of consistency plus that kind of structure such that a left-out statement is implied by the others, namely, congruence, would still not yield probability, because there is an infinite number of possible geometries. Coherence with experience, in other words, is critical. There is all the difference in the world between a self-consistent large lie and something with at least a little probability. The laws of chance are appealed to in reference to the testimony of witnesses when that testimony is in agreement. The conclusion is that they must be telling the truth. Take also the example of a pack of cards. The chance of getting thirteen hearts is the same as the chance of getting any other hand. This conclusion rests on a statistical interpretation of the second law of thermodynamics concerning distribution in a closed system. No probability is established by sheer consistency, not even, in fact, by total congruence—a state of affairs in which the truth of one proposition is required by the truth of the rest.
The secret of the matter, then, must be coherence with experience or with something which at least gives a ground of probability. The matter of experience must be consulted with regard to its role as ground in the determination of empirical truth. Perceptual judgments might be regarded as a basis of experiential truth. However, some perceptions are not reliable. They may be mistaken. Typically, one can hope that an explanation of a mistake, an error, can be found by use of the laws of physics. [See Collected Papers of C.I. Lewis, pp. 318-321.] But we must recognize that perception is not completely certain. In accrediting the perceived, there must be other processes required for validation of the percept than merely looking, having, hearing, etc. The coherence of other perceptions must be invoked to attest to the reliability of some perceptions. We believe most of what we see, but discredit some of our experiences. We do, of course, occasionally fall back on the coherence of experience. There is that fact that I had just that experience which I did and there is also the fact that some other experiences did not jibe with it. Probability and improbability depend on this absolute fact of the experiential (regardless of whether it is illusory). [In other words, the determination of what is illusory is made intra-experientially.-Ed.]

We cannot get away from the facts of experience. Is the ultimate datum then perception? No; that cannot be the case. Perception cannot be regarded as absolutely valid for a given datum may be adjudged wrong. Note that coherence with the results of many experiments in a laboratory is required for the acceptance as valid of any one other result. We cannot go beyond our perception. Then, if we have to, we go to our "perception" of what other people tell us that they perceived. In either case, in the end there is a perception which you have. All our knowledge goes back to our own first person experience. Although we may find out by being told, that is, by our receiving perceptions of that sort (that is, our experience of being told), it is in the last analysis the fact of our having had that experience to which we give weight.

William James uses "truth" in a certain sense; namely, the truth you can get. Scientific truth changes. It is the kind of truth that James is speaking of, not absolute truth. The former is the only thing we have; but it is not the way we think the phrase, "concept of truth" ought to be used. There is, after all, an ideal of truth: that which in general the workings of rational minds tend to move toward with the further implementation of human experience by testing, corroboration, and the like. That is a never-attained goal toward which the human spirit works, an absolute ideal relative to rationality. In a sense, then, we never get beyond absolute idealism. This kind of truth, truth as absolute, can never be possessed. The truth which we can possess is best illustrated by science, namely, changing truth which keeps its old pragmatic cash value even if replaced by newer truth. So, cash value, that's the truth.
There is a difficulty with respect to perception which forces us to the situation dealt with by the coherence theory. So far as the question of empirical truth is concerned, there must be ultimate dependence on the type of truth that comes from experience. The idealists do not explain the meaning of coherence in the sense of coherence with experience, for this would presume experience which would then become the root of the matter. Mathematics does not give probabilities to the truth of our beliefs about reality. For example, as noted, there are different geometries. The reason for believing that space is Euclidean or not is not a question of logic. We must find our way back to what physicists or astronomers see; that is, we must go back to experience, to perception. More, however, is needed, since not all perceptions are believable. We conclude this latter fact because there are some ways in which they conflict. The findings of different senses may not agree, and such lack of agreement is not a matter of sheer logic nor is it a matter of sheer perception. Two conflicting perceptions individually regarded have the same convincing character; but when they are compared, both cannot be factual. Is there a question of coherence here? Our disbelief in one experience may be grounded in its incoherence with another experience. Probability, therefore, turns on relations that obtain among the experiences themselves. To resolve the situation, we ask whether perception is perhaps a mere content of given experiences or whether it involves something more than the mere finding of a presentational given in our experience.

The fact is that perception implicitly implies more than the passive receiving of sensuous data. It involves a judgment. In the case of visual experience, for example, there is a factual presentation plus an unconscious inferring of a certain state of affairs. There is an element in perception in addition to the apprehension of a merely sensuous presentation. This, however, may incorrectly suggest a visual grasp followed by a judging. That is not the case. The step from the visual to the belief that such-and-such is not a character of thought, that is, not a psychological inference. The fact is that we do not see mere sense data. What is visually grasped is a certain pattern of color in a situation with the quality of overthereness, but we see a horse. That seeing includes something which involves there being the unseen side of the horse. We do not judge that the horse over there has another side. That object, namely, the other side of the horse, is posited in perception. We posit what is, strictly speaking, not presented. We are always a little vague as to what exactly is posited. For example, we are not quite clear as to what the color of the other side of the horse would be. The element of the directly presented in its relation to the posited was emphasized by Whitehead by his reference to patterns of color in a situation. [See The Concept of Nature, pp. 148-153.] This configuration of data has occurred in the past and at once by habit we "think of" the other side of the object; we take it to be there without thinking about it, without making an explicit judgment. It has to be there in our seeing for
us to perceive a horse. There are then these two elements in perceptual experience, the given and the posited.

Our project in the theory of knowledge has its primary interest in explicating and investigating the validity of empirical knowledge. Those aspects of the situation that interest the psychologist are only indirectly of interest to us. He will have to tell us what makes him think which of his beliefs are correct. With what justification can he do that? The fact is that the psychologist has different interests. For example, his interests concern the relation of knowledge to neural processes, but he has little or no interest with the question of validity.

The question, "with what validity?", exists with respect to the second element of perception, the posited, as, for example, in the question, "With what validity is the other side of the horse conveyed to us by what we see?" The validity of the belief in the other side is essentially the same problem as if it were a matter of inference. Think of it as though it were a judgment, not only a positing. "What I thought was that I saw..." The seen and the inferred are connected by reason of their similarity to other corresponding configurations in past experience. There is a vagueness in the coherence theory because of the failure to distinguish the incorrigible sheer datum of seeing from the judgment-like element in perception. It is with respect to this latter element that there can be error. The plain absolute fact of what is sensuously presented does not amount to seeing what we thought we saw or heard.

The given element in experience, the datum, does not alone amount to justification for our belief in any objective matter of fact. Our belief in the posited matter of fact, for example, the object over there, can in any instance be mistaken. In this element, the posited, resides the invalidity in cases of invalid perception. We cannot go back, by the way, and re-examine an experience. We do not get a second chance to answer the question of what was there, of what was experienced. Did I see brown, or merely imagine something brown? The distance between perception and imagination becomes smallest near the threshold of perception. There is an extreme difficulty in using language accurately in matters of this sort.

