AN EXAMINATION
OF THE THEORY OF PERCEPTION
OF C. I. LEWIS

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ABSTRACT

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by Carole Joyce Borowski

This thesis is a critical analysis of C.I. Lewis' account of the verification and justification of empirical statements and the justification of empirical knowledge claims in general, as presented in Book II of An Analysis of Knowledge and Valuation. The thesis also includes an analysis of several criticisms of phenomenalism in general and of Lewis' account in particular.

Lewis' theory is that we verify and justify physical object statements by appealing to the data supplied by immediate sense experience. We are justified in doing so because physical object statements entail sense experience statements. These sense experience statements express the meaning of the physical object statements which entail them.

The process by which Lewis claims we ought to verify our physical object statements is examined in detail. Several ambiguities, inconsistencies and errors in Lewis' account are pointed out. The conclusion reached is that the process of verification which he advocates is not adequate, although the basic idea of his theory - that we appeal to sense experience to

verify physical object statements - is plausible. As far as the process of justification of physical object statements is concerned, only one part of his account is found to be unsatisfactory.

Unfortunately for Lewis his claim that physical object statements entail sense experience statements is subject to serious criticisms. Two criticisms presented by Berlin and Chisholm are probably valid, and if they are, Lewis' claim is untenable. The principle expressed by this claim, according to Lewis, justifies the processes of verification and justification of physical object statements. If it is rejected the theory as a whole must be rejected as well. Therefore Lewis' attempt to justify our empirical knowledge claims is unsuccessful.

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INTRODUCTION

This thesis examines one attempt to solve a major problem in epistemology: How can we justify our claims to empirical knowledge? Epistemology is the branch of philosophy which is concerned with knowledge. One type of knowledge which most people claim to have is knowledge of the physical world. Epistemological theories do not attempt to describe this physical world; such a description belongs either to the sciences or to metaphysics, another branch of philosophy. Epistemological theories about empirical knowledge are concerned with, among other things, our claims to have such knowledge of the physical world and with how these claims can be justified. Epistemological theories of this type are often said to be attempting to provide some sort of foundation for empirical knowledge.

One sort of theory which attempts to justify empirical knowledge claims is phenomenalism. The basic idea of the epistemological versions of phenomenalism is that empirical knowledge claims are justified by immediate sense experience. A phenomenalist usually claims that the total verification and justification of statements about physical objects rest on the data supplied by the senses, that the meaning of statements about physical objects can be totally expressed by statements about sense experience, and that statements about physical objects entail sets of statements about sense experiences.

The epistemological versions of phenomenalism do not entail

any assertions about the ontological status of physical objects. It may be that there are physical objects which exist independently of being perceived and which we do occasionally perceive. On the other hand, there may be no such independently existing objects. This question of existence is simply left open. Also left open are questions about the ontological status of the data of sense themselves. These data are simply accepted as "given" and no attempt is made to ascertain whether they are mental, physical, metaphysically neutral, or identical with or a part of physical objects. Finally, the holder of a phenomenalistic theory of perception is not committed to the view that "the data of sense" is either a connate or an alien accusative of "sensing".[1]

One important contemporary philosopher who held a phenomenalistic theory of perception was C.I. Lewis. My thesis is an analysis of his theory of perception, as it is presented in An Analysis of Knowledge and Valuation, Book II.

I shall begin by presenting an account of Lewis' analysis of the elements involved in perceptual knowledge. These are expressive statements, terminating judgements, and non-terminating or objective judgements. The expressive statements are the

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1 This distinction is made by C.J. Ducasse in Nature, Mind, and Death (LaSalle, Illinois: The Open Court Publishing Company, 1951) p. 254. The distinction can best be explained by examples. In "I am jumping a jump.", "jump" is a connate accusative of "Jumping". In "I am jumping a fence.", "fence" is an alien ac-

statements which describe immediate experience. Terminating judgements express, in language referring to sense experience, predictions about future possible sense experience. The non-terminating judgements are what are often called physical object statements. I shall attempt to show in my analysis that Lewis' account of the first two elements, expressive statements and terminating judgements, is not adequate. I shall explain why the expressive statements are not epistemically indubitable or certain, although Lewis seems to think that they are. I shall make a distinction between two types of terminating judgements, although Lewis recognizes only one and I shall also demonstrate that the form he ascribes to his one type of terminating judgement is mistaken. If the theory which Lewis presents is to be at all plausible, I shall claim that his descriptions of expressive statements and terminating judgements must be qualified. I shall also attempt to demonstrate that the relationships between the various elements in the analysis of perceptual or empirical knowledge are not as straight-forward as Lewis suggests. In doing so I shall examine in detail his analysis of probability. In particular, I shall in the same section attempt to demonstrate that terminating judgements do not express the total meaning of the non-terminating judgements which are supposed to entail them.

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cusative of "jumping". In "I am dancing a waltz.", "waltz" is a connate accusative of "dancing". In "I am sewing a dress." "dress" is an alien accusative of "sewing". A connate accusative is the name of something which cannot exist independently of the process described in the verb of the statement. An

During this discussion of the elements which must be recognized in the analysis of empirical knowledge, I shall also point out the various ambiguities, inconsistencies and errors in Lewis' account itself. I shall attempt to give a plausible account of his theory in those sections in which Lewis' own account is unclear and where I detect inconsistencies and contradictions I shall try to determine which statements, if any, are most likely to represent Lewis' actual opinion. Where I think Lewis' account is actually mistaken I shall, if possible, give what I consider to be a more satisfactory account of the topic under discussion.

After considering the various elements in Lewis' proposed analysis of empirical knowledge I shall consider the analysis as a whole. I shall conclude that once the necessary corrections are made Lewis' account of how we verify and justify individual empirical statements is plausible. However I shall conclude that his attempt to justify our use of these procedures is unsuccessful.

One of the questions I shall consider when examining Lewis' account of the justification of empirical knowledge claims is whether he ought to be classified as a phenomenalist. I shall attempt to demonstrate that his theory has all the features

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alien accusative is the name of something which can exist independently of that process. The problem concerning sense-data is whether they can exist independently of the process of sensing. Are sense-data connate or alien accusatives of sensing?

generally considered to be characteristic of phenomenalism and Lewis must therefore be classed as a phenomenalist, at least insofar as his epistemology is concerned.

At the end of this thesis I shall consider various criticisms which have been made of phenomenalism in general and of Lewis' version in particular. I shall show that Lewis has avoided most of the possible objections to this kind of theory. However, I shall also demonstrate that a criticism made by Berlin seems to be telling against Lewis' position and that a criticism made by Chisholm, while invalid as it stands, suggests another criticism which may be valid. My final conclusion is that Lewis' attempt to justify our empirical knowledge claims is on the whole unsuccessful.

CHAPTER I

TERMINATING JUDGEMENTS

In An Analysis of Knowledge and Valuation, Book II, Lewis presents a phenomenalistic account of empirical knowledge. He claims first of all that the meaning of statements about physical objects, or of "statements of objective belief", can be completely expressed in terms of sense experience. Secondly he claims that both the justification and the verification of statements of objective belief are ultimately grounded in immediate experience. He does not however make any claims at all about the nature of the objects referred to in the statements of objective belief and his phenomenalism is therefore epistemological but not metaphysical. Lewis also holds a full-blown verificationist theory of meaning, since he claims that the meaning, in one sense, of a statement of objective belief is equivalent to its verification.

Expressive Statements

One fundamental notion of epistemological phenomenalism is the basic statement - the statement which refers to the content of immediate experience. This statement is basic both temporally and epistemically.

The basic statement is temporally basic because it is the experience of the senses (or the apprehension of the given, to

use Lewis' terminology) which gives rise in the perceiver to an objective belief about physical objects. The perceiver places an interpretation on this experience. The sense experience plus the interpretation constitute perception. For example, when we perceive a red ball, we have sense experiences of red and round and we believe that certain other experiences will follow. The interpretation given by the perceiver is based on past experience; the interpretation results from an induction from past experience to the effect that since similar experiences in the past were followed by certain other sense experiences this present sense experience can be expected to be followed by sense experiences of a similar type.

The statement of immediate experience is also regarded as epistemically prior to the physical object statement. This is because it is used to justify the physical object statement. The basic statement is thought to be indubitable, both in the epistemic sense that it ought not to be doubted and in the psychological sense that it is psychologically impossible to doubt it. Basic statements are supposed to terminate an evidential chain for physical object statements. An evidential chain is a series of statements in which the first is justified by the second, the second by the third, and so on. It is thought by many philosophers that such an evidential chain must not go on forever - there must be some point at which it is possible to stop and say "This statement is now justified". Such a stop-

ping point is known as the terminatimg point of an evidential chain. Many philosophers who seek such a terminating point claim to have found it in the basic statements. Since the basic statement is the ultimate point in a chain of evidence for a physical object statement it is epistemically prior to the physical object statement.

To establish that statements about immediate experience are epistemically prior to statements about physical objects is to take merely the first step in the process of explanation. Why is the statement about immediate experience indubitable? Is it because the immediate experience described in the statement is itself indubitable? If so, how can immediate experience, which is not a statement, render a statement indubitable? What sort of experience is meant when "immediate experience" is discussed? There a number of difficult problems in this area.

The basic statementsin Lewis' epistemology are what he calls "expressive statements" and these are described as "formulations of the given".[1] Lewis does not make completely clear what form these statements are to take. He claims that "the difficulty of formulating precisely and only a given content of experience is a relatively inessential consideration for the analysis of knowledge".[2] It is inessential because, in his view,

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1 C.I. Lewis, An Analysis of Knowledge and Valuation, (LaSalle, Illinois, The Open Court Publishing Company, 1946) p. 184.

2 Ibid., p. 182.

analysis need not be carried out exclusively in terms of language. It is not necessary that a fact be linguistically expressed in order to know it or make use of it. But just because it is difficult to formulate precisely in words the nature of the direct experience it does not follow that the "hard kernel in experience" ought to be doubted.[3] This "hard kernel" of experience is the immediate experience itself, distinguished from any interpretation which might be made on the basis of this experience. It is the fact that the experience has occurred which is to be conveyed in the expressive statement, and it is the content rather than the form of the statement which is important.

When Lewis goes on to speak of the expressive statements as being certain, he does not mean that they are analytically true or a priori. What he seems to mean is that their content is certain, and certain in a psychological sense. The content of an expressive statement is the fact of the occurrence of an immediate experience and it is this fact which the statement is meant to convey. What Lewis really thinks is certain is therefore not the expressive statement but the fact that the immediate experience occurred. Lewis seems to mean, when he claims that the fact that the immediate experience has occurred is certain, that if I have an immediate sense experience then it is psychologically impossible for me to doubt that I had this experience.

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3 Ibid., p. 183.

He also seems to assume that because it is psychologically impossible for me to doubt that I had the experience, I ought not to doubt it.

Lewis also applies the word "incorrigible" to the content of the expressive statements. This use of the word "incorrible" is rather curious since the fact of the occurrence of an experience is not the sort of thing to which "corrigible" or "incorrigible" would be thought to apply. The having of an experience just is, and is neither correct nor incorrect.

The expressive statements as distinguished from the occurrence of a sense experience which they describe, are themselves neither certain, indubitable, nor incorrigible. They might well be false if the speaker is lying. If true they convey the fact that there has been an immediate sense experience. It would appear to be very difficult for anyone to establish that they accurately convey the nature of the experience, or for anyone besides the speaker to be sure that any experience whatsoever has occurred.

The "certain" basis required by Lewis for his statements of objective belief must be found in the occurrence of the experience and not in the statement describing that experience. This certain basis - "certain" being used in both a psychological and epistemic sense - is required, Lewis states, because "if anything is to be probable, then something must be certain".[1]

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1 Ibid., p. 186.

This statement of Lewis' obviously leads to a search for a terminating link in an evidential chain that will be certain - "Evidence must go back to something which is certain - or, as we have said, it will go round in a circle and fail of any genuine basis whatever".[1] Lewis' position on the justification of statements of objective belief is the one usually taken by phenomenalists. However Lewis does not point out that it is the occurrence of the experience alone which is certain, and that as soon as this experience is expressed in words in the expressive statement, this certainty disappears.

The expressive statements themselves are in fact only probable. But the degree of probability they have and how it is to be established are subjects ignored by Lewis because he mistakenly assumes that they are certain. However it seems likely that expressive statements are rendered probable simply in virtue of having been made. It is unlikely that they would be made unless an experience of the described type had occurred.

Expressive Language

Expressive statements are made in what Lewis calls "expressive language" which "denotes experience as such".[2] This language is often called "sense-datum language", particularily when used in the context of a theory of knowledge which is

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1 Ibid., p. 187.

2 Ibid., p. 203.

formulated in terms of sense data. Examples of the words used in this language are "red", "soft", "loud", or "sweet". These are all general words, since they attempt not merely to name the experience, but to describe the nature of it. In saying "red now", I am not merely trying to convey the fact that I am having a sense experience. I am also claiming that I am having a visual experience which is similar to the experiences that I remember having on other occasions when I said "red now". In using general terms we thus appeal to memory and since memory is corrigible, memory statements must be corrigible too. Expressive statements, which all appeal to memory statements, are therefore corrigible.

There is only one English language. Whether we are talking about physical objects or about sense experiences, we use the same words. We say "I see a red ball" and "red now", using "red" in both cases. It might be claimed that "red" in both cases is a phenomenological term - that in both cases it describes sense experience. However the statement of objective belief "I see a red ball" not only gives a phenomenological report of the present experience, but also implies that the ball will continue to be and to appear to be red on subsequent occasions. On the other hand, "red" contains none of these implicit predictions when used in "red now", but is simply a phenomenological report.