(Nov. 7) To summarize the argument, we take off from the coherence theory of truth. Considerations may later drive us back towards the coherence theory as that happened in the cases of perception where we find that we have to repudiate perceptual beliefs because of their relation to other perceptions believed in. But the idealist view is not clear and adequate as it stands. A novel is a fiction whether or not it is coherent with real life; pieces out of real life may cohere with a lot of fiction. Coherence alone does not stand as a ground for belief, although, of course, the occurrence of incoherence raises a presumption that falsity is there somewhere.
Now, however, consider coherence with experience. Experience is peculiarly relevant to coherence on the view to be considered here. The word, "coherence," does not suggest exactly what is meant here. The ideal of coherence is a mathematical system as pure and as taken to express facts of certain [logical?-Ed.] order. Perhaps, there are lower grades of coherence or congruence. Statements may be congruent in the respect that if you take one away and presume the others, then the others will give a high probability to the truth of the one removed, but not certainty. Perception does provide a basis of unique importance. Not all perceptual beliefs and judgments, however, can be true, because some occasionally are not coherent with others. That is true also with memories. We must apply a critique to perceptual belief. Can we go beyond perception? Yes; there can be a conceptual move to sense data—the given in experience—because perception is a more complex state of mind than what at first glance might seem to be the case.

Factors in perception, of course, do not come in separate pieces. The sheer datum of presentation and a conclusion jumped to without a conscious process of inference, nonetheless, are analytically discernible from experience. The latter, the element of inference, may in some cases be repudiated in retrospect, for it is the element in perceptual belief which affects its validity, yet is not its absolute datum. It has a status of an inference justified by the frequency with which the given has been associated in the past with the fact I was led to believe.

A visual pattern, for example, is presented at night on a highway. That pattern occasions a suggestion which justifies our taking a certain action. Here is a question concerning the status of such an inference. In infancy, the presentation of a pattern need not have aroused the same judgment in the way it does now, except for the possibly spontaneous response of immature lower animals.

By what criterion do we distinguish between what is merely presented and what we believe? Belief is suggested by a high measure of correlation in past experience between the presented and the inferential nonpresentational element. Frequency aids in this matter. We are faced here with an example of a type of report that has higher status than animal knowledge, because it concerns the logical probability which justified our concluding from A that B is a fact. Some consideration of probability is relevant in the discussion of adequate knowledge even at the perceptual level. There is an inferential element involved but not merely psychologically so. But would the element believed in be justified as an inference in retrospect? How do we make the separation of the psychological from the question of validity? We distinguish between what does not have the status of objective fact, except in experience, and that which claims the status of objective fact. The fact of having an experience is an objective fact but is subjective in the respect that it is in consciousness. The total perceptual state claims a relevance beyond the state of mind itself. We can merely note what is given as such without claiming any objective status whatever for what that given might have led us to believe.
The way of expressing the given is not easily described, although the fact of givenness is undeniable. The given is the undeniable element in perceptual cognition. The rest is doubtable, but the given is indubitable. There is, of course, a difficulty concerning introspection. Language was invented for the purposes of communication. Something must arise in the mind of the hearer similar to what was in the mind of the speaker or writer. The sensuous quality aroused in the mind of the other need not be qualitatively identical, however. One's experience might be qualitatively different from that of others. What is important, from the point of view of epistemology, is that the pattern ingredient in the sensuously given be the same in the mind of the hearer as it is in the mind of the speaker. [See Mind and the World Order, pp. 73-81.] Only the nature of pattern is relevant in determining the appropriateness of behavior in response to what caused the experience. Consider the pragmatic function of secondary qualities. [See Mind and the World Order, pp. 128-132.]

The given is to be distinguished from the inferential element. We do not have a language adequate for expressing the data of experience in isolation from objective fact. Every word normally carries with it objective reference. The word applies only if the thing is an objective reality, not just a given in experience. The whole of language serves essentially for conveyance of information about objective fact. We cannot talk unambiguously about the data of experience. The qualia of experience are ineffable and inexpressible. Consider the difficulty of expressing the given in experience. For example, do you see what I see? Not a believed-in reality, but the presentation is under consideration here. [See Mind and the World Order, pp. 52-53.]

A question [such as the last example] is typically answered with objective language but we mean to report, "It looks purple, but it may not be." No objective fact is in question, but the idiom we generally use does not differentiate these two elements clearly. Both the given and the believed-in are expressed with the same idiom. (Note that when poets want to share the fact of a mood, they do this by arousing a given state of mind in another. The expressive use of language has no vocabulary of its own, but is defined with respect to its objective uses. Expressive uses are not in the dictionary except for ejaculations. There is, unfortunately, an unavoidable vagueness in the use of expressive language.)

(Nov. 14) The element of the given in experience provides the foundation eventually of all empirical knowledge. We distinguish between what is guaranteed and what is inferred, but we do not do so on the occasion of perception but rather when we reflect on the validity of our knowing. There are cases where it would be silly to hesitate to act. The significance of the given is not only not doubted in such cases, but is indubitable also.
The content of experience is here being contrasted with the object believed to exist on the occasion of that experience. Need such content of experience have any other status than its being a presentation in experience? Probably not. What is given exists only in the sense of its being in some moment of conscious experience. Nothing more than that is here ascribed to it. If nothing is certain by virtue of experience, then nothing is certain except analytic statements. Empirical knowledge would have no certain grounds at all, not even for a degree of probability. Probability must be grounded on empirical data at least. There are two kinds of confirmation. Objective empirical beliefs can be confirmed or disconfirmed. If not, they would merely be sentiments. Nothing can be confirmed except by use of the data of experience. The theory of truth depends upon the theory of meaning. That verifiability includes confirmability and disconfirmability is accepted as a theory of meaning here.

We take the thought from Santayana that essence is qualitatively specific. Prediction confined merely to what one experiences can be absolutely verified. We note that we are never aware of the given as such. We see the watch. Its shape is an afterthought. The given is past when I want to talk about it as given. The present is not an infinitesimal point as in geometry, but is a specious or epistemological present. An instant of time is a mathematical fiction. The present is long enough for us to take a second look if we have to. [See An Analysis of Knowledge and Valuation, pp. 330-332.]