In this latter case, the possibility of ambiguity arises. When a statement is made using one of these general phenomenological terms, there should be some way of determining if it is being used in a predictive or non-predictive sense. One way in which the two senses may be distinguished is by the grammatical form of the statement. "I see a red ball" would in most occasions be taken as a statement of objective belief, while "red now" is likely to be recognized as a phenomenological report. However, there are instances in which the distinction between the two kinds of reports is not so clear. For example, the statement "I hear a loud sound" may suggest either that there is a loud sound which I am hearing, or that I am having an aural sensation of loudness. In order to make the distinction perfectly clear words in the expressive language can be qualified by such words as "seem", "appear", or "as if". When the statement is qualified in this way, there is no question but that it should be interpreted only as a phenomenological report. The need to make this distinction explains Lewis' frequent use of such statements as "sense experiences as if I were doing so-and-so".

Expressive statements are statements which are intended to assert that a sense experience has occurred and to describe the nature of this experience by the use of such phenomenological terms as "red" or "soft". They are made using qualifying words which indicate that they are intended to give only a

phenomenological report and no predictions about future events. These statements are neither indubitable nor incorrigible. They are in fact probably justified or rendered probable by the sense experience which they are meant to describe. Since Lewis does not recognize that they are not certain he does not discuss the problem of how they are justified or rendered probable.

Terminating Judgements

Closely related to expressive statements in that they also describe sense experiences, are what Lewis calls "terminating judgements". He states in one place that terminating judgements "represent some prediction of further possible experience",[1] and in another, that they are predictions of possible direct experience.[2] It might possibly be more accurate to claim that they contain predictions of possible experience as a constituent. There is also a problem deciding which formulation, of several he presents, Lewis intended as the actual formulation of the terminating judgement.

The Prediction

I suggested above that it would be more accurate to say that a terminating judgement contains, rather than is, a predic-

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1 Ibid., p. 184.

2 Ibid., p. 203.

tion. To begin, let us assume that the terminating judgement has the form, "If I have sense experiences of such-and-such, and if I do so-and-so, then I will have sense experiences of such-and-such else". Surely the prediction is no more than "then I will have sense experiences of such-and-such else". The rest of the terminating judgement can than be construed as providing the ground on which the prediction is made.

Lewis interprets the terminating judgement as a prediction which is "conditional rather than categorical".[1] By this he means, not that the statement making the prediction is conditional rather than categorical, but that the truth of the prediction is dependent upon the adoption of a particular mode of action under the specified conditions. In the case of a categorical prediction, the prediction will be true or false independently of the mode of action, if any, adopted by the experiencer.

Examples of hypothetical and categorical predictions can be given on both the level of sense experience and on the level of physical objects. On the sense experience level:

(1) If I turn my eyes to the right, I will have desk-like sense experiences.

(2) That man if firing a gun; I will have sense experiences of a loud noise. On the physical object level:

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1 Ibid., p. 205

(3) If I go to the store, I will be able to buy some food.
(4) Evening is coming; it will soon be dark.
In the first of each set of examples the prediction will not be true unless I do something. The truth of the prediction is dependent upon my action. In the second of each set of examples the prediction will be true or false regardless of what I do, (excluding sudden jet trips to the South Pole). The first of each set is a conditional prediction, the second a categorical prediction. The predictions made by terminating judgements are of the first type.

The Form of the Judgement

The second problem which arises concerning terminating judgements is: what is the structural form of the terminating judgement? Lewis states that the form of the terminating judgement is: " 'If A, then E' or 'S being given, if A then E' ".[1] These are obviously two very different formulations. However, before discussing which is the correct one, the meanings of the various symbols should be given.

"S" is an expressive statement describing the present sense experience. It is a phenomenological report of the present situation. "A" is an "action statement", also made in the expressive language. It is a description of the sense ex-

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1 Ibid., p. 205.

periences relevant to a mode of action which may be adopted. "E" is an expressive statement about further possible experience. It is a description in phenomenological terms of the experience resulting from the adoption of the mode of action described by "A". All of these statements are made in the expressive language, and are made using general terms rather than proper names or surrogates of proper names. They do not refer only to specific single sense experiences but also to general types of sense experience. For example, the action described by "A" could be performed at any time, or many times, within a certain span of time. Thus "A" does not describe one particular action, but a kind of action which might be performed. Many actions of this type might be performed, and all would be denoted by "A". The same is true of those sense experiences described by "S" and "E". Any particular action described within a terminating judgement is only one of a class of many actions of that type.

A number of examples can be given of terminating judgements:

(1) Office-like sense experiences being given (S), if I have turning-my-head-to-the-right-like sense experiences (A), then I will have desk-like sense experiences (E). This example uses the form "S being given, if A, then E".

(2) If I have turning-my-head-to-the-right-like sense experiences (A), then I will have desk-like sense experiences (E). This is an adaptation of (1), using the "If A, then E" formulation.

(3) Submerged-in-water-like sense experiences being given, if I have sense experiences like those of breathing, then I will have water-in-the-nose-like sense experiences.

(4) If I have sense experiences like breathing, then I will have water-in-the-nose-like sense experiences.

(3) is of the form, "S, if A, then E", while (4) is of the form, "If A, then E".

With regard to the problem of the correct formulation of the terminating judgement, two different questions must be answered. First, is the "S" element to be considered part of the judgement? Secondly, what is the logical relationship between "S", "A", and "E"?

In answer to the first question, it seems clear from Lewis' later account of terminating judgements that "S" is to be considered part of the judgement. It is, as a matter of fact, necessary that it be so considered since otherwise the prediction made by the terminating judgement would not be even highly probable. Supposing, as will be later shown, that the conditional (2) above must be interpreted as a probability statement, it should be evident that the antecedent, ("If I have turning-

my-head-to-the-right-like sense experiences") does not render more probable than not the consequent, ("then I will have desk-like sense experiences"), for the proportion of cases in which the antecedent is true and the consequent false is very high indeed. Only when taken together with another expressive statement, "S", specifying an appropriate sensory context, will "A" probabilify "E". Therefore "S" clearly should be considered part of the terminating judgement and "If A, then E" should be considered as an elliptical version of the judgement.

The next question has to do with relationship of "S" to "A" and "E". There are two possibilities:

(1) If S, then if A, then E.

(2) If S and A, then E.

Lewis uses both formulations but his final account uses (2), and this is one reason for concluding that it is the formulation that he prefers.[1] On the level of material implication this distinction does not matter, since "S⊃(A⊃E)" is equivalent to "SA⊃E". However, this may not be the case when the implication is not material.

The Nature of the Implication

Lewis considers in much detail the logical relationship between "A" and "E". He states that although it is true to say

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1 Ibid., p. 248.

that "A" implies "E", this implication is neither material, nor formal, nor strict.

The implication is not material although it includes the truth of the material implication - i.e., it is not the case that "A" is true and "E" false. However, the nature of the terminating judgement also requires that even if "A" is false, if "A" were true, "E" would be true. In other words, the counterfactual must have "significant consequences".[1] Just exactly what this phrase entails is difficult to determine. It clearly means that the counterfactual must not be true simply in virtue of its having a false antecedent. It must be true because there is some "connection" between the antecedent and the consequent, beyond the fact that they are antecedent and consequent of the same hypothetical. What else the phrase "significant consequences" might mean is probably contained in the concept of "real connection" to be discussed below. The truth of the terminating judgement includes and requires the truth of the material implication. It also requires something more which the truth of the material implication does not require.

The relationship is not formal implication, whether formal implication is taken to be of the form "For all existent things, if Fx then Gx" or of the form "For all thinkable things,

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1 Ibid., p. 216.

if Fx then Gx". If the first interpretation is accepted, then a terminating judgement is false when its antecedent is false. But Lewis clearly wishes to allow terminating judgements to be subjective conditionals, i.e., to allow them to be true even though their antecedents may be false. Therefore, the first interpretation must be ruled out. If the second interpretation is accepted, then "Gx" must be logically deducible from "Fx". This is the only case in which the hypothetical would be true of all thinkable things. But in the terminating judgement, "E" is not logically deducible from "A". It is not true that it is impossible that "A" be true and "E" false. The relationship between "A" and "E" is empirical and can only be learned from experience. Therefore the second interpretation must also be ruled out. The relationship is also not one of strict implication, since in this case also, "E" would have to be logically deducible from "A".

Lewis finally concludes that the relationship is "one which has no name".[1] It is one which is frequently called a "matter of fact" or "real" or "natural" connection, of the type Hume discussed under the heading of "necessary connections of matter of fact".[2]

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1 Ibid., p. 227.

2 Ibid., p. 212.

Interestingly enough, the

> idea of a "real" or "necessary connection" does not require the supposition of a 100 percent correlation by which, "A" being given, "E" can be predicted with certainty. It is also satisfied if the occurrence of "A" genuinely affects the occurrence of "E": if the objective frequency of "E" when "A" is present is reliably different than when "A" is absent, so that the occurrence of "A" is a probability-index of the occurrence of "E".[1]

The meaning of "genuinely affects" in this quotation seems to be that the occurrence of A probabilifies the occurrence of E, which means that the probability that E is present when A is present is greater than the probability that E is not present when A is present. It also seems to mean that the probability that E is present when A is present is greater than the probability that E is present when A is not present. Although the latter statement seems to be the obvious interpretation of "the objective frequency of 'E' when 'A' is present is reliably different than when 'A' is absent", it is not correct. This can most easily be seen by taking an example. If E were tactile sensations of hardness, and A were sense experiences relevant to reaching to the right, it simply is not true that the probability of having tactile sensations of hardness on reaching to the right is greater than the probability of having tactile sensations of hardness when not reaching to the right. Not reaching to the right does not rule out reaching in any other direction, and reaching to the left may make the probability of having such sensations even greater.

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1 Ibid., p. 229.

Since it is clear, in any case, that the relationship between "A" and "E" is one of probability rather than certainty, it is not necessary that all occurrences of A be followed by occurrences of E. It is only necessary that the probability of A and E taken together be greater than the probability of A and not-E taken together. This would suggest quite strongly that the condition of material implication - that it not be the case that "A" is true and "E" false (which Lewis included as a necessary condition of this "real" connection) does not have to be met after all. The other implications of this relationship's being one of probability will be discussed below when the verifiability and falsifiability of terminating judgements is considered.

Verification of Terminating Judgements

The final problem concerning terminating judgements *per se*, before approaching the question of their relationship to statements of objective belief, is the problem of their verification. Lewis explicitly states that not only are terminating judgements verifiable, but that they may be "*decisively* verified or found false by adopting the *mode of action* in question and putting them to the test".[1] In other words, if the mode of action is adopted and the experience does ensue then the termi-

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1 *Ibid.*, p. 211 (Italics mine).

nating judgement has been decisively verified. If the mode of action is adopted and the expected experience does not ensue, then the terminating judgement is decisively falsified. This account of the verification of terminating judgements is clearly wrong.

In the first place, as has been noted above several times, expressive language uses general terms rather than particular names and demonstratives. The purpose of an expressive statement is to assert the occurrence of a sense experience and to convey to the listener its nature. The latter cannot be done without using such general terms as "red" and "soft". Thus, if the terminating judgements are made in expressive language, as they are, then each part of the judgement refers to a certain type or class of events. For example, in the terminating judgement, "If I have office-like sense experiences, and I have turning-my-head-to-the-right-like sense experiences, then I will have desk-like sense experiences", the "office-like", the "turning-my-head-to-the-right-like", and the "desk-like" sense experiences all refer to certain types of experience. The terminating judgement does not merely predict the occurrence of experience, it predicts that the experience will be of a certain type correctly nameable by these terms. It is a law-like general statement saying something about the relationships of certain classes

of events. The successful attainment of a predicted experience will therefore not decisively verify the law-like terminating judgement. It may confirm the terminating judgement but it no more verifies this law-like statement than the falling of one apple onto Newton's head verifies the Law of Gravitation.

In the second place, if anything at all were verified, it would be the prediction, "I will have desk-like sense experiences". The terminating judgement itself is not decisively verified since what the judgement states is that the occurrence of SA probabilifies the occurrence of E. The successful test is merely one example, among many possible of E's following SA.

This second objection is also applicable to Lewis' claim that the terminating judgements can be decisively falsified, although the first objection is not. If SA occurs and E does not follow, then it is true that the prediction "I will have desk-like sense experiences" is falsified. But since the terminating judgement asserts only a probability relationship between "SA" and "E", the falsifying of the prediction in this case is entirely compatible with the validity of the judgement as a whole.

The claim that the terminating judgement is decisively falsifiable is consistent with the claim that the condition of material implication holds between SA and E in the terminating judgement. However, I have demonstrated above that Lewis

actually abandons this condition. Therefore he cannot use it to establish that terminating judgements are decisively falsifiable.

Lewis does not explain how counterfactual terminating judgements are to be verified or falsified. This could not be done directly, by adopting the specified mode of action, since the very fact the terminating judgement is a counterfactual suggests that this mode of action has not been adopted. My suggestion is that counterfactual terminating judgements could not be verified or falsified, even if the other terminating judgements could, and that they could only be rendered probable by the truth of the terminating judgements which have been tested.