(Nov. 16) We are forever within our experience. We cannot get beyond our experience. This limitation determines the only manner in which a knowledge of what constitutes validity in knowledge can be obtained. [See Collected Papers of C.I. Lewis, pp. 338-339.] No side is taken with respect to metaphysical theory here. All accounts of knowledge can be given only in terms of experience. We look to a significance which attaches to the idea by which it acts as a sign of what is to come—Berkeley's point, of course. The given is that element to which significance attaches. That which signifies only the present state of mind alone is not knowledge. Experience must carry cognitive content. Purely emotive or affective experience is not significant of anything beyond the state of mind itself. Something must be signified which is transcendent to the merely given experience. Something in immediate experience mediates something not in experience at this moment. The judgmental, inferential, mediational element differs from the presentational, incorrigible element to which the sign function attaches. The latter is recognized as the character of experience by virtue of which we acknowledge a reality independent of our own knowledge of it. The universally recognized significance of the given is its being a sign of what is independent of what we will or what we choose to think.
This independence of the mind implies an ontological view. What do we mean by independent reality? It signifies something which is determinable, not a present, immediate content of consciousness, but that of which this content of consciousness is a sign. If we test a belief concerning this reality, we shall get results independent of our wishes, but as they will be. There is, in other words, determined in reality something not determined in immediate experience, and this in a manner that reflects the law of the excluded middle. An object has one or other of every possible pair of contradictory predicates. The predicate to be applied is determined by a reality independent of us. The character of experience, that is, the terms of that character, are sufficient to explain what we mean by an independent reality. Reality is as it is and not otherwise, but the aspects of an object disclosed to us in fact depend on how we investigate the object in question. What are we active about? What questions do we raise? The answers to these questions determine what aspects of objects appear in our experience. Both the subject and the object play their part in the disclosure of any world.

The direction of our investigations is determined according to our interest. One, there is immediate specific quality, the element of presentation. Two, there is signification, the cognitive element of an experience, the element of judgment by virtue of our thought. The first leads to the second by virtue of its being what it is; that to which the second attaches is the first which is not cognitive in itself. What is signified is to come, is not now. This contradicts one understanding of the immediate judgment, for example, that I see a man. Reportive experience does not say anything about the language used in making the report. There is conceptualization involved in all epistemic statements. The objective fact that we regard as given is not a mere given, but reflects an epistemological appreciation of its status. Propositions live in my mind and yours, not in Platonic heaven.

(Nov. 19) Protocol statements are statements of the given in expressive language, the language used by the lyric poets. Language refers to objective factors in the usual way: it is as if...; it appears as if... However, one must in this area of analysis speak of appearance itself. The given must be put into a language which is an expression of appearance and is free from the usual reference to objective fact. Language cannot express exactly what is given to us. No words are as precise as what we wish to convey. Sometimes we mean to refer to appearance and at other times to an objective property.

We turn now to a new topic, that of meaning. Our meanings must be clear before verification or judgment of an intended objective fact can be made. Reference to what is to be verified depends on the meaning of the statement. The sense of meaning as in "What does it mean?" has to be distinguished from other senses of meaning.
1. Denotation or extension

This has to do with substantives or adjectives. By means of denotation a term can be used to point to, to point out, to indicate. Denotation is ostensive meaning. Denotation refers to something indicated, an individual or a class of individuals. Denotation, however, is confined to existents, usually a class of existents. The class of centaurs, for example, would be an empty or null class. (Worth noting is that in the case such as, "This cherry is red," "red" is a concrete word. The sentence could read, "This cherry is a red thing." "Red" here is an attributive. Attributives, like substantives, are used to denote.)

2. Connotation or intension

This second mode of meaning, connotation or intension, is the sort of thing implied when one says of anything, "x is so and so." What is deducible from that? The answer is intension, what is intended in making a statement. Statements have implications.

What does the assertion of this imply? According to Percy Bridgman, it means an operation plus a resulting observation, although the latter is not made explicit by him. According to Charles S. Peirce, one is to consider what consequences with practical bearings your concept of an object would have. The concept of the object is but your concept of these consequences. The meaning of what is asserted in applying the concept to an object is discovered by determining what would verify the assertion. This is meaning in the sense of intension; that is, consequences or implications, something determinable as holding or not holding in the case in question. If a concept or predicate applies, then what is said is true. One must be able to conceive of a way of acting to verify what is said, because conditions are not always ideal. In general, we have to be provided with certain circumstances to prepare for confirmation.

This is the sense in which the meaning of an objective statement is to be considered here; namely, meaning as verification or confirmation. Specifically, meaning refers to what we would predict as consequences of an activity of our own. Judgment always has reference beyond the immediate state of mind, a reference which is not here and now verified.

All empirical knowledge goes beyond our present state of mind. Perceptual judgments can be mistaken, although they are led to, occasioned by, by something which is in itself unmistakable. For example, if this is a watch, it will tick. [In light of the theory that Lewis expressed later in these lectures, as well as in his written works, the present example can better be stated: If this appearance (of what seems to be a watch) which I now have is veridical I shall, upon having the experience of moving it close to my ears, hear the sound of a tick.]
Cognitive significance attaches to immediate experience, but goes beyond it and asserts something not given as true but as testible. The significance of a statement consists in what is implied by the statement and is in principle determinable. Verification is subsequent to the making of a judgment, but prior experience provides the justification for the present assertion. The subsequent experience confirms or verifies the judgment. "This is a watch" also has implications with respect to past time. Relations are affirmed implicitly with regard to past time when one makes that statement. For example, a watch as an artificial creature had to have certain conditions met in its production. But verification of these implications with respect to past time cannot be carried out in past time, but must be carried out from here on out. Any statement of objective fact has infinite implications of a testable sort. The fact is that people have but an extraordinarily partial knowledge of the flower along the river bank.

One must distinguish practical from theoretical verification. Take our knowledge of other minds as an example. Other persons make noises which sound like the noises I make when I am expressing my thoughts. This is an argument by analogy which merely suggests procedures for determining that there are other minds than our own. Admittedly this is an extreme example. That I think you have a mind is in some way meaningful, however. You can be thought to have experiences like my own, although no direct verification could be made. We cannot inspect the thing in question by operations. There is no hope for theoretical certainty here. We must be satisfied with confirmation. A statement to be meaningful must be confirmable, endlessly confirmable to be sure, but not verifiable because the implications of a statement of objective fact are infinite and therefore inexhaustible. The point here is to insist on the role of images in mind which determine, specify, what would settle the matter supposing the matter could be settled. To mean is to be ready to declare "this is what I'm talking about." [More helpful examples of this point are given in Collected Papers of C.I. Lewis, pages 268-271.-Ed.]