The untenability of Lewis' claim that terminating judgements are completely verifiable leaves a number of problems in this area. That terminating judgements are general rather than particular raises the question of how they are confirmed. I would suggest that each particular adoption of the specified mode of action in the specified situation which was followed by the specified sense experiences would inductively confirm or probabilify the terminating judgement in a manner similar to that by which terminating judgements confirm statements of objective belief.

The statement describing each particular adoption of a

mode of action and the results of this procedure, I shall refer to as a "particular terminating judgement". These particular terminating judgements might be thought of as denoting specific experiences which are members of the class of experiences denoted by the general terminating judgement. I would suggest that the probability factor would likely not be present in the particular terminating judgements (they would be of the form "SAE" or "SA-E", rather than "If SA, then probably E",) so that they could be verified or falsified by the experiences ensuing as a result of the adoption of a mode of action. It must of course be remembered that because they make use of general phenomenological terms, they can only be probable. However, if it is accepted that the terms are properly used, then if the mode of action is adopted and the expected experiences do not ensue, it would be correct to say that the judgement had been falsified. If the expected experiences did ensue then it would be correct to say that the judgement had been verified. The number of such particular judgements verified or falsified would determine the degree of probability between the antecedent and consequent of the general terminating judgements.

The fact that the terminating judgements, as described by Lewis, are themselves confirmed by even more basic judgements, the particular terminating judgements, as I have called them,

suggests that the terminating judgements have been wrongly named. They do not terminate the evidential chain, but rather form intermediary links.

To sum up briefly this chapter, I have pointed out that although Lewis is extremely unclear as to the form of his terminating judgements, the formulation "If S and A, then probably E" is the one most likely to be compatible with his theory. The relationship between the antecedent and the consequent of the terminating judgement is one of probability, and despite Lewis' statements to the contrary, the truth of the material conditional is not a necessary condition for the truth of the terminating judgement. I have also shown that terminating judgements can be neither decisively verified nor falsified but only confirmed by more basic experiential statements. Lewis' terminating judgements do not live up to their name and his structure of knowledge needs sub-basement. Bearing all these points in mind, I will now go on to a discussion of non-terminating judgements.

CHAPTER II

NON-TERMINATING JUDGEMENTS

The third type of judgement Lewis speaks of is the non-terminating judgement. Non-terminating judgements, Lewis states, "represent an enormous class; they include, in fact, pretty much all the empirical statements we habitually make".[1] The empirical statements they do not include would be expressive statements and terminating judgements, both of which we rarely make unless constructing a theory of knowledge. Lewis uses several different names for the non-terminating judgements: "statements of objective fact", "statements of objective belief",[2] and "objective statements".[3] These names are used interchangeably by Lewis and can be assumed to be equivalent. For the purposes of exegesis, I shall restrict my own usage to "objective statements".

The most important characteristic of these objective statements is that "nothing in the import of such objective statements.....is intrinsically unverifiable".[4] They are intrinsically verifiable because they are grounded on past and

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1 Ibid., p. 185.

2 Ibid., p. 185.

3 Ibid., p. 187.

4 Ibid., p. 184.

present sense experience and because they entail statements about immediate sense experience. Although most objective statements are verified by other objective statements, there is nothing other than sense experience which is basically necessary for their verification, and objective statements are therefore theoretically totally verifiable.

However objective statements are not totally verifiable in practice because the statements of immediate experience which they imply are infinite in number. Moreover, I shall later show that objective statements which refer to past events present a problem in Lewis' system. For all objective statements, "no matter to what extent the objective belief should have been, at any time, already verified, the truth of it will still make some difference to further possible experience".[1] This statement is characteristic of an advocate of pragmatism, and is part of the theory that a physical event or object will have causal repercussions which can be traced or be evidenced at any time subsequent to the occurrence of the event or the existence of the object. The study of archeology might well be said to be based on this belief since it reconstructs the events of several thousand years ago on the evidence of those events which exists today.

This same belief underlies any verificationist theory of truth. If a statement is to be established as true or false

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1 Ibid., p. 189.

at any time other than that at which the event described in the statement is occurring, then at that other time there must be causal traces of the event by means of which the statement is verified. Otherwise, the truth value of an objective statement could only be known at the very moment of the occurrence of the event.

It would appear that the "difference" mentioned in the quotation given might be found on either of two levels, the objective or the subjective level. By using the phrase "objective level", I am suggesting that if the objective statement is true then it signifies a certain objective state of affairs which by its existence will have an influence on subsequent states of affairs. For example, the statement "It is snowing today" if true, signifies an objective state of affairs which will influence future states of affairs, in that there may be snow on the ground for the next few days. By using the phrase "subjective level", I mean that a person's belief or disbelief of the statement will in some way influence his future actions. For example, if I believe the statement given as an example, I will wear overshoes. If I don't believe the statement I will not wear overshoes and, perhaps, will regret that decision. I think that Lewis had both of these levels in mind when he made the statement which I quoted above. This distinction between objective and subjective levels of influence is related to

Lewis' implicit separation of experience into two factors, that over which I can have no control as, for example, the falling of the snow from the skies, and that over which I do have control, as whether or not I go out and stand in this snow. This distinction was also made in the discussion of hypothetical and categorical predictions.

Non-terminating judgements might be regarded as one end of a chain starting with experiences and including expressive statements and both types of terminating judgements. The terminating judgements are the link between expressive statements and non-terminating judgements since they exhibit the meaning of the non-terminating judgements in expressive language.

Non-terminating Judgements and Expressive Statements

Expressive statements are described by Lewis as the certain and indubitable basis of non-terminating judgements. As I have argued in the first chapter, this view is not correct, since expressive statements are themselves neither certain nor indubitable. Any statement about experience, whether simply an assertion of its occurrence or a description of the nature of the experience, involves the use of general terms and the possibility of error is thereby introduced. As I have also suggested in the first chapter, the experience per se might serve as evidence for the truth of the expressive statement simply by the fact of its occurrence.

Lewis asserts that the objective belief expressed in the

non-terminating judgement is "cued" by the presentation signified by the expressive statement.[1] Although he does not elaborate on this assertion in any detail, I think a reasonable account can be given of its meaning. He is, I believe, suggesting a genetic or psychological relationship between experience and objective beliefs: that the experience signified by the expressive statement is temporally prior to the objective belief. His position is that we first have the immediate sense experience and then make an inference as to the existence of a physical object, and not that we are first aware of the physical object and then analyze it into component sense experiences. In stating that the presentation signified by the expressive statement "cues" the objective belief, he is suggesting that we make an inference from the presentation to the objective belief.

This analysis of the relationship between expressive statements and objective statements might be criticized, using as evidence the structure of ordinary language. One of the difficulties pointed out by Lewis himself about expressive statements is that the language used to make them refers primarily to physical objects and not to the presentations of sense experience. In making expressive statements we have to adapt the physical object language to describe the contents of sense ex-

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1 Ibid., p. 185.

perience. This suggests that the mere awareness of physical objects as a whole might have temporal priority over the awareness of the discrete parts of sensation. This objection is not really telling, since we do have phenomenological words such as "red" and "soft" in the language as well as physical object words like "ball" and "desk". It may simply be that talking about physical objects is more convenient in ordinary life than talking about sensations or sense experiences.

The interpretation placed on the sensory experience - the inference to the existence of a physical object - is "imposed in the light of past experience".[1] The inference is an inductive one based on a comparison of the present experience to similar experiences in the past. In making the inference we assume that the present sense experience will be followed by other experiences similar to those which followed similar prior experiences in the past. The belief that particular experiences will follow one another as they have in the past constitutes the belief in the existence of a physical object. At times Lewis seems to think of a physical object as a sort of shadowy being "behind" all the sense experiences which causes the sense experiences to occur in a fixed order. If in the past having sense experiences of

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1 Ibid., p. 189.

three rectangles was usually followed, on the adoption of some specified mode of action, by sense experiences of another three rectangles, then it is believed that this present experience of three rectangles will also be followed, taking into account the mode of action, by sense experiences of another three rectangles. This sequence of sense experiences is generally taken to be representative of a cube. The present sense experience is assumed to be a member of a class of similar sense experiences and is therefore subject to the same laws of sequence as the other members of the class. This sequence of sense experiences of three rectangles will be like other similar sequences in that if I adopt certain modes of action I will have sense experiences of another three rectangles. The process of testing an objective belief in the existence of a physical object of a certain type, that is, the process of adopting a particular mode of action and determining if it is followed by the appropriate sense experiences, is an example of testing a particular terminating judgement to see if it falls under the class specified by the general terminating judgement. The general terminating judgement is thought of as being a statement of one of the laws governing the sequence of sense experiences which is regarded as being representative of a cube.

The inference from one set of sense experiences to

another set of sense experiences which has been discussed above is obviously inductive, so long as it refers only to actual and possible sense experiences. However, the fact that Lewis goes on to say that our belief in the validity of the inference in any particular case constitutes our belief in the existence of a physical object is what makes Lewis' theory phenomenalistic. The other features of his theory that are phenomenalistic, the method by which he justifies objective statements and his claim that objective statements can be translated into statements about sense experiences, will be dealt with later under the appropriate headings.

Non-terminating and Terminating Judgements

A discussion of the relationship between terminating and non-terminating judgements must be approached from two different directions. There is first the question of the translation of the non-terminating judgement into a set of terminating judgements. The second question is concerned with the verification of the non-terminating judgement by these terminating judgements.

Lewis makes a number of different statements about the relationship between a non-terminating judgement and the set of terminating judgements associated with it. First of all, the objective statement must be "translatable into terms of passages of possible experience, each of which would constitute some

partial verification of it".[1] That is, the objective statement must be completely restatable by terminating judgements - statements which make a prediction about further possible experience. The form of the terminating judgement which is to be used in this translation is: "If S be given and act A initiated, then in all probability E will follow".[2] It will be noticed that this is the form I mentioned in the first chapter as the one intended by Lewis.

If such a translation is to be adequate, it is clearly necessary that the objective statement be equivalent to the set of terminating judgements associated with it.[3] If they were not equivalent, the translation would not be complete. If we were to regard a translation as a form of definition, it is obvious that the definiens and the definiendum must be equivalent or the definition itself would not be accurate. It must be noted, however, that this translation can never be completely carried out in practice since the set of terminating judgements associated with any given non-terminating judgement has an indefinitely large number of members. There are an indefinitely large number of possible ways to test the truth of any objective statement.

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1 Ibid., p. 189.

2 C.I. Lewis, "Professor Chisholm and Empricism", (Journal of Philosophy, 1948, pp. 517-524) p. 512.

3 Op. cit., p. 192.

Another thesis held by Lewis is that "the translation of objective fact into terminating judgements, in terms of possible experience, represents its [the objective fact's] actual and vital cognitive significance".[1] In other words, the terminating judgements express the meaning, (or is it perhaps only the important meaning; it is difficult to tell from what Lewis himself says) of the objective statement. This, of course, is another facet of Lewis' theory that makes it phenomenalistic. He clearly believes that the meaning of statement about physical objects can be expressed by statements about sense experiences.

Lewis also states that the truth of the objective statement is one "cause" or explanation of the consequent of the terminating judgement.[2] It will be recalled that the consequent of the terminating judgement is a prediction that certain sense experiences will follow upon the adoption of a mode of action. If the objective statement, which is translated into a set of terminating judgements, is true, then the prediction made in the terminating judgement will probably be true as well. In the example of the cube, if the statement "This is a cube" is true, then the consequent of the terminating judgement "If sense experiences of three rectangles are given and a particular mode

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1 Ibid., p. 203.

2 Ibid., p. 238.

of action adopted, then sense experiences of three other rectangles will probably follow" will be true as well. If the objective statement is false, the prediction probably will not be true.

Sense Meaning

The most definite position that Lewis takes on the relationship between non-terminating and terminating judgements is that the former, in virtue of their sense meaning, imply the latter.

The sense meaning of a term, Lewis states, "is constituted by the criterion in mind by which what is meant is to be recognized".[1] It is an aspect of the intension of a term and as such is described by Lewis as "epistemologically the most important signification of 'intension'".[2] "Signification" if defined as "that property in things the presence of which indicates that the term correctly applies and the absence of which indicates that it does not apply".[3] "Intension" is defined as the "conjunction of all other terms each of which must be applicable to anything to which the given term would be correctly applicable".[4] A "term" is a linguistic expression "which names or applies to a thing,

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1 Ibid., p. 37.

2 Ibid., p. 37.

3 Ibid., p. 39.

4 Ibid., p. 39.

or things, of the same kind, actual or thought of".[1] The conjunction of the last two definitions gives the "linguistic meaning" of a word or linguistic expression, which is "the pattern of definitive and analytic relationships of the word or expression in question to other words or other expressions."[2] Linguistic meaning and sense meaning are two different interpretations of intensional meaning, the former interpreting intension from a linguistic point of view, the latter from a sensuous point of view. Thus sense meaning is also described as"the criterion in terms of sense by which the application of expressions is determined."[3] Since the objective statement entails the individual terminating judgements, and the set of terminating judgements entails the objective statement in turn, the objective statement and the set of terminating judgements associated with it must be equivalent in meaning. The set of terminating judgements might therefore be said to express the meaning of the objective statement. Lewis also claims that the terminating judgements provide evidence for the truth of the objective statement. Since the terminating judgements describe series of sense experiences, they might well be said to provide "the criteria in terms of sense by which the application of expressions is determined". The ob-

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1 Ibid., p. 38.