(Nov. 21, 1951) Our concern here is with the turning point in the development of the theory of knowledge. We have within our experience what signifies objective reality only if one idea is a sign of what is to come. Berkeley calls attention to that predicament which we cannot escape, although, parenthetically, Berkeley was wrong in his metaphysics. The criteria of the real or of the illusory are something we can determine within our experience. No objective existence could be known or recognized by us if it were not for the fact that one idea is a sign of another that is to come. In saying "tree," we implicitly assert an expectation of future experience, an expectation with a degree of reliability based on our past experience. If this function did not obtain, knowledge of causal connections and even recognition of objects would not exist. Calling things by a substantive name is an expression of certain expectations which cannot be violated too much in further
experience. The criteria of the "objectivity" of our perception turn on what a present item of experience signifies. Experience plus or minus an implicit expectation is what is involved in the recognition of an object or the apprehension as objective of any state of affairs. The meaning of "so-and-so means such-and-such" implies or entails that "if such-and-such doesn't come, I'll take back so-and-so." What I mean in a statement of objective fact is what the statement entails; and if that does not come off, that will raise doubts as to what I have asserted.

As for the operational theory of meaning, according to that, to speak of length, for example, is to assert that a certain experiment will give a certain result. The operational result is the sole and conclusive test. But in the case of operationalism, we are not talking about experience as such, but rather about objective fact. The test of one objective fact is another objective fact. For operationalism, there is no concern with the epistemological problem of error. Therefore, this is not a satisfactory epistemological account of the matter—given Berkeley's challenge—for the observer can be wrong about objective fact. In contrast to operationalism, our concern is with the class of implications of an asserted objective statement. These implications are conceived of in terms of direct experience. They can be directly observed if some act or other is carried out, and they will be found absolutely true or false. We cannot trust the best observers' best observations. We have to face up to this fact; and we can by instituting a method for testing objective beliefs by direct experience. By this means, when we experiment, the direct observations will be absolutely the case or not the case, absolutely verified or falsified. Prediction is to be tested by direct experience. Terminating judgments are examples of such predictions. They are essentially different from objective statements. When one makes a test of an objective statement, there can be error. "The star crossed the line at so and so, etc." There can be an error of observation. In objective cases only confirmation is possible—but not absolute verification. In the case of terminating judgments, however, the test is phrased in terms of experience and carried out in experience. The entire matter is stated in expressive language. Terminating judgments are not protocol statements or reports of the given. The prediction, implicit in a terminating judgment, is not certain when made as is the description of a protocol statement (ideally).

A terminating judgment cannot be phrased in objective language where words signify things or objective facts, but must be framed in terms of immediate experience. These predictions are aroused in our minds because of past experience. They constitute certain expectations that can be expressed in terms of direct experience, and they are testable to get an absolute yes or no. They are the totality of testable consequences which are implied by your statement. They exhaust the meaning of your statement in this sense of meaning. "There is a tree" could be explicated in many ways in accordance with different aspects of meaning. But let's stay with our use of meaning. If what I have asserted is true, the prediction
implicitly made will be borne out. These tests depend on the condition of my instigating certain action. We cannot predict independently of what we can do. "If I act in such-and-such a way, then such-and-such an experience will follow" is also to be expressed in expressive language.

Terminating judgments are implicit in our beliefs of objective fact, beliefs aroused in us by visual presentations, for example. My beliefs are contingent on those presentations' being given. The implications of an objective belief will be numerous. Prediction in terms of immediate experience is the means by which we test our beliefs concerning objective fact. An objective belief has multiple implications, each a terminating judgment implicit in the meaning of the objective statement by which one expresses the belief. This test; this result. (Compare this with Bridgman's operationalism according to which any statement of an objective fact becomes indefinitely confirmable or disconfirmable.) How many tests are implied? The answer is: infinite numbers of different tests, not all of which are in mind. An objective statement will be testable through all time—theoretically speaking. It would be meaningless to assert a fact if confirmation were not at all possible. In Berkeley's terms, that would mean that there would be no sign of a thing to come. We do not have to say there are an infinite number of tests; we can say definitely there is not a finite number. To put our position in suggestive language, all terminating judgments implicit in a belief or judgment constitute a family and have a relation of congruence. If you tear one out, the rest will make that one which has been removed highly probable.

Think of the different terminating judgments implicit in the statement of objective fact as a family, a congruent set the whole of which would exhaust this kind of meaning of an objective statement.

(Nov. 26) The point of the recent discussions has been to emphasize that cognition is to be brought into terms of possible experience where it can be verified or confirmed. The need is to have a positive schema of how a belief can be investigated to determine the truth of its content. In order to make this determination, we experiment. To find the truth value of our beliefs, we have to do something about it. Expressive language refers to what appears to us. It is used to express a given presentation, but is not a statement of objective fact. Eventually, we have to go to the evidence which we have or go to the evidence we can get—in either case, in terms of direct experience. With respect to that, we use language whose denotation is of what we find, the immediate, the given, the sensuous presentations, which we'll call S. S is given; I believe a certain objective statement P to be true. There may be further corroboration.
The schema here is: S (a sensuous presentation) is given; if A (a type of activity), then E (a certain eventuation in experience). There is a prediction made which is to be tested; then there is a confirmation. What I mean here, in a certain sense, is correlative to the whole body of the tests made and the eventualities predicted on the supposition that such-and-such is true. This necessity for a practical and theoretical test of meaning or significance is pragmatic. A difference in the world must follow from the truth of a belief, or the belief does not signify and is a mere noise. The total set of those terminating judgments that could be elicited from a statement is an unlimited, interminable set.

As for the connection between objective belief and the set of terminating judgments correlative to it, that's what you mean by your objective belief. P implies, requires, them. This is not a formal implication, but is a deduction from meaning. We look in the dictionary to find out what a certain noise means. The meaning has invented a noise to convey it. A central issue here concerns the attempt to explicate the meanings that have arisen in the human mind. Those terminating judgments that are deduced from the meaning must be a congruent set: namely, a set such that if we take out one and suppose the rest, the one excised would be rendered probable by the supposition of the rest.

[To illustrate the discussion to follow, Lewis drew a square on the blackboard.]

The statement, "It's a square" is made relative to this figure. What do you mean? Perspectives, according to Bertrand Russell, are what we are referring to. All of them are said to be equivalent to the objective fact itself. I say "no" to this. We require something more concrete and identifiable. There is, in fact, an appearance in our experience; and it can be investigated. Only those perspectives which appear in experience are to be studied. We will consider a family of them in terms of our own possible experience. We would have to compare expectations with visual images to test an experienced instance [objectively speaking] of rectangularity. What we have in mind is better than sentences. Language gets in our way at this point. Proceed in terms of direct experience, if possible. We can, as already noted, absolutely verify terminating judgments. Complete verification or falsification of the prediction which we make is possible on this view. Get a ruler and a T-square, and further test the figure on the board. A more telling confirmation can by that means be achieved than those achieved merely from looking. The operational theory of meaning takes its stand on just one of these tests. But what if other experiences brought a negative result? An inexhaustible totality of such tests are independent in that no single result or set requires positive results of every further test. No subset of the whole set is so related to the rest that the truth of the rest is also determined by the truth of the subset.
The operational theory does not square with the actual fact of what we mean when we make an objective statement. The relation of the members of the set to one another is critical as already noted. One test corroborates belief, but the possible role of many other tests is raised by the objective statement. And after enough tests, the objective belief may be rendered very highly probable. So a probable value attaches to any test we have not made yet. The significance of knowledge for life consist in its pragmatic role relative to the prediction of experience. We trust other tests in light of results of some prior test.