2 Ibid., p. 131.

3 Ibid., p. 131.

vious conclusion is that the sense meaning of an objective statement is expressed by the terminating judgements which the statement implies. As I said at the beginning of this section, the objective statement implies the set of terminating judgements in virtue of its sense meaning.

Lewis also describes sense meaning as a "schema, a rule or prescribed routine and an imagined result of it which will determine applicability of the expression in question".[1] The use of the word "rule" is curious in this context. A rule is usually regarded as being prescriptive - an order to do something. It might be of the form "If you are given S, then do A and expect E to follow". But surely the meaning of a term does not consist in its giving an order. The word "law" might have been better used in this description, since a law is of the form "If S and A, then E will follow". This formulation supplies the required routine and result without the suggestion of being an order.

This last explanation given by Lewis obviously describes the terminating judgements. Lewis gives the example of the routine of counting the sides of a chiliagon and getting the result 1000. There is also the example of a cube, for which the prescribed

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1 Ibid., p. 134.

routine and its result might be having sense experiences of turning the cube around and counting six rectangles, the first three originally given in sense experience and the second three given subsequent to the adoption of a mode of action or a routine.

It can be clearly seen that there are many possible different routines with as many possible different results for any given thing or event. With the cube, it is possible to turn it around in several different directions, or to place it in several positions and move around it. For each routine, the result will differ in some degree, but every routine and result will be part of the sense meaning of the word "cube".

Lewis states that there are two conditions which must be fulfilled in order for a term to have sense meaning. First, whether or not the term is applicable must be ascertainable by means of sense presentable characters. Second, which characters will determine "applicability must be fixed in advance of the particular situation".[1] In other words, for the term "cube" to have a sense meaning the applicability of that term must be determined by means of sense-observable characteristics. Also, it must be known before examining any particular thing that possessing such characteristics will determine that it is to be called a cube.

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1 Ibid., p. 135.

Lewis also states that the "intension of a proposition comprises whatever must be true of any possible world in order that this proposition should be true of, or apply to, it".[1] Although Lewis uses "proposition" to designate an abstract entity, "the content of an assertion", I think that what he says of a proposition is equally true of a statement. Thus the intension of a statement also includes whatever must be true of any possible world in order that this statement should be true of, or apply to, it. One of the things which must be true of any possible world in order for a particular objective statement to be true of it is that following a prescribed routine will probably have a certain result. This prescribed routine and its result are expressed by the terminating judgements entailed by the objective statement. Therefore the terminating judgements must be part of the intension of the objective statement which entails them. Since Lewis claims that an objective statement entails an indefinitely large number of terminating judgements, he also claims that the intension of a statement is so large that it would be impossible to recite it.[2]

This last point must be carefully considered. If the sense meaning of a term is one interpretation of its intension,

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1 Ibid., p. 56.

2 Ibid., p. 56.

then if the intension consists of an indefinitely large number of schemata, the sense meaning must also consist of an indefinitely large number of schemata. This conclusion also follows from the fact that the sense meaning consists of rules or routines and the imagined results of these routines which will determine applicability of the expression in question, since there are many different rules which could be applied in any given situation. A sense meaning consisting of an indefinitely large number of schmata raises numerous difficulties, among which is that of knowing an indefinitely large number of things. I can suggest one solution to this problem. It is true that in one sense there are many different routines which can be followed to determine the applicability of the word "cube". It is possible to start to count at any one of the six sides. It is possible to place the cube in a number of different positions while this is done. These variations can be enumerated indefinitely. However, all of these particular routines are members of one class: the general routine of counting all the sides of the object to determine if there are six of them. This general routine by itself can be regarded as the sense meaning of the term "cube". If all the sides are counted, they will number six. This interpretation is also compatible with the statement that the intension includes whatever must be true of any possible world in order

for the statement to be true. In the case of the cube, it must be true of any possible world that if all the sides of a cube are counted, there will be six. Finally, the general routine takes the form of the general terminating judgement discussed in the first chapter, just as the innumerable specific routines take the form of the particular terminating judgements of that discussion.

For the sake of Lewis' theory as a whole, I think it is necessary to adopt this interpretation of sense meaning and intension, even though a broad interpretation must be made of some of the statements he makes about intension. The problems presented by sense meaning consisting of an indefinitely large number of schemata, are too numerous to allow that interpretation to stand.

The relevance of sense meaning to the relationship between non-terminating and terminating judgements is that it is in virtue of the sense meaning of the objective statement that it implies the set of terminating judgements associated with it. I might also use the word "entails" for "implies" in the last statement, following Lewis' definition of "p entails q": "if any world to which 'p' would apply is required to be one to which 'q' would apply, then 'p' entails 'q'".[1] Lewis suggests that

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1 Ibid., p. 55.

the objective statement and the terminating judgements implied by it have the same intension.[1] One of the characteristics of the intension of a term is that it comprises whatever must be true of any possible world in order that the term should be true of it. If two terms have the same intension, then it clearly follows that they require the identical things to be true of any possible world in order that they should be true of it. Therefore, in Lewis' definition of the word "entails", the objective statement entails the set of terminating judgements and the set of terminating judgements entails the objective statement. However, it should not be assumed that this entailment is "a formal implication...which can be derived by the rules of logic. Rather it...can only be determined by knowing a meaning and...without that, cannot be discovered by any application merely of logical rules".[2]

Lewis also states that the objective statement and the set of terminating judgements it entails are logically equivalent.[3] I assume that they are logically equivalent in virtue, again, of their sense meanings. It seems a strange use of "logical equivalence" to me. I suspect that this entailment and logical equivalence might be compared to the relationship be-

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1 Ibid., p. 201.

2 Ibid., p. 195.

3 Ibid., p. 192.

ween the definiendum and the definiens of a definition. "Bachelor" is equivalent to "unmarried adult male" in virtue of the meanings of the two expressions. It might also be said that "bachelor" entails "unmarried adult male", or that being a bachelor entails being an unmarried adult male. Thus these two expressions are equivalent and one entails the other, but only in virtue of their meanings. I think that this is the point Lewis is making about the relationship between objective statements and the sets of terminating judgements associated with them.

From the fact that the set of terminating judgements explicate the sense meaning of the objective statement by which they are implied, several conclusions can be drawn about these terminating judgements. If the determination of whether or not a term is applicable must be through sense presentable characteristics, then it follows that the determination of whether an objective statement is applicable to a situation or, in other words, whether it is true, must be by means of sense experiences. The terminating judgements are made in the expressive language, describing sense experiences. Thus they meet this condition.

Because the characters which determine applicability of an expression must be fixed prior to any situation in which the expression is to be used, it can be concluded that the sense meaning of an objective statement is known prior to any attempt

at confirmation. Thus the sense meaning must be known a priori, before any experience, and so must the general terminating judgements which are implied by the objective statement. Whether these terminating judgements will be verified or rendered probable cannot, of course, be known a priori.

The discussion of sense meaning is relevant to the discussion of verification which is to follow since the "sense meaning of such a statement coincides with what it would mean, in terms of experience, to determine fully that it is true".[1] Since the sense meaning of an objective statement is explicated in the terminating judgements implied by it, Lewis is here claiming that the verification of the terminating judgements verifies the objective statement.

Non-terminating and Terminating Judgements

In the preceding discussion of sense meaning and intension, it was stated that Lewis seemed to suggest that the sense meaning of an objective statement consisted of an indefinitely large number of schemata. However, I decided that this must be accepted only with qualification: that the sense meaning might be regarded as consisting of several, but not an indefinitely large number, of general schemata. These schemata might be re-

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1 Ibid., p. 193.

garded as law-like statements. The number of particular instances of each law-like statement might be indefinitely large, but the number of law-like statements is not.

The same situation arises in relation to the indefinitely large number of terminating judgements, which are the explication of the sense meaning. These judgements can, as a matter of fact, be regarded as the statements of the routines and their results which make up the sense meaning of an objective statement. In this case, they cannot be indefinitely large in number either, or they could not all be known. They must be known or else the sense meaning of an objective statement could not be known. Since the sense meaning is known, the conclusion is obvious. Unfortunately, Lewis states that "the whole set of such statements are infinite in number",[1] which is a direct contradiction of my explication. However, I think that this problem can be resolved by appealing to the distinction between general and particular terminating judgements. This distinction is of course identical to that made between general and particular schemata which constitute the sense meaning of an objective statement. The general terminating judgements are the law-like statements which are implied by the objective statement. The particular terminating judgements are instances of the general laws. I

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1 Ibid., p. 190.

think it can plausibly be claimed that the particular terminating judgements, the instances of the laws, can be indefinitely large in number without the number of laws being indefinitely large.

It must be emphasized that if this distinction is made, the law-like statements, the general terminating judgements, must be formulated in very general terms. In other words, they must be similar to "If I am given office-like sense experiences and have sense experiences such as turning my head, I will have desk-like sense experiences". There must not be specific laws constructed for each of the infinitely many points of view from which an object can be perceived.

I will admit that this interpretation leads to problems immediately, since it will definitely make a difference to the mode of action adopted what particular sense experiences I am originally given. In the case of the objective statement "There is a desk in the office", if I am given sense experiences relevant to facing the north side of the office and I turn my head to the right, I will have different sense experiences than if I am originally given sense experiences relevant to facing the south side of the office and I turn my head to the right. In one case I may have desk-like sense experiences, while in the other I may not. The same argument applies if I am facing the east or the west. Already it appears that there must be at least

four law-like statements and a determined adversary could undoubtedly add innumerable more. However, I think that this problem could be solved, although at the expense of making the general terminating judgements more and more general. The problems inherent in allowing the law-like statements to become indefinitely large in number seem to me to be insoluble, and thus I prefer to choose this horn of the dilemma.

Lewis accepts the principle that an objective fact will have causal traces which can be used to verify the statement of this objective fact at any time subsequent to the occurrence of this event. He also states that the sense meaning corresponds to what would verify fully the objective statement. Since the sense meaning is expressed in the terminating judgements, the natural conclusion is that these causal traces are included in the terminating judgements.

This conclusion is not plausible. The sense meaning of a term is known a priori, but what causal traces might remain after the event cannot be so known. To know what causal traces will remain, it would also be necessary to know all sorts of causal laws a priori as well. To know the latter is certainly unlikely, and even if it were likely, these causal laws themselves could not be considered part of the sense meaning of an objective statement. Yet they would have to be if the causal traces were included in the sense meaning.

I would suggest that the only experiences which can be included in the terminating judgements are those which occur during that particular extent of time during which the objective event occurred or the physical object described in the objective statement existed. This is not to claim that terminating judgements can only be expressed during this period of time. The tenses in the terminating judgement need not be present. For example, if the desk exists in the office from time t_n to time t_{n+1}, at any time t_{t-m}, prior to the existence of the desk in the office, it would be possible to say "If I am given office-like sense experiences during time t_n to t_{n+1}, and I turn my head to the right during time t_n to t_{n+1}, then I <u>will</u> have desk-like sense experiences during time t_n to t_{n+1}. Similarily, at any time t_{n+1+m} after the desk had ceased to exist in the office, I could say, "If I had been given office-like sense experiences during time t_n to t_{n+1}, and I had turned my head to the right during time t_n to t_{n+1}, then I <u>would have had</u> desk-like sense experiences during time t_n to t_{n+1}. The common feature in both these terminating judgements is that the sense experiences described in them are only those which might occur or might have occurred during the time of the existence of the objects in question. All of these sense experiences are directly related to the object in question. There are none which

are related to any causal traces which might remain after the existence of the object. I would suggest that this time factor is implicitly present in all terminating judgements.

I have now restricted the terminating judgements implied by an objective statement to very general law-like statements which do not include any extraneous causal laws and which include only sense experiences contemporary with and directly related to the objective event in question.

This, of course, does not mean that statements about the past cannot be verified. They can be verified by means of causal traces, and by means of other objective statements. However, none of terminating judgements implied by objective statements about the past describe present experiences, and so the terminating judgements cannot be used to verify the statement. This does not damage Lewis' theory in any way. He does not claim that <u>all</u> objective statements must be directly verifiable by means of terminating judgements, or by means of an appeal to direct experience. He only claims that somewhere in the chain of verification, there must be an appeal to direct experience. Statements about the past can be verified by statements about the present, and statements about the present can probably be verified by appealing to direct experience.

Because he maintains that the terminating judgements

implied by a non-terminating judgement are indefinitely large in number, Lewis states that "it is not possible to make all the possible confirmations of an objective belief".[1] Although I have abandoned the former position to some extent, it is still true that it is not possible to make all possible confirmations. First of all, the particular terminating judgements which are instances of the general terminating judgements may be infinite in number. In the second place, there might be many causal traces after the occurrence of the event when the object no longer exists which would allow one to confirm further the objective statement, though not by means of terminating judgements. Therefore, it is not correct to say that objective statements can in practice be verified; they can only be confirmed or rendered probable. The general terminating judgements which are directly implied by the objective statements can themselves only be rendered probable by the limited number of particular terminating judgements that it is possible to test. Thus the general terminating judgements can in turn render the objective statements only probable, and neither certainly true nor certainly false. I will deal with the verification of objective statements in more detail later.

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1 Ibid., p. 189.

The Logical Relationship Between Non-terminating and Terminating Judgements

After stating that a non-terminating judgement entails a set of terminating judgements, Lewis qualifies this statement. He claims that "we can no longer regard any terminating judgement 'When S is given, if A, then E' as strictly implied by an objective statement P, which is believed. We can only say, 'If P, then when presentation S is given and act A is performed, it is more or less highly probable that E will be observed to follow...the sense meaning of an objective belief... is to be thought of as some set of direct empirical findings it implies as probable under appropriate conditions of presentation and of action."[1] The only plausible interpretation of these quotations is that the non-terminating judgement implies, without qualification, a set of terminating judgements of the form "If S and A, then probably E". This interpretation is supported first of all by the fact that in his discussion of terminating judgements, Lewis concedes that the implication from antecedent to consequent is one of probability. The fact that this probability factor is already in the terminating judgements seems to me to account adequately for the fact that the failure to obtain the appropriate sense experiences after the

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1 Ibid., p. 237.

adoption of the specified mode of action in any particular situation does not conclusively falsify the objective statement. That this is true can be seen by examining ordinary experience. If I walk into the office tomorrow and fail to see a desk, it does not necessarily mean that the statement "There is a desk in the office." is false. I may have been struck blind during the night. However, Lewis' system will adequately account for this fact without adopting the position that the objective statement only probably implies the set of terminating judgements.

Secondly, Lewis does state that "the predictions, in terms of experience...are not predictions with theoretical certainty but with probability only...".[1] The predictions referred to are clearly those sections of the terminating judgements symbolized by "E". Finally, when Lewis gives a schematic analysis of the relationship between non-terminating and terminating judgements, he uses the following formula:

$$P. < : S_1A_1 \rightarrow (h)E_1$$

The symbol "$<$" means "analytic consequences", which he states "covers not only that of any premise to a conclusion derivable from it by the rules of deductive logic but also, that...which cannot be certified by logical rules alone but only through

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1 Ibid., p. 239.

knowing the meaning of the terms involved and understanding the relation of these two meaning to one another". This relationship is "certifiable a priori".[1] There is no mention of probability here. As well, "(h)E" is translated as "in all probability, E". And he states "The analytic consequence of 'P' which we wish here to express is not the probability of a relation '$\longrightarrow$' between 'S_1A_1' and 'E_1', but a relation of probability between them."[2] Thus, despite what the original quotation seems to say, my interpretation seems more likely.

Up to this point in the discussion of the relationship between non-terminating and terminating judgements only the implication from non-terminating to terminating judgements has been dealt with. There is another important aspect to the relationship; that in which the terminating judgements serve as evidence for the truth or falsity of the non-terminating judgements by which they are implied. This matter will be dealt with in the following chapter, which is concerned with the justification and verification of non-terminating judgements.

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1 Ibid., p. 249.

2 Ibid., p. 250.

CHAPTER III

THE VERIFICATION AND JUSTIFICATION OF EMPIRICAL KNOWLEDGE

Having the sense experience predicted in a terminating judgement is evidence for the truth of the objective statement by which the terminating judgement was implied. This one sense experience does not provide total verification of the objective statement for the following reasons. First, a single particular terminating judgement is only one of an indefinitely large number of such judgements implied by the objective statement. The verification of one such predictive statement does not verify the whole set. Secondly, the verification of objective statements referring to any time other than the present requires an appeal to causal laws as well as to immediate experience.

The function of the particular terminating judgement is variously described by Lewis as "confirming" the objective statement,[1] of rendering the objective statement probable,[2] and of rendering the statement credible.[3] That these three descriptions are consistent can be discovered by examining Lewis' analysis of probability.

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1 Ibid., p. 238.

2 Ibid., p. 265.

3 Ibid., p. 305.

Probability

The chapter in An Analysis of Knowledge and Valuation on probability gives an analysis of what "probable" means in such statements as "q renders p probable". Lewis describes this relationship between p and q, and explains how it establishes the credibility of objective statements. This is an essential step in his justification of our claims to have empirical knowledge. After having discussed the distinct links in the evidential chain - the objective statements, the terminating judgements, the expressive statements, and direct experience - Lewis goes on to explain how these links are joined.

Before beginning the discussion of probability, we can see that there are two conditions that Lewis' account of probability must meet before it can be regarded as adequate for the use he later makes of the concept of probability. First, since objective statements can theoretically be totally verified by a set of terminating judgements, the relationship between the non-terminating and the terminating judgements must be a priori. Once the objective statement and the appropriate set of terminating judgements have been given, the probability of the objective statement's being true must be determinable. No appeal to any sort of "outside information" must be necessary. Since the non-terminating and the terminating judgements are linked by a relation

of probability, it is this relation of probability which must be a priori.

In his discussion of the Principle of Inverse Probability Lewis makes use of the probability calculus. This calculus is based on several postulates. A possible set of postulates is:

A1. $P(O/e) + P(\text{not-}O/e) = 1$. The sum of the probability of an objective statement and the probability of its negation, relative to the same evidence is 1.

A2. $P(O_1 \ \& \ O_2/e) = P(O_1/e) \times P(O_2/e \ \& \ O_1)$. The probability, given evidence, e, of a conjunction of two propositions O_1 and O_2, is the probability of O_1 on the evidence, e, multiplied by the probability of O_2 on evidence e and proposition O_1.

A3. If the evidence e is self-consistent, then $P(e/e) = 1$.

Lewis' account of probability must therefore also be consistent with the use of this calculus.

Key Terms

Before giving an explication of Lewis' account of probability, I should first explain a number of key terms he uses. First, he speaks of the "quaesitium class" and the "reference class" and of the "frequency" of a member of the quaesitium class being a member of the reference class. The quaesitium class might be defined as that class made up only of members similar to the one whose probability is to be determined. For example,

if we are concerned with the probability that tomorrow, January sixteenth, will be a sunny day, the membership of the quaesitium class might consist of sunny January sixteenths. If we are concerned with the probability that the next ball drawn from the urn will be red, quaesitium class might be the class of red balls drawn from this urn.

The reference class could be described as a larger class of which the quaesitium class is a sub-class. For example, if the members of the quaesitium class are sunny January sixteenths, the membership of the reference class might be made up of all January sixteenths, or by all days following days like today, or by all days in January following days like today. In the case of the quaesitium class consisting of red balls drawn from this urn, the corresponding reference class might be consisted of balls drawn from urns, or of all balls drawn from this urn, or even of all balls drawn from urns of this particular shape and colour. Just as any one small class may be a sub-class of many different larger classes, so also any one quaesitium class may be a sub-class of many different reference classes. The choice of reference class, as I shall demonstrate later, is very important in determining probabilities.

The "frequency" mentioned in the previous paragraph is that of members of the quaesitium class among members of the

reference class. In my first example, the frequency would be that of sunny January sixteenths among January sixteenths, or among days following days like today, or among days in January following days like today. In the second example, it would be the frequency of red balls among all balls drawn from urns, or among all balls drawn from this urn, or among all balls drawn from urns of this particular shape and colour.

The frequency is expressed by a fraction "a/b" in which "a" represents the number of members of the quaesitium class, and "b" represents the number of members of the reference class. It can easily be seen that "a/b" cannot be greater than one. If all January sixteenths are sunny, and the quaesitium class is equal to the reference class, the fraction will equal one. In most cases the quaesitium class will be smaller than the reference class, and the frequency will be less than one. In no case can the quaesitium class be greater than the reference class. A sub-class cannot be larger than the class of which it is a sub-class.

Both the quaesitium class and the reference class are indefinitely large, because their members include, for example, not only all the sunny January sixteenths that have ever been, but also all the sunny January sixteenths which are to come. Their members include not only all the red balls which have been

drawn from urns, but also all those which will be drawn.

Account of Probability

Lewis gives three separate and incompatible accounts of probability. They are: 1) "a probability is a valid estimate of frequency from the given data."[1] 2) "On data 'D', 'P' is probable with expectation a/b and reliability R."[2] 3) "That c, having the property ψ, will also have the property ϕ, is credible on data 'D', with expectation a/b and reliability R."[3] I shall discuss each of these in turn.

The "Frequency"

The first account identifies probability with a valid estimate of a frequency. The frequency in question is, of course, that of members of the quaesitium class among members of the reference class. It should be noted that the probability is not identified with the objective, or actual, frequency which is not known; it is identified with an estimate of that frequency. Thus a statement of probability involves a judgement and, as such, must be based on evidence. This evidence is provided by the "data" mentioned in the formulation.

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1 Ibid., p. 291.

2 Ibid., p. 296.

3 Ibid., p. 305.

The Data

The "given data" come from the chosen reference class. It will be recalled that each quaesitium class could be a subclass of several different reference classes. In one of the examples I gave the reference class could have consisted of January sixteenths, of days following days like today, or of days in January following days like today. The choice of reference class will often make a difference in the estimate of the frequency. If the weather today happens to be a stormy day, the frequency of sunny January sixteenths among days following days like today might well be smaller than the frequency of sunny January sixteenths among all January sixteenths. Since the reference class limits the data on the basis of which the estimate is made, the estimate is markedly influenced by the choice of the reference class. By choosing different reference classes, different estimates of frequency can be made, and different probabilities can be assigned to the same event. Being able to assign different probabilities to the same event is not very useful in any practical situation and it might readily be asked if all these estimates are equally valid. According to Lewis they are. A probability judgement is said to be valid "If in fact the data 'D' gives this estimate 'a/b' of the frequency of instances of [the quaesi-

tium class] amongst instances of [the reference class] , and if the reliability of the data and their proximateness to the case in point, indicate reliability in degree 'R' of this determination."[1] In other words, the validity of the judgement depends only on the correctness of the inference and not on the composition of the reference class. In order to make use of a probability judgement we clearly need some standard for choosing between the various estimates of frequency.

Reliability

The necessary standard is the "reliability" of the data supplied by the reference class. Reliability is a measure of three different factors, "the adequacy or inadequacy of the data, the proximateness or remoteness of the data, and the uniformity or disuniformity of the data".[2]

The adequacy of the data takes into account the amount of data available. The reliability of an estimate of a frequency will partly depend on whether there has been a sufficient number of similar cases in the past on which to base the estimate. If there are meteorological records on only two January sixteenths, any judgement made on the basis of them about the probability that tomorrow, January sixteenth, will be sunny will be less re-

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1 Ibid., p. 305.

2 Ibid., p. 298.

liable than a judgement made on records about one hundred January sixteenths.

The proximateness of the data is a measure of the degree to which the past instances resemble the present instance. For example, if the judgement of January sixteenth's being sunny is based on the evidence of all days in January following days like today, then it must be determined how much like today these other days in January were. Are they like today only in that they were days in January, or were they like today in having a mean temperature of -20 ? Obviously, the more details in which these past days in January resemble today, the more reliable will be the judgement based on this information.

The third aspect of reliability distinguished by Lewis is that of the uniformity of the data. The data are uniform if the frequency of members of the quaesitium class among members of the reference class is approximately the same for all sub-sets of the reference class chosen. In our example, the data would be considered uniform if the frequency of sunny January sixteenths following days like today in years whose dates are divisible by four were approximately the same as the frequency of sunny January sixteenths among days like today in years whose dates are divisible by five, by six, and so forth. Once these three factors have been examined, the reliability of the estimate can be deter-

mined.

Second Account of Probability

The discussion of reliability leads directly to a consideration of the second account of probability given by Lewis: "On data 'D', 'P' is probable with expectation a/b and reliability R". The expectation mentioned is a synonym for "probability coefficient", which in turn is a synonym for "estimated frequency". This aspect of the second account is thus consistent with the first account. However, this account unlike the first, includes within the formulation the notion of reliability. From what Lewis says it is almost impossible to determine whether he intends the reliability of the judgement to be an intrinsic part of the formulation of the definition of probability. The following statements suggest that he does: 1) "Since it is to be recognized that a probability determination has this dimension of reliability..."[1] 2) "And the almost complete neglect of the dimension of reliability in other theoretical formulations, is a notable shortcoming..."[2] 3) "Or it appears in other formulations only in maxims governing the choice of data, or of the reference class, and taken to be pragmatic only, and not subject to rules accord with which is essential for validity of the probability determination itself".[3] On the other hand, he also states: 4)

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1 Ibid., p. 296.

2 Ibid., p. 301.

3 Ibid., p. 293.

"The pragmatic problem of arriving at a well-judged determination is that of so choosing the reference class as to give a determination having the highest possible degree of reliability. Truth of the determination is not necessarily affected by such choice, because in any probability determination reference to the data on which it is judged must...be retained."[1] The fourth quotation seems to be inconsistent with the third. Lewis calls the problem of reliability "pragmatic" in the fourth quotation, in the third, he criticizes other formulations for construing it pragmatically. In the fourth quotation he says that the choice of the reference class need not affect the truth of the determination, since a true determination is one which is valid and whose data "D" are true, and yet he declares in the third quotation that the choice of reference class is essential for the validity of the probability determination.

There are three reasons for choosing the fourth quotation rather than the first three as representing Lewis' general position. Of least importance, perhaps, is the fact that it comes later in the book. Final statements might be regarded as more indicative of a writer's position than preliminary ones.

Secondly, the inclusion of the aspect of reliability in the actual probability formulation does not seem to be necessary. The estimate is validly made on the basis of the given reference

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1 Ibid., p. 314.

class, and the question of reliability only enters into deciding which of the various estimates is most useful.

The third reason is pragmatic: if the final quotation is accepted as a statement of Lewis' actual position, he avoids a criticism made by Carl G. Hempel.