The fact is that things for us arise when discernibles begin to behave in predictable ways. We form habits of expectation and prediction on the basis of something else. Is this thought? It is at least the association of ideas, correlative with habits in the conscious animal's experience. We inhabit a world in which there are things to be meant. If the world were not like that, there is no danger of finding out—that is the point of Kant's deduction. Intelligibility requires this coagulation. We are concerned with the story of how a believed in objective presence means or implies a family of terminating judgments. Without them, there would be nothing intelligible. There would be no world.

(Oct 28) The presentation today will be a little more precise. [Again, Lewis drew a square on the blackboard.] Consider the square on the board. We say "that is a square." We see a square on the board, but "I see X" is ambiguous. X is a name of an external object or its properties. We are concerned to designate a physical object or its properties, but what we "have" are visual appearances. A square or something square is of the sort of thing referred to by our objective language. [Lewis (rhetorically)] Don't tell me about objects or objective characters. What do you see? "I see X" uses as values of X, the names of appearances. Such names are not easily come by in English, or, for that matter, in any other natural language. What terms or phrases we have, such as "looks like a square" or "squarish," are unspecific. They may truly apply but not be sufficiently specific to convey what there is to be conveyed. In this sense of "I see X," the values of X are adjectives of appearances. We have here an expressive use of language as in protocol statements. Experiences don't inhabit space; that is, they have to be distinguished from the things on the board. They are in the mind, and not in space. In a phrase such as "X looks like...," appearances are referred to. Depth and shape are both in apprehension. [Note that Lewis' use of the term "expressive" corresponds to the present day use of the term, "phenomenological."]

What we have in experience is specific relative to the objective fact regarded as being there; namely, a square at a certain distance from me and at a certain angle in relation to me, that is, from a certain perspective. (Try to be as specific as you can in these matters. We lack a vocabulary for the expressive description of appearances.) To take another example: I see $S_1$. If I were to
take one step to the right, I would see S₂. That is a terminating judgment. The objective belief that there is a square figure on the board can be disconfirmed by the absolute falsification of certain terminating judgments, or that object of belief may be confirmed by the absolute verification of terminating judgments. [Lewis (as he points to figures on the board):] We test only these things. We cannot directly inspect the object itself on the board, but only the various presentations whose relations to one another convey to us the objective fact. The family of terminating judgments is equivalent to the objective belief. Berkeley's point is still relevant here: one idea is a sign of another that is to come. In those cases when we do in fact have knowledge S₁ is a sign of S₂, S₃, and so on. There are connections among them. They are related together such that S₁ is an occasion for a terminating judgment that upon the condition of taking a certain action, I shall find certain appearances. All these elements are related in a complex way. This relation together of all such terminating judgments is equivalent to knowing that there is a square on the board. The essential criterion of objectivity is the maintenance of this sort of order in the possible experience of human beings. This is something we can verify [determine?—Ed.]; and it is what we have learned in the connection of terminating judgments with actions which we can perform. [The "this" in the last sentence probably refers to the criterion of objectivity; see Collected Papers of C.I. Lewis, pages 337-338, especially the last sentence that begins on page 337.]

We can be disappointed by what eventuates in experience. For example, I see something that makes me believe such-and-such. I perform that action appropriate to the confirmation of that belief, but I do not get the expected result. If the belief strictly implies a terminating judgment, and the terminating judgment is false, then the belief is false! So we back up. We "explain" the failure in a way that is compatible with the truth of the belief—so the objective statement doesn't strictly imply the terminating judgment! We have to maintain our sense of fact in philosophizing!

The relation of probability goes both ways. Finding some terminating judgments true makes the objective belief 0 more probable, and if 0, the objective belief, is true, then there is a high probability that some terminating judgments will be true. The truth of the objective belief does not completely imply the truth of any terminating judgment correlative with it. But we would cease to believe the objective state to be the case if too many terminating judgments turn out to be false.

[This lecture ended with what appears to me to be a slight digression. Lewis spoke of meanings in the sense in which no two of us have exactly the same meaning for the same expression.] We do not understand anything ideally. For example, consider the word, "meson." Note how the word, meson, overlaps in small ways with different people. Logicians proceed on an idealistic, Platonic course.
An objective statement implies a set of terminating judgments because of its meaning. Such a judgment is that a certain presentation's being given, if we do so-and-so, we should see a specific and anticipatable so-and-so. The point to be underscored is that, upon the initiation of a certain activity cued by a sensuous presentation, there will then be a specific eventuality of experience, not of objective fact. The latter could only be confirmed but not absolutely verified or falsified. The prediction which is an element of the terminating judgment, in other words, is to be tested in terms of sheer sense data, and, as such must be expressed in expressive language. The symbolic form, $P < [SA \rightarrow E]$, can be read as: the objective judgment implies that, on the condition of the givenness of a certain sense presentation, if I initiate a certain action, I will find a certain sense datum as an eventuality.

Be careful not to confuse the simple report of a sense presentation with a prediction of experience under phenomenal conditions not had when the prediction is made. A terminating judgment is a prediction in protocol or expressive language, but it is not itself a protocol. It is a prediction. Note how an oculist by profession distinguishes between objective facts and direct experience. [The reference here is probably to emphasize the distance between the objective facts which an oculist believes and comes to believe; for example, about the patient and the reports of direct experience which the patient makes as different lenses are tried. [See An Analysis of Knowledge and Valuation, page 420.]

Theoretically, one negative result of one test of a terminating judgment shows that the objective statement is absolutely false—but the facts of life don't concur. The two steps we took in order to test the terminating judgments may not have been long enough: we fail to see $\Box$. So we have to qualify the terminating judgment by including the notion of a high probability of the presentation $E$, the sense datum eventuality: $P < [SA \rightarrow (h)E]$. "(h)" is to be read "in all probability."

This is vague language but the fact is that assumptions can be assigned a degree of probability. Note, of course, that the prediction of something as probable is itself not verifiable or falsifiable absolutely. In this sort of case, the whole statement is qualified with respect to the E end of it by the insertion of the probability symbol, $h$. What is being asserted is a connection of probability, not the probability of a connection. Next time we will deal with the question of what we mean by the if-then connection.

(Dec. 5) No theory of empirical knowledge can escape the problem of induction. Some provision must be made for a concept of the necessary connections of matters of fact, that is, for noncoincidental connections of matters of fact, that is, for noncoincidental connections. Undeniably, there is a relation of induction to empirical knowledge. The question, however, is where does it come in.