Professor Hempel, in a review of An Analysis of Knowledge and Valuation[1] claims that one of the factors of reliability, proximateness, can only be determined by experience and hence only with probability. His criticism appears to be valid. Proximateness is a measure of the degree of resemblance between past instances and the present instance. This can only be determined by comparing past instances with the present instance in each case in which an estimate of a frequency is to be made. This involves an appeal to experience. Hempel states that because of this appeal to experience, Lewis' formulation of the probability statement is not completely analytic in character. However, if we adopt the position suggested, and eliminate the reliability factor from the formulation, the criticism is no longer applicable. It is, however, worth noting that Lewis does state that "reliability also concerns only logical relations".[2] But this statement is false since the factor of proximateness involves

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1 Carl Hempel, Review of An Analysis of Knowledge and Valuation. (Journal of Symbolic Logic, 1948, pp. 40-45)

2 Op. Cit., p. 314.

an appeal to experience. I conclude, therefore, that "a probability is a valid estimate of a frequency from the given data" is more accurate than "On data 'D', 'P' is probable with expectation a/b and reliability R."

Third Account of Probability

The third account which Lewis gives of probability seems at first glance to identify it with credibility. The particular formulation suggesting this interpretation is: "That c, having the property ψ, will also have the property ϕ, is credible on data 'D', with expectation a/b and reliability R." Upon closer examination, this statement does not really support the interpretation that probability is identical with credibility. Lewis also explains that a probability is "a valid estimate of a frequency". This estimate may be said to be credible, but "the degree of its credibility (the probability that the actual frequency coincides with the estimate) is not the probability, a/b,... This credibility is one aspect of what we may call the reliability of the probability determination." Attention must be given to the question of reliability, "otherwise there will be the possibility of confusing the credibility of a frequency estimate...with the probability which is measured by this estimate".[1]

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1 Ibid., p. 292.

On the other hand, Lewis does make such statements as: "probability or credibility has another mode of variation."[1] and "such credibility of a statement 'P' coincides with the intent of "It is probable that P' in the sense...implying that 'P' has probability the measure of which would at least exceed 1/2".[2] This whole topic seems an impossible confusion, which likely rests on an ambiguity in the way in which Lewis uses the word "probable". He sometimes uses it as a synonym for "valid estimate". It was this usage which I accepted as the most plausible account of probability. But he also uses "probable" as the name of an"a priori determinable relationship between the expectation coefficient as assessed and empirical grounds on which that assessment is made".[3] Since "expectation coefficient" and "estimate of a frequency" are synonymous, we are led to the ridiculous conclusion that probability is a relationship between probability and its empirical grounds. Because of this result, I would prefer to ignore this second usage of the word "probable". Finally, Lewis uses the word "probable" to evaluate the frequency estimated. If the frequency is estimated to be over 1/2, then the statement that the event in question will occur can be called probable. It is in this last sense that probability might be

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1 Ibid., p. 292.

2 Ibid., p. 315.

3 Ibid., p. 314.

identified with credibility. This explanation of the source of the confusion does not clear away all the difficulties, since it is almost impossible to determine in any given case in which sense Lewis is using the word. In many cases in which Lewis discusses probability, he does seem to identify "probabilify" with "render credible". In these cases, it is difficult to imagine how his frequency analysis of probability could be applied to the relationship he is discussing. I shall go into this in more detail later.

The Rule of Induction

The next step in my explication of Lewis' account of probability is the consideration of the "estimate" and how it is made. This estimate of a frequency is reached through the use of certain rules, and in particular the Rule of Induction, which Lewis expresses:

> When the frequency of instances of ϕ among instances of ψ has been found up to a certain point to be m/n, and when for a period thereafter, progressive determinations of this frequency, as more and more instances of ψ are observed and the cumulative results tabulated, at no point diverge from m/n by more than some small number e the probability that an unexamined or unspecified instance of ψ will be an instance of ϕ may be said to be m/n, with an approximation indicated by e, and with a degree of assurance which is related to the length of the examination for which the frequency found has remained within the limit of divergence.[1]

According to Lewis, this rule, like the rules of deduction, is

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1 Ibid., p. 272.

a priori. This analysis of the status of the rule of induction is not common among contemporary philosophers. However, since Lewis does not present his reasons for holding this position, I shall, for the purposes of this thesis, simply accept it as one of the axioms of his theory.

It might be relevant at this point to make a distinction between logical rules and statements of logical principles. In the field of deductive logic, one rule often appealed to is "Given 'p' and 'p⊃q', you may infer 'q'." The statement corresponding to this logical rule is "p.p⊃q.⊃q". The usual claim made by logicians is that the rule is justified because the statement which corresponds to it is true. It is also sometimes claimed, as it is by Lewis, that the statement of the principle is analytically true because the meanings of the logical connectives in the statement are expressed by the rule. Lewis, in his analysis of probability, is trying to say the same things about the rule of induction and the statement corresponding to this rule as are often said about the rules and statements of deductive logic. Thus the rule of induction which was quoted is, according to Lewis, justified because the statement which corresponds to it is true. And this statement, for example, "On data 'D', it is probable that P" is analytically true because the meaning of the logical connective, "probable" is expressed by the rule of induction. As in the case of deduction, holding both of these posi-

tions involves one in a circular argument. This is more easily seen in the case of inductive reasoning than in the case of deductive reasoning. Why should we hold this rule of induction, rather than some other version? Any other version would make the statement corresponding to it analytically true as well, and since the fact that the statement is true is what justifies the rule, both rules of induction would be equally justified. However, this question is not within the scope of this thesis. The point of this discussion is that Lewis draws a parallel between deductive and inductive reasoning.

Any deductive argument whose conclusion follows from the premises according to one of the rules of deductive logic is a valid argument. Similarily, any inductive argument whose conclusion follows from the premises according to the rule of induction is a valid argument. But in a valid deductive argument with 'p' and 'p⊃q' as premises and 'q' as conclusion, if the premises are true the conclusion "q", taken by itself is also true. The same cannot be said unqualifiedly of an inductive argument. The conclusion of an inductive argument is not "probably P" but "On data 'D', probably P", where "D" are the premises.

It was stated at the beginning of this chapter that Lewis' account of probability must fulfill two conditions. It must allow a probability determination to be <u>a priori</u>, since theoretical

total verification of an objective statement lies within the terminating judgements which it implies. It must also allow for the use of the probability calculus. Both of these conditions are met by Lewis' account.

The probability formulation, "that c, having the property ψ, will also have the property ϕ, is probable on data 'D', with expectation a/b." is a _priori_ or analytic. The expectation coefficient, or the estimated frequency, a/b, is arrived at on the basis of the data "D", which are included in the probability statement. Moreover, the rule by which the estimate is made is the rule of induction, which is also an _a priori_ rule. Thus, if the reliability factor is not included as an intrinsic part of the probability formulation, no appeal to "outside information" is necessary.

Lewis' account also allows for the use of the probability calculus. The frequency estimated is that of members of one class among members of another class. For example, for the first axiom, $P(O/e) + P(\text{not-}O/e) = 1$, let the reference class be the cards in an ordinary pack. Let the quaesitium class be the spades in an ordinary pack of cards. Then if h is the frequency of spades in a pack of cards, h will equal 1/4. If not-h is the frequency of non-spades in a pack of cards, not-h will equal 3/4. 1/4 plus 3/4 equals 1.

For the second axiom, $P(O_1 \,\&\, O_2/e) = P(O_1/e) \times P(O_2/e \,\&\, O_1)$,

let O_1 be "This card is an ace" and let O_2 be "This card is a spade". For both propositions, let the reference class be all the cards in an ordinary pack. For O_1 let the quaesitium class be the aces in an ordinary pack of cards. For O_2 let the quaesitium class be the spades in an ordinary pack of cards. For O_1 and O_2 together, the quaesitium class will consist of the aces of spades in an ordinary pack of cards. In an ordinary pack of cards, if h is the frequency of aces of spades, h will equal 1/52. $P(O_1/e)$, the frequency of aces in a pack, is 4/52. $P(O_2/e \ \& \ O_1)$, the probability that this card is a spade, given that it is an ace, is 1/4. 4/52 X 1/4 equals 1/52, which is the frequency of aces of spades in an ordinary pack of cards.

For the third axiom, P(e/e) equals 1, if the quaesitium class consists of the ace of spades and the reference class also consists of the ace of spades, then if h is the frequency of the aces of spades in this pack among the aces of spades in this pack h equals 1.

The Principle of Inverse Probability

There is one more aspect of Lewis' account of probability which must be considered before I move on to the question of the verification and justification of objective statements. This is his account of the Principle of Inverse Probability. If the objective statement entails a number of sense experience statements,

then the sense experiences described in these statements serve as evidence for the truth of the objective statement. Lewis needs some way to assign a degree of probability to an objective statement, given the sense experiences as evidence. The formula which he uses to assign a degree of probability to an objective statement, given the sense experiences as evidence, he calls the Principle of Inverse Probability.

Carl Hempel, in his review of Lewis' book mentioned before, also criticizes Lewis' analysis of the principle of inverse probability. This criticism does not appear to be valid.

Lewis' analysis of the principle is as follows:
The antecedent probability of "P", the empirical statement, is W.
The antecedent probability of "not-P" is 1-W.
The probability of "E", (the consequent of the terminating judgement), if "P" is true, is K.
The probability of "not-E" if "P" is false is N.
The probability of "E" if "P" is false is 1-N.
When "E" is found to be true, the probability of "P" is

$$\frac{WK}{WK + (1-W)\times(1-N)}.$$

Lewis claims that this fraction is nearer to unity as W or N is nearer to unity. This claim, Hempel argues, is false since, if K is made small enough, the fraction itself will approach zero. An example can be given on the purely arithmetical level

in which W is near to unity and yet the fraction is near to zero. Let W equal 99/100. Then 1-W equals 1/100. Let K equal 1/1,000,000. Let N equal 1/2,000,000. Then 1-N equals 1,999,999/2,000,000. In this case the fraction,

$$\frac{WK}{WK+(1-W)\times(1-N)} \text{ equals } \frac{\frac{99}{100}\times\frac{1}{1,000,000}}{\frac{99}{100}\times\frac{1}{1,000,000}+\frac{1}{100}\times\frac{1,999,999}{2,000,000}} \text{ equals } \frac{198}{2,000,197}.$$

It can easily be seen that this fraction is nearer to zero than to unity. However, I think Hempel has misinterpreted Lewis. When Lewis uses the phrase "nearer to" I suspect that he means "approaches". "Approaching" is a mathematical concept which in this case means only that when W or N gets nearer to unity, the fraction as a whole also gets nearer to unity. It does not mean that the fraction will actually be closer to unity than to zero, or that it be very near to unity, only that it gets nearer. The concept of approaching also generally includes the idea that the other elements in the fraction remain constant. Naturally, if everytime that W is increased, K is made smaller, the fraction may never approach to unity. But if K is kept constant, the larger W gets, the larger the fraction will get. I will admit that Lewis should have been more explicit in his account and have pointed out that K was to remain constant, and that only W or N was to vary. Otherwise, Hempel's criticism seems to me to be irrelevant to Lewis' actual position.

Verification and Justification

Objective statements must be both verified and justified. To justify an objective statement is to give reasons for believing it to be true, or at least credible. To verify a statement, on the other hand, is to prove that it is true. Thus justification is not so much justification of the statement itself, but of our belief in the statement, or of our right to assert it. When we are asked by someone to justify a statement we have made, we are asked why we believe it or what right we have to assert it. However, we do not verify a belief - we verify the statement which expresses what we believe. We do not verify the fact that we have a belief, we prove that the statement believed is true. An objective statement may be true without our being justified in believing it. Conversely, we may be justified in believing a false statement.

Lewis claims that in both a priori and expressive statements, verification and justification coincide. An a priori statement is verified by finding a rational ground for it, i.e. - by discovering the meanings of the terms involved. The meanings of the terms in the statement also justify our belief that the statement is true. Expressive statements, Lewis states, are found to be true, or verified, by the immediate experience which they describe. This immediate experience is also the ground on which our belief in the truth of the expressive statement is

based. Thus a priori statements are verified and justified by the meanings of the terms involved in the statements, and expressive statements are verified and justified by the immediate experience which they describe.

In objective statements, however, verification and justification do not coincide. A statement may be verified without being justified, or justified without being verified. Verification looks to the future, and provides an answer to the question "Is this statement true?". Justification looks to the past and the present to answer the question "Ought we to believe this statement?". An objective statement is verified by discovering if what it implies about future experience turns out to be true, while it is justified by appealing to past and present experiences which led us to believe it. Of course, once a statement has been verified by us, we are justified in believing it. So in this way past verifications of a statement become part of its present justification. When we justify our belief in an objective statement, we may claim that in the past we proved it to be true. But we may be justified in believing a statement even if it has never been proved to be true. Until a few years ago, astronomers were justified in believing that there were craters on the far side of the moon, although they had seen no photographs of the far side of the moon.

The process of verification involves the formulation and

testing of predictions. These predictions are formulated, but not tested, on the basis of past experience. The process of justification involves examining memories of the past to find reasons for the objective belief. Thus in both verification and justification the problem of the validity of memory comes in. Both verification and justification may also involve appeals to other objective statements and to causal laws, as well as to immediate experience. Thus, even though verification and justification have different purposes and refer to different periods of time, there are definite similarities between the two processes.

The process of verifying an objective statement is the process of adopting the mode of action described in the terminating judgements which the objective statements imply, and seeing if the predicted sense experience ensues. If it does ensue, then the objective statement is partially confirmed. If it does not ensue, then the objective statement is partially disconfirmed. The degree to which the objective statement is confirmed or disconfirmed depends on the degree of probability between "SA" and "E" in the general terminating judgement, "If SA, then E". This degree of probability would be the estimated frequency of the occasions on which E followed SA among the occasions on which S and A occurred. That is, the quaesitium class would consist of the occasions on which S was given, act A performed, and E

ensued, while the reference class would consist of the occasions on which S was given and act A was performed.

The degree of probability between "SA" and "E" in the terminating judgement will be affected by other factors besides the frequency with which E followed S and A. For example, the fact that all empirical statements are only probable because they involve the use of general terms must also be taken into account. It is difficult to see just how this factor could be incorporated into Lewis' account of probability as an estimate of a frequency. It would be extremely difficult to estimate the frequency of the "correct" use of a general term among all uses of that term. This problem becomes particularily acute at the level of expressive statements, since there seems to be no possible way to compare two experiences which occurred at different times in order to see if they are sufficiently alike to be denoted by the same term.

The whole procedure of establishing the degree of probability between "SA" and "E" would seem to be as follows: Immediate experience supplies the data on which the probability of an expressive statement is judged. Particular terminating judgements are made up of expressive statements describing three sets of experience, S, A, and E. These particular terminating judgements supply the data on which the probabilities of the general terminating judgements of which they are instances are

judged. Finally, the general terminating judgements supply the data on which the probability of the objective statement which implies them is judged. Thus, by a long process, immediate experience supplies the data on which the probability of an objective statement is judged. Most of these relationships can be forced into the pattern outlined by Lewis. The one exception to this is the relationship in which immediate experience supplies the data on which the probability of an expressive statement is judged. If the quaesitium class were to consist of the occasions on which a general term has been "correctly" used to describe a particular sense experience, and the reference class were to consist of the occasions on which that general term were used to describe, correctly or incorrectly, an experience, there seems to be no way of determining on any given occasion whether the term has been used correctly or not. There is thus no way of determining whether this given occasion is a member both of the quaesitium class and of the reference class or merely a member of the reference class.

In the case of the particular terminating judgements supplying the data on which the probability of the general terminating judgement is estimated, the reference class would likely consist of all the particular terminating judgements (which are instances of the general terminating judgement) which have been tested. The quaesitium class would likely consist of all members

of the reference class in which the predicted experiences followed the adoption of the specified mode of action.

In the case of the general terminating judgements supplying the data on which the probability of the objective statement is estimated, the reference class would likely consist of all the general terminating judgements implied by the objective statement which have been tested, and the quaesitium class, of all members of the reference class which have been found to be highly probable. That is, the quaesitium class would consist of those general terminating judgements whose own probability had been, as in the previous step, estimated as being at least greater than 1/2. Whether the explanation above is exactly the explanation Lewis himself would have given of the relationships between the various elements of perceptual knowledge, I do not know. However, I suggest that this is one of the few possible ways in which his account of probability could be made consistent with his account of the elements of perceptual knowledge.

Once an objective statement has been judged to be probable, to some degree, the degree to which any new piece of evidence will render it more probable can be established by applying the Principle of Inverse Probability.

In the last few paragraphs I have been discussing how immediate experience confirms an objective statement. I have deliberately avoided one problem of interpretation - what does

"confirm" mean? It seems to mean "render probable" or "render credible". Lewis also often says that immediate experience "probabilifies" objective statements. If we are to accept Lewis' account of probability - that a probability is a valid estimate of a frequency - then in some manner "A probabilifies B" must be translatable into a statement about an estimate of a frequency. I am not at all sure that this can be done.

I can think of only one possible interpretation. If we are given an objective statement "P", which implies a number of terminating judgements of the form "If S and A, then probably E", the occurrence of E following the occurrence of both S and A is said to probabilify "P". If the reference class is taken to be the terminating judgements (implied, of course, by "P") which have been tested, and the quaesitium class to be members of the reference class in which E has followed S and A, then the occurrence of E in any specific instance will increase the frequency which is estimated of occurrences of S, A, and E among occurrences of S and A. Thus the occurrence of E in any specific case will make the objective statement more probable than it was before this specific occurrence of E.

The flaws in this analysis are obvious. Sometimes the occurrence of a particular sense experience makes an objective statement <u>much</u> more probable than it was before the occurrence of that sense experience. But the estimate of a frequency is

made on the basis of a large number of instances of terminating judgements which have been tested. If the specific sense experience which we are discussing here is only one of a very large number of sense experiences predicted in the terminating judgements implied by the objective statement, there is no reason to suppose that it will make the objective statement any more than slightly more probable.

I can provide no real solution for straightening out this whole confusion. I can only suggest that Lewis, when he claims that A probabilifies B, is using "probable" as a synonym for "credible", and not as a synonym for "valid estimate of a frequency". I said that this usage of "probable" was incompatible with the rest of his account of probability when I discussed that account, but clearly this usage cannot be totally discarded, either by Lewis in his account of the verification of objective statements, or by me, in my analysis of that account. What I think Lewis has done is give one account of probability and then start using another interpretation of the probability when the first became incompatible with the rest of his thesis. It is clear that when Lewis says "A probabilifies B", he means "A renders B credible" and not that some estimate of a frequency can be made of occurrences of A among occurrences of B or of occurrences of B among occurrences of A.

The purpose of verifying an objective statement is to

determine whether or not it is true. The whole process of verification occurs in the period of time following the formulation of the objective belief. There is, of course, reference to the past in the appeal to the rule of induction. However, the experiences described in the terminating judgements must all occur after the formulation of the objective belief and during the period of time in which the objective event is occurring or the physical object exists. Thus this particular process of verification is only applicable when the objective belief concerns something actual in the world at the time at which the belief is stated. Statements about the past must first be partially verified by other objective statements before they can be verified by means of terminating judgements and direct experience. This is a distinction that Lewis himself does not make. His whole discussion seems to rest on the assumption that all objective statements can be verified by means of the process he outlines. As I pointed out in the chapter on terminating judgements, this cannot be so. However, the fact that Lewis does not explicitly recognize this fact does not damage his theory in any way. He does not deny that some objective statements are verified by other objective statements. I am simply pointing out that among such statements which are initially verified by other objective statements are all objective statements about the past. Statements about the past can also be verified by

means of causal traces left by the objects referred to in the statements. However, this is merely a variation of verifying statements about the past by statements about the present and then verifying these statements about the present by appealing to direct experience.

Lewis also states that the meaning of objective statements is expressed by the terminating judgements. It is difficult to hold this position concerning objective statements about the past. It is also difficult to claim that the meaning of objective statements about the past is equivalent to their verification. If one accepts both of these positions, one is forced to the conclusion that the meaning of statements about the past is equivalent to the meaning of statements about the present and the future. These latter statements will include causal laws. This position is clearly untenable. The meaning of "It was snowing this day last year" is not equivalent to "If I check the records at the meteorological bureau, I will find the notation that it was snowing this day last year". Thus, although I am able to accept in general Lewis' account of the verification of objective statements, I cannot accept his account of their meaning. The latter simply will not do for objective statements about the past.

Justification

Lewis states that "no empirical belief is properly included under knowledge unless (1) it is decisively verifiable or else is confirmable and remains always capable of being further confirmed without limit; and (2) there is some ground on which this belief is rationally justified".[1] The first of these conditions has been discussed above. It is the second question which I will now explore.

The process of justification is intended to answer the questions: On what basis do we make objective statements? What right do we have to say that certain data or certain sense experiences are relevant and others are not? What right have we to say that a certain statement is true or false? What is the ground of our objective beliefs?

A probability judgement is justified only when the relationship between the belief and the evidence for it is justified. A statement of empirical belief is justified when the relationship between it and the evidence for it is justified and the evidence is believed to be true. When it is claimed that an objective statement is probably true, the data on which the statement is based are asserted to be true. Instead of merely "if p (the evidence), then q (the objective statement)", which asserts only a relationship between two factors, "p" and "q", we must have "if p then q, and p, therefore q". In the case

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1 Ibid., p. 315.

of objective statements, the "p" of the argument form is the data of immediate experience. "Empirical knowledge...arises as inference from empirically given data."[1]

The Data of Justification

These data, which provide the ground for objective statements, are not merely the data of immediate experience. The role of present immediate sense experience is to "cue" the objective belief. Past experience makes up the ground of objective belief and it is because of past experience that we claim to be justified in our belief. In the past certain things occurred, and it is assumed that they will continue to occur in the same pattern. Thus our objective belief is justified. It will be noted that the rule of induction is appealed to here, as well as in the process of verification. But how do we know that the data are true? How do we know that we actually did have similar experiences in the past? This immediately raises the problem of validity of memory.

Memory

These questions about memory must be answered, because it is impossible to have together at any one time all of the data justifying objective statements. The "epistemological present [is] a present in which what is sensuously given is surrounded

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1 Ibid., p. 323.

by or imbedded in a mass of epistemically pertinent surrogates of past experience, in the form of memories, or of the sense of past experiences as having been so-and-so..."[1]

Lewis claims that memory facts are at least highly probable, because "whatever is remember...is prima facie credible because so remember".[2] In other words, the mere fact that something is remembered renders it credible. The assigning of an initial probability to a memory fact simply because it is apparently remembered is necessary for Lewis' theory as a whole. It will be remembered that Lewis cannot apply the Principle of Inverse Probability unless the objective statement which is to be confirmed already has an initial probability of some degree. Nor, for that matter, can he use any part of the probability calculus unless P(h/t), the a priori probability that the objective statement is true, is greater than zero. In order for an objective statement to be rendered probable by sense experience, it must have at least a small initial probability. Statements about past events which are remembered are of course no different from any other objective statements. They too must have an initial probability before they can be rendered more probable by any evidence. This is why Lewis claims that memory facts are probable simply because they are apparently remembered.

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1 Ibid., p. 334.

2 Ibid., p. 334.

The problem of distinguishing between true memory and imagination can be solved by using the concept of congruence. Lewis defines this concept: "A set of statements, or a set of supposed facts asserted, will be said to be congruent if and only if they are so related that the antecedent probability of any one of them will be increased if the remainder of the set can be assumed as given premises."[1] In other words, given a set of suggested facts A, B, C, D, the members will each have a certain degree of probability independently of the other members of the set. However, if A, B and C are assumed to be true, then the probability of D will be increased, and so on for each of the other members of the set. The facts are not merely consistent, but probabilify one another. In order to eliminate the possibility of having to choose between a large number of sets, all congruent, other conditions must be fulfilled. At least some of the members of a congruent set must be probable without reference to the other members of the set. This probability must be derivable from the relationship of these members to direct experience. The direct experience might well be the experience of apparently remembering one event which is a member of the set. Another condition which Lewis mentions in The Ground and Nature of the Right is "the obligation to muster all the

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1 Ibid., p. 338.

given and available evidence which is relevant..."[1] If some evidence seems to probabilify not the objective statement but its contrary, this evidence must not be ignored, but must be taken into account. These two conditions will not assure with complete certainty the truth of a congruent set. An apparently remembered event may not have occurred. All the available evidence may point towards a statement being true when it is actually false. However, they do supply some way of choosing between equally congruent sets. Lewis admits that the quest for absolute certainty for memory facts is futile, and he states that we have "no rational alternative but to presume that everything remembered is just a little more probable than that which is incompatible with what is remembered, and that with respect to which memory is blank".[2] This is really a pragmatic solution to the problem: making this assumption seems to work, and we really have no other choice. If it is to be admitted that we do have empirical knowledge, then some such assumption must be made.

Lewis' account of the justification of memory facts seems to me to be as adequate as it is possible to provide. Of course, the concept of congruent sets does not allow us to be absolutely sure that some memory facts are truly remembered and that others,

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1 C.I. Lewis, The Ground and Nature of the Right, (New York: The Columbia University Press, 1955) p. 32.

2 Op. cit., p. 323.

though apparently remembered, have actually only been imagined. But Lewis ought not to be criticized for this, since such assurance is probably impossible to obtain.

Past experience is involved in the justification of an objective statement. The confirmation of each particular terminating judgement implied by the objective statement renders this statement more probable. A terminating judgement, once confirmed, becomes part of the ground or justification of the objective belief. And since it renders the objective statement more probable, it also renders more probable what is implied by the objective statement, that is, further terminating judgements.

Finally, I stated at the beginning of this chapter that the confirmation of a terminating judgement confirms the objective statement, renders it more probable, and renders it more credible. At this point, the inter-relationships between these expressions can be seen. The terminating judgement, once confirmed, renders the objective statement more probable in the sense that it supplies more reason why it ought to be believed. To confirm an objective statement is also to render it more credible. An objective statement is credible, in the sense that it ought to be believed, when the probability of its being true is greater than 1/2. Thus, an objective statement ought to be believed if it is more probable than improbable, or more credible than incredible. The degree to which it ought to be believed should

conform to its probability: "A belief is rational if the degree of assurance with which these expectations are entertained conforms to a/b, the degree of probability with which "P" is assured. In that case, this degree of assurance is not merely a psychological 'felt intensity' of belief, but the degree to which it is epistemically warranted."[1]

Realism of Phenomenalism

To conclude my explication of Lewis' epistemology, as given in An Anlysis of Knowledge and Valuation, I will present my reasons for classifying Lewis as a phenomenalist. Lewis himself did not accept this classification, but I think my case is plausible.