$P < SA \rightarrow (h)E$
Belief in an objective fact (P) entails [in sense of means that] (<) on the condition of some specific presentation's being given (S) and a mode of action's being instituted (A), there will ensue (→), with a certain probability (h), a specific eventuality (E). There is an interminable set of such consequences. The probability relation, "h", pertains to the connection between the action taken and what eventuates as a result. The relation expressed by the "<" is one of implication. It is akin and only akin to the connection like that between the meanings of two expressions found in the dictionary; they mean the same thing. The relation is of an equivalence of meaning. This is not the very same connection of meanings as in the dictionary, but rather it is the relation of intension as against one of extension. Meanings grow up because of the conjunctions and relations in experience represented by such statements as the one about the square on the blackboard. Given the one appearance of what we regard as the square, that given S is a sign of other S's, that is, E, the eventuality. These other S's can be realized by our taking some appropriate action such as looking at the square on the blackboard from various angles and from various distances. With respect to the whole set of terminating judgments, any S suggests the different perspectives that can be discovered in experience by performing certain activities. What we have learned, in the sense of association, is to expect the hanging together, the congruence, you might say, of that set of perspectives. These things have come to be considered as reliable. We implicitly come to depend on them. There is an infinite number of possible perspectives of the square on the blackboard that can be experienced by taking different actions; and they all hang together. This is one large induction.

Suppose no perspectives were to hang together. Then no prediction would be possible, no matter what action were taken. Also, if there had been no correlations in past experience of perspectives, no such words as "square," "triangular," "round," or the like could ever be used. The capacity to remember depends on the capacity to subsume different aspects to the same name. For example, each common noun refers to any one of a whole bundle of things. The point of this is that there is an implicit induction at the bottom of this business. This is not, however, a psychological induction, because we have meanings first. The epistemological question is: with what right or justification does one get those meanings? The question here is of the validity or justification of cognition, not with the how of cognition. The concept of knowledge cannot be reduced to unjustified cognition even if it is a lucky guess. The problem of validity of such inductions as these will concern us next.

Induction in this context is the extrapolation from judgments based on past experience to the next occasion of experience. Is this just animal faith, an association of ideas based on past experience, or is it rather a case of genuine justification? The answer concerns the relations of terminating judgments. What relation do we have in mind for "→", the if-then? It is not a relation of deductive inference, nor one of material implication. The difference in this use of if-then, from that in material implication, comes out in paradoxes. A false proposition entails all true propositions since the falsity of the antecedent satisfies the relation required
as shown in the truth tables:

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If this were a case of material implication, the refusal to take action A would make E, the eventuality, true. If A is false, if only by virtue of the non-occurrence of the action which it represents, that does not say anything about the truth of E. The basis of rationality with respect to actions is based on an awareness of consequences. There is no rational ground for any action without the validity of induction. The relation on which reasonable inference for action is based is a fact, whether you take action or you don't. Thus, the choice of alternatives for action can be based only on the supposition of what would happen in each of the cases. Rationality in the choice of an action depends on entertaining the supposition that, if a certain action is taken, then it would have such-and-such consequences. That relation cannot be expressed with "\( \Rightarrow \)" because not taking the action implies anything. Any implication however, will not do, for only certain consequences are relevant. Therefore, this cannot be expressed with "\( \Rightarrow \)". So material implication is not what we mean to use in this analysis.

Another familiar relation from Principia Mathematica, \((x)\theta x \Rightarrow \psi x\), does not express "\( \Rightarrow \)" either.

\[ \theta x = (x \text{ is a featherless biped}) \]
\[ \psi x = (x \text{ laughs}) \]

For every value of \( x \), if \( x \) is a featherless biped, then \( x \) laughs. The connection in this case is just a biological accident, a universal coincidence, not a necessary connection of matters of fact.

We are concerned with the real connection between experience and action, however. That kind of connection is a kind upon which the validity of induction depends, the epistemological missing link never successfully explicated. Contrafactuals are critical here. What would be the consequent if the antecedent were true? The antecedent is not false. The relation is one that holds regardless of the truth or falsity of the antecedent where, of course, the falsity of the antecedent means that the action, \( A \), is not taken. This relation is at the heart of the problem of induction.
Skepticism is the topic of this lecture. You are to try to recognize the problem to determine its locus. The problem itself can be put in a variety of ways. We can only act on the supposition of predictable alternatives that would come about as a consequence of our actions. The rational ground for choice between alternatives includes prediction of what would happen as a consequence of either course of action. The alternatives are mutually incompatible. I believe that if I do this, then so-and-so will result. There is some degree of assurance though, of course, not absolute certainty. But for this relation, no rational choice would be open to a rational being. We do not know which action will go into effect at a time before the choice is made. The if-then prediction has to turn upon a relation which is involved independently of the question of whether the antecedent is true or not, that is, whether the action, A, is undertaken or not. A tenseless verb is intended here. As we contemplate this matter, we are dealing with an if-then relation in nature such that the truth or falsity of the antecedent makes no difference to the truth of the if-then relation. This is not, I repeat, a truth-value relation; that would be a misinterpretation. In some discussions an effort is being made to change it to a truth-value relation, but that is wrong at the start.

The point of induction is extrapolation with some degree of probability from the past observed instances to instances not yet observed. We contemplate a particular course of action in light of past cases.

\[
\begin{align*}
(x) \quad \neg \exists \, x &\supset \forall x \\
(\neg \exists \, x &\supset \forall x)
\end{align*}
\]

x will not have the character \( \neg \) or it will have \( \forall \). A universal examination of values of \( x \) is called for here, but then there would be no cases left for prediction to put this generalization to use. If we had examined every case, there would be no need for induction; it would be useless. Honest-to-goodness induction must be useful for extrapolation. There must be at least one instance which has not been examined, and it is up to us to determine the probability of the unexamined case. "If someone wants to see me, I won't be in the office." A truth-value relation would be assured by the truth of the consequent. There is not on the truth-value interpretation a real connection between the antecedent and the consequent. There would be no essential connection.

Our interest is in the if-then relation as exemplified in extension to unexamined cases. Those cases are the ones which include rationally chosen action. We speak here in the subjunctive mood. Since truth in the truth-value relation depends on the known truth of the consequent in the relation, the truth-value relation is irrelevant to the idea of real connection which is used whenever we assert a causal connection. That kind of relation is more accurately brought to mind if we speak in the subjunctive mood of supposition or entertainment—acknowledgement of the laws of nature is not just a summary of past instances. The validity of inductive extrapolation
is not explained in putting forth a justification which is not petitio principii. We assert it in rational decision. Laws of nature depend on it but we cannot see how it is different from a universal coincidence. Either there is this connection or we are not being rational when we think we are. If there are no recognizable things, behaving in certain patterns, then human knowledge is nothing. There is not anything to say, nor is there even anything to talk about.

(Dec. 10) The concept of induction is here being considered in connection with the concept of empirical knowledge. Inductive extrapolation is an argument from examined past instances to unex­amined cases. The past cases, of course, are those which have been under our observation or are otherwise known to us. Men are animals; animals are mortal; therefore, all men are mortal. The premises are analytic, and so is the conclusion. Mill thought the premises were inductive, and the conclusion dependent on the validity of the premises. However, we have made no empirical statements but only set up requirements for calling a thing a man or an animal. We decide by inspection which is a man, but is one inspection sufficient?—for we decide to call it a man now. We may rescind our ascription with respect to the future.

Is one inspection a sufficient guarantee that our entertained meaning is satisfied by the object observed? Entities with no enduring character for observation are not called entities. We have meanings; we can entertain meanings, by virtue of the fact that entities remain recognizable from moment to moment. We can refer to predicable courses of alteration or persistence of their character. The ascription of meaning to an object is an implicit prediction of the character it will be observed to have. If the prediction does not hold, we may say that we were mistaken about what the thing was or that it was an illusion. Ideas are entertained by virtue of our having habits of expectation developed from our past experience. The concretions have been noted in past experience. Inductive extrapolation is needed to do so little as ascribing a name to a thing. "All men are mortal" can be regarded as an a priori statement. This will not be called a man unless it can be called an animal regardless of any existential qualification. One cannot get away from induction. Socrates is a man. If he isn't a man, I won't call him Socrates. There is no escape from the role in empirical knowledge of our inferences from past experiences to future instances. Hume's skepticism turned on this point.

Knowledge has both forward and backward looking significance. Knowledge must be a significance validly attaching to something in our minds. X must be imaginable or in some manner directly or indirectly presentable in sensuous experience. The ground for belief in cases of empirical knowledge relates to the past, [but the significance of belief pertains to the future]. We expect the thing to come off and this expectation acts as a guidance for our reasonable ways of acting. In that resides the value of knowledge. Prediction must be justifiable from the past. The significance of what we know lies in the future, although justification rests on the past.
We learn to predict both change and constancy, so induction is universally involved in anything we can call empirical knowledge. Some would say this is an insoluble problem. Is it? To say "yes" is to agree with Santayana. There is only animal faith. There is no reason for what I believe or do. It is all sheer irrationality, but we cannot behave as though we believe that this is so.

Psychologically, belief in skepticism is impossible. The skeptic's assertion of his position involves a contradiction, for he says that there can be no rational justification for any empirical belief. So he knows too much about the world, mind, and so on—about what any word refers to, for that matter. The only consistent skeptic would be the man who never thought, believed, or said anything. Especially, he ought not to speak about anything as broad as world, mind, and the like. The consistent skeptic must admit that if he's right, then he is ridiculous. The skeptic is in a predicament. Epimenides said all Cretans are liars. He was a Cretan. There is no logical contradiction involved in this. He said he was a liar. That statement has the character of a pragmatic contradiction, a contradiction which lies in the assertion of the statement, for statements usually are made with a certain significance. It is the same with the skeptic. "This statement you should believe." There is a significance attached to this statement which the content of the assertion, if true, would remove. One cannot argue for what is an essential presupposition of any argument without petitio principii. The act of logicizing presumes the validity of the principles of logic. We cannot prove that sort of thing because we have to assume it. The proof of the reality of the empirical world amounts to this: as long as we think there are recognizable objects to which meanings apply, and as long as we hold that statements are believable or disbelievable, we presume the principle of the validity of induction.

(Dec. 12) The validity of induction cannot be proved directly, but its absence would reduce us to speechlessness. We could not assert what science and common sense assert. An idea with putative application in experience is like a general statement for which induction is essential. For the word "watch" to be applicable in experience, there must be things which behave reliably in our experience in appropriate ways. The application of the concept of a type of object implies that we can identify the objects of that type from moment to moment by their remaining fixed or changing in a predictable way. For example, the watch remains pretty much the same for our observation over a period of time. We can also anticipate that its hands will be a certain position in a predictable fashion. If an anticipation entertained when seeing certain appearances allows that I can identify what I am talking about, then I am assuming that the entertained anticipation will be borne out. To deny induction leaves us nothing to talk about. So long as there is a perceivable world of objects, there will be the kinds of things which induction gives us a right to expect. So long as the world endures, induction will not mislead us. To prove the validity of induction is to show that it is an indispensible assumption, a pragmatic finality.
Where does this question appear in this account of empirical knowledge? The concept of empirical knowledge cannot satisfy Descartes' ideal of knowledge. Empirical science to a rationalist would be the equal of mathematics. Nowadays almost all empiricists represent the recognition that the main problem with respect to science, but not logic or pure mathematics, is the problem of empirical knowledge, a problem which cannot be given a rationalistic interpretation. However, pure experience, with no rational element, would appear inductively very unlikely to be [the only subject in] a successful account of knowledge. Kant combined these two features. The mind contributes something to knowledge, namely, the form, and the senses contribute the content. Experience ultimately means experience of a world of objects to Kant, although at first it meant merely a manifold. Increasingly, the uniformity of nature is talked about in reference to its necessity for induction. Note, for example, how later Peirce uses the word, "habit." Everything has a peculiar and reliable way of behaving. A thing must satisfy certain expectations associated with it, expectations that arise because of our former experience of similar things that have greeted our senses. A thing is an entity that will reliably behave in a predictable way in an experience. That is our only way of identifying things. A perfect induction, one which would include all members of a given class, would be a pure deduction. Inductive extrapolation comes into the picture when we refer to unexamined cases.

\[ P < SA \rightarrow (h)E \]

[On this occasion of the use of symbols, Lewis interpreted the "(h)" as "in all probability." The supposition here is that \( P \), the objective state of affairs believed in, entails endlessly many terminating judgments. We never come to a situation where there is absolutely nothing that could further confirm its truth. [Lewis crossed out the symbol for "in all probability" as he then said, "We expect \( E \)."]

We learn to entertain meanings. To entertain a meaning is to have a body of expectations on the occasion of certain presentations. The body of those expectations is the same as my idea, for example, of a tree. The confirmation of the experience leads us to say, "I was right. It was a tree." The association of the terminating judgments constitutes the meaning of, "There is a tree." They are said to be associated because they hang together. The set of terminating judgments represents the meaning of the objective statement. We have found them to hang together in the past and expect them to hang together (excluding illusion) one hundred percent. (At least, that is possible.) The force of what I believe [about objective realities] is in the congruence, the hanging together, of the set of terminating judgments. Belief is in point only when certain presentations are given. Induction does not relate to \( P \), the objective belief, itself a shorthand expression for the whole bundle of terminating judgments. \( P \) is deductively entailed by that bundle of terminating judgments. We are as certain of \( P \) as we are of predictions borne out of what is implied by the content of the belief. There is a relation of meaning here, not a question of truth. The truth of belief has only an inductive assurance and is no more than
probable. At the next lecture we'll discuss the actual basis for induction of this sort which we make.

(Dec. 17) Probability concerns the attempt to put in our minds ideas useful to have in the mind whether they can stand up in a particular case. Probability represents a valid estimate of a frequency, but of what? I believe it will snow tomorrow. The quaesitum property, the property inquired about, is in this instance a snowfall. The frequency of snowfall relative to what? The answer is the reference class. Probability is a valid estimate of the frequency of the quaesitum property in some understood reference class, in this case, the class of days when the weather forecast is like the forecast for today. The choice for the reference class is arbitrary. Here we have the weather forecast for tomorrow used as a means to determine which reference class to pick. The reference class is chosen to satisfy two conditions:

1. We have information of the occurrence of the quaesitum property, snow, in observed instances of that class, that is, days when snow has been forecast. Induction is an extrapolation of the frequency found in past cases to [the set of] unexamined cases.

2. [The members of the reference class are like the case in question in specified respects, that is, in this example, days when snow has been forecast; see An Analysis of Knowledge and Valuation, p. 270.]

If in three out of five cases the snow forecast was fulfilled, then we assign the probability of 3 over 5. The reliability of a probability judgment has to do with the adequacy of the data used relative to the whole class in question. There is no correspondence between reliability and the numerical value of a probability, but there is between reliability and adequacy of data. The degree of correctness is different in early and later parts of "history;" in our example, take the last few years for the reference class which is closer to our concern, namely, the forecast for tomorrow. Choose the reference class on two considerations:

1. We narrow it to get instances more like what we are presently concerned with.

2. The likeness to the present instance is to be determined on pertinent points.

We want the reference class to resemble case in point, but not with so few data that it loses reliability. Choose a reference class for which we have sure data. Our determination of a probability is bound to be relative to the data. Probability may be different on different sets of data with respect to the same quaesitum property. The reference class must contain the data; that is, we must know something about this class. Choose a definite class, yet not one which is so small that we have much less data or none at all. We
may retreat to a more general or specific class when new factors enter, as, for example, when a question of dishonesty arises [in cases that involve the testimony of witnesses]. The reference class may not be unique.

With respect to confirmation, the main question is what is it that gets confirmed? A hypothesis does. The inductive logic of confirmation concerns inference from a determined probability to another. You have a hypothesis and certain consequences inferred from it. One general rule, roughly expressed, is that if you have hypothesis, H, there is a given probability of C. Suppose C happens, how much does it confirm H? The rule is: if H gives probability so-and-so to C, and if C happens, the probability of H is proportional to the improbability of C if H were not true. This is the inverse law of probability called Bayes' Rule.

There is another point that concerns the manner in which a probability can build up. That is the case of a hypothesis having different consequences, all of which obtain. The conjunction of C₁, C₂, C₃, etc. may give a probability to a hypothesis of a different order of magnitude than C₁ would singly. [The hypothesis that a deck of cards used in a card game has not been shuffled is not given much of a probability by what each player singly is dealt. However, if the players collectively see, after several cards have been dealt, that the order of the cards as dealt is the same as the order in which cards are usually packed at the factory, the hypothesis will be given a very high probability. See An Analysis of Knowledge and Valuation, pages 344-345.]

Consider the example of tossing a coin which shows heads twenty times in a row. The outcome of each toss is as probable as not, but the same outcome for many tosses is highly improbable. This type of fact lies at the basis of the relation by which the coherence theory people define truth. Experiential results support a hypothesis; the determined probability can be enormously high even if any single item did not attach much confirmation to it—practical certainty.

(Dec. 19) An inductive conclusion is necessarily a probable conclusion. Induction comes up in the analysis of empirical knowledge. The \( \rightarrow \text{in } P < \text{SA} \rightarrow (h)E \) represents the relation in question. The probability qualifier \( (h) \) is applied to E, the eventuality which is expected. SA is the inductively warranted probability index of E. The relation which is critical here, as noted before, is best expressed by the subjunctive mood, should and would. We do not know anything further. It is unique. It is at the root of empirical knowledge. We cannot accept a cheap and easy account of it. It is a kind of connective with objective reference. We have been talking in terms of that relation all our life. Its relation to the discussion of meanings turns on the fact that meanings are justified in application. If the meaning is justified in application, then the connection of the "SA, then in all probability E," is not there simply in our minds.
Meanings are conveyed by a word which refers to the fact that this family of expectations is signalized by a family of sense presentations. One can explicate a meaning in the following manner. Each meaning is an induction with reference to ["on the occasion of"?-Ed.] present experience. There are further inductions such that any one found borne out gives us the right to expect another member of the family. An objective belief is a shorthand way of expressing the whole bundle.

Induction is of two kinds. The first is that kind which expects something to be true in some unexamined case because the same thing has happened in examined instances, that is, an extrapolation to unexamined instances from examined ones. The second is the case in which A and B are alike in many examined respects. A has a property unexamined in B, unlooked for, so to speak, in B. B will probably be like A in this unexamined respect. The argument is from analogy. There is no essential difference between the second and the first types of induction. Every induction is argument from analogy. There is always a whole flock of cases examined in certain respects. For example, all dogs have barked. We see an unexamined dog. The dog in question may be unlike others which had been found that barked. This dog just seen is unexamined with respect to barking.

On what ground is induction valid? The only justification of belief in induction is one feature which is involved: it is too fantastic to doubt. All induction presumes we know something to have happened in the past. We do not even remember the cases often, but merely have a fused impression. We assume the validity of memory in trying to show the fallibility of memory. Take, for example, looking for a book. [We would, in some cases, have to remember that we remembered falsely.] (See An Analysis of Knowledge and Valuation, p. 334.) Let's not lose our sense of fact. [Lewis smiled as he said that.]

Unless induction is valid and memory is reliable, there are no specifiable grounds on which empirical knowledge can be justified. There is no place for histrionic doubt such as Descartes' in the Meditations. If the next case does not confirm induction, we still do not give it up because in general it has worked in the past. Induction is a branch of logic, but it cannot be reduced to deduction. No further argument lies in the nature of the question. The concept of proof is used in somewhat different sense here. It involves the sort of proof Kant tried to give in the deduction of the categories. A petitio principii, namely, a case in which a general premise includes the conclusion as a specific case. Consider the alternative: induction is not so, memory is not valid. We should be deprived the products of induction,—but also of anything we can talk about! There would be no instances of generality. There would be nothing to be spoken of. As long as a world revealed in experience is intelligible, induction is valid and so is memory.