I maintain only that Lewis' epistemology is phenomenalistic. The book I have been discussing is on epistemology, and any metaphysical position mentioned in it is only incidental. I do not know how I would classify Lewis' metaphysics; it may be, as he claims, a form of realism. However, his epistemology is not; it is a form of phenomenalism. My position is based on the conditions I set forth at the beginning of this thesis for phenomenalism. First of all, the total verification and justification of objective statements rests on the data supplied by

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1 Ibid., p. 323.

sense experience. Secondly, the meaning of statements about physical objects can be completely expressed by statements about sense experience, and thirdly these statements about physical objects entail statements about sense experience. Lewis' epistemology seems to fulfill all these conditions.

The verification of all objective statements is based eventually on immediate experience. Some objective statements may be initially verified by other objective statements, but at some point in the process an appeal must be made to sense experience. Sense experience is the only thing which is certain, and for anything to be probable something must be certain. The same argument holds for the justification of objective statements. "Evidence must go back to something which is certain..."[1] Lewis, of course, also claims that our belief in the existence of an independent physical world is constituted by our belief that certain sense experiences will follow other sense experiences in a regular order.

Lewis maintains that the meaning of an objective statement is expressed by the terminating judgements which it implies. Although I do not think it is possible to hold this position concerning objective statements about the past, the fact that Lewis does, counts in favour of his being classified a pheno-

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1 Ibid., p. 187.

menalist. Finally, of course, he also maintains that the objective statements entail the terminating judgements and, in turn, that the set of terminating judgements entails the objective statement.

Lewis, of course, claims that his theory is not phenomenalistic, but that it is rather a form of realism. He argues that our experiences are to a certain extent restricted and not within our control although we are always able to alter them to some degree. For example if a volcano were to erupt in my path there would be nothing I could do to prevent myself from having sense experiences of light, sudden heat, or other experiences relevant to the explosion of a volcano. However, if I were to put my hand in front of my eyes or over my ears I could to some extent alter the character of these sense experiences. Lewis claims that the fact that our experiences are not totally within our control establishes the existence of an independent physical world. I am willing to grant that perhaps it does, but only with probability and not with certainty. However, the argument is only damaging to a claim that his metaphysics is phenomenalistic. It does not in the least mitigate my claim that his epistemology is phenomenalistic.

His next argument against his position being classified as phenomenalistic is more to the point, although in the end I think that it too is directed against a claim that his metaphysics,

rather than his epistemology is phenomenalistic. He argues that he does not identify "the content of experience which evidences what is believed with the existence and character of the external reality of which it is accepted as being evidence."[1] In other words, he does not identify sense experiences with the physical objects for which the sense experiences are taken to be evidence. This statement is consistent with Lewis' claim that two statements may be intensionally equivalent without there being an identification of the "things" signified by the terms used in the statements. Two statements are intensionally equivalent if they require the same things to be true of any possible world in order that both statements should be true of or apply to it. Two statements are intensionally equivalent if they entail the same things, using "entail" in the way defined by Lewis. The example which Lewis uses is that "Tomorrow will be Wednesday" and "Yesterday was Monday" are intensionally equivalent. They entail the same state of affairs, that is, that today be Tuesday. However the "things" signified by the "Tomorrow" and "Wednesday", and "Yesterday" and "Monday" are certainly not identical. In the same manner, Lewis is claiming that although the statement referring to physical objects may be intensionally equivalent to a set of statements referring to sense experience, it does not follow that the physical object is identical with

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1 Ibid., p. 201.

the set of sense experiences. For example, the statement "There is a desk in the office" may be intensionally equivalent to a set of terminating judgements including such members as "If I have office-like sense experiences and I have turning-my-head-to-the-right-like sense experiences, then I will have desk-like sense experiences." This does not mean that the desk is equivalent to the sense experiences described. I think this argument is clearly directed against a metaphysical thesis that physical objects are in some manner "constructed" out of sense experiences. On the whole, Lewis seems to identify phenomenalism with "subjectivism",[1] or idealism. In any case, he thinks it is solely a metaphysical thesis. If it is regarded as an epistemological thesis, Lewis theory fills all the conditions I set forth, and I would therefore classify it as a form of phenomenalism.

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1 Ibid., p. 224.

CHAPTER IV

CRITICISMS AND POSSIBLE REPLIES

Before dealing with a criticism that has been directed specifically at Lewis' position, I would like to consider various objections which have been made to epistemological phenomenalism in general.

One such objection is expressed as follows: If a physical object statement entails a certain sense experience statement then, if the latter is found to be false, the physical object statement must also be false. However, it is the case that there are situations in which we believe a physical object statement to be true, and yet one of the statements about sense experience which it entails is false. This falsity may arise from an abnormality either in the conditions of observation or in the observer. Whatever the cause, if the statement of sense experience is false, then either the physical object statement is false or the sense experience statement is not entailed by the physical object statement. In the first case, the theory does not work; in the second case, it is no longer a form of phenomenalism.

This objection is similar to one made by Chisholm which will be discussed at the end of this chapter. Taken in its simplest form, the argument is that if "A" entails "B", then if "B" is false, "A" must also be false. "A" is of course in this

case a physical object statement and "B" is a sense experience statement. In the case of physical object statements and sense experiences, we all know of instances in which "A" is true and "B" has not occurred. Therefore it cannot be the case that "A" entails "B". This argument is clearly valid. One solution would be to claim that "A" does not really entail, but only probabilifies "B". That is, instead of claiming that if "A" is true, "B" must also be true, it is possible to claim that if "A" is true, "B" is only probably also true. This solution will not do. If "A" only probabilifies "B", then the occurrence or non-occurrence of "B" will neither completely verify nor falsify "A". But the whole point of maintaining that "A" entails "B" is that statements about sense experience, if true, are supposed to verify the physical object statement which entails them. If false, the sense experience statements are supposed to falsify the physical object statement which entails them. If the relationship between "A" and "B" is only one of probability, neither complete verification nor falsification of the physical object statement will be possible.

Actually, Lewis' theory avoids this criticism. It will be recalled that the objective, or physical object, statement entails a set of terminating judgements of the form "If S and A, then probably E". If the sense experience described by "E" does not occur, the sense experience statement as a whole is

not falsified. "Not-E" is entirely compatible with "If S and A, then probably E". Since the sense experience statement is itself not falsified, neither is the physical object statement which entails it. Therefore Lewis' theory can easily account for any situation in which the sense experience predicted in the terminating judgement (which the physical object statement entails) has not occurred, and yet the physical object statement is true.

Another objection made to phenomenalism is that sense experience statements presuppose the existence of an experiencer. Somebody has to have the experience, it cannot happen in vacuo, and this somebody is a physical object.[1] Although Lewis does not deal with this particular problem, I suspect that he would have given the answer which Hospers, one of those who expresses the objection, suggests himself. This "somebody", like any other physical object, can be described in terms of sense experience. No reference to a physical object need be made, even implicitly in the formulation of the sense experience statements. Such a solution is consistent with Lewis' description of terminating judgements. He states that "both antecedent and consequent of this judgement, 'If A then E' require to be formulated in the expressive language".[2] Since "A" is a description of the

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1 J. Hospers, An Introduction to Philosophical Analysis, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1956) p. 439.

2 Op. cit., p. 184.

action of the experiencer it would follow that statements about the experiencer would be translatable into expressive language.

An objection concerning sense experiences which are at a distance, either in space or time, such as the sense experiences which are associated with the desk which was in the next office last week, is more difficult to answer. The problem does not lie in the vastly complicated procedure which would have to be followed to fully describe the necessary actions to relate the speaker's time and place to the time and place at which the sense experiences are to occur. This procedure, although staggeringly difficult to carry out in practice, is theoretically possible. The objection is that the phenomenalist could never begin describing the series of sense experiences relating this time and place to some other time and place without previously having in mind "the thought of a physical world, ordered in space and time [and] conceived to be already waiting to be sensed".[1] However, as forceful though this objection appears at first, I think that it can be circumvented.

The objection raises two separate problems. First, how does the phenomenalist know the right procedure to take in order to reach the time and place where the sense experiences are to occur without thinking of a physical world? Lewis

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1 Hospers, Loc. cit., p. 442.

maintains that it is not necessary to know in detail all the terminating judgements implied by a physical object statement. The only thing that it is necessary to know in order to understand the sense meaning of an objective statement is the type of sense experiences which would be implied by the objective statement. The phenomenalist could know the type of experiences without knowing the specific details in a particular case. He undoubtedly has some concept of time and physical distance which he has acquired through experience. He would also have some knowledge of the specific space and time mentioned in the statement even if this knowledge was acquired through the sense experiences involved in reading a book. All of these elements are presupposed when we assume that the speaker understood what he was saying.

The second problem presented by this objection is that of the notion of a physical world, waiting to be sensed. This part of the objection seems irrelevant. The only thing needed to make a statement about other times or places meaningful is the concept of possible as well as actual sense experiences. Possible sense experiences play a large role in Lewis' epistemology. It is not a physical world which is waiting to be sensed, it is only possible sense experiences which are "waiting". Thus, on examination, this criticism is found to be not really damaging and certainly not fatal to Lewis' theory.

Another objection to phenomenalism, recorded by Ayer in Philosophical Essays, has been regarded as being fatal for this type of theory.[1] This is the objection that actual occurrences cannot depend upon mere possibilities. The argument is based on the completely acceptable belief "that physical objects exist and are causally efficacious at times when no one is perceiving them". The objection continues: "There may, therefore, be unobserved physical events and they may stand in causal relations to other unobserved events, or to observed events...An unobserved physical event is reducible to a set of possible sensory events...But...this is incompatible with its being the cause, since a mere set of possibilities cannot do anything."[2] As Ayer observes, the fact that a causal relation is assumed to hold between two physical objects does not entail that these objects and any events involving them could not be described in terms of sense experiences. Observed events which exhibit a causal relationship can be fully described in terms of actual sense experiences, although it is not usually claimed that actual sense experiences can cause one another. Similarily unobserved objects which are assumed to have a causal relationship are describable in terms of possible sense experiences. Ayer thinks that the initial plausibility of this objection to phenomenalism

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1 A.J. Ayer, Philosophical Essays, (London, MacMillan and Co. Ltd., 1954) pp. 143-148.

2 Ibid., p. 145.

results from an ambiguity of the word "event". Sense experiences are not events in the same way that physical events are events. The latter are in physical time, while sense experiences are not. Sense experiences of course occur, but when they do occur, it is the experiencing which is the event, but not the experience. I am not sure that Ayer's answer is altogether satisfactory. It sounds more plausible with "sensing" substituted for "experiencing" and "sense-data" substituted for "sense experiences", but I suspect that it is somewhat misdirected. The objection itself is directed against the metaphysical thesis that physical objects are "constructed out of" sense experiences, or that physical objects are nothing but sense experiences. Ayer's answer to the objection presupposes that phenomenalism is a metaphysical theory. Thus he attempts to show that the objection is not telling against such a metaphysical theory. I disagree with him - I think that as stated the objection would be damaging to a metaphysical phenomenalism. I do not think, however, that the objection is damaging to an epistemological phenomenalism which maintains simply that sense experiences alone are evidence for the existence and character of physical objects, since it does not even seem to be directed against such an epistemological theory. Since Lewis' theory is epistemological rather than metaphysical, the objection is not relevant to his theory.

There have been several other objections expressed, but

most of the rest seem to be versions of various types of the four which I have outlined above. I do not think that any of them present a particular problem for Lewis, and at times his theory seems to have been deliberately constructed so as to avoid such criticisms. However there have also been other objections, some made explicitly against Lewis, which present a greater problem. I have attempted to answer in Chapter III of this thesis the objections made by Hempel against Lewis' analysis of probability. Berlin makes a criticism of phenomenalism in general which, although not specifically directed against Lewis, is telling against his theory. Finally, Chisholm explicitly attacks Lewis' theory on a number of basic points.

The criticism made by Berlin is based on the fact that empirical propositions are usually categorical in form, while sense-data or sense experience statements are hypothetical.[1] Given the categorical empirical proposition "This ball is red.", the corresponding sense experience statements are of the form, "If I do so-and-so, I will have such-and-such sense experiences". There are two objections involved in this criticism. In the first place there is the simple fact that categorical and hypothetical statements are different kinds of statements grammatically. Secondly, and more importantly, categorical statements have

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1 Isaiah Berlin, "Empirical Propositions and Hypothetical Statements", (Mind, 1950, pp. 289-312).

existential import, while hypothetical statements do not.

There seems to be no real answer to the first objection. I think it is true that when we think of two statements being equivalent, as the objective statement and the set of sense experience statements are supposed to be, we think of them as having a similar grammatical form. A dictionary would not define a declarative statement by means of an interogative statement. Nor would it define a categorical statement by means of a hypothetical statement. The real significance of this distinction between categorical and hypothetical statements can be seen in the second part of the objection.

I can think of one possible reply to this second objection. Lewis' terminating judgements are of the form "If S and A, then E.". On the surface, this does not seem to have any existential import. However, it will be recalled that the objective belief is "cued" by some sense experience. That is to say, the objective belief would not have been formulated had there not been some sense experience which actually did occur. Moreover, when it is claimed that an objective statement is justified the data on which it is based are asserted to be true. These data are made up in part by sense experiences. It might be possible to claim that "S", in the terminating judgement, includes the sense experiences which "cued" that belief and which

justify it. If this is the case, then a categorical statement would be equivalent not to a hypothetical of the form "If S and and A, then E.", but to a hypothetical and categorical of the form "If S and A, then E; and S." I must admit that I do not think that this reply is very plausible.

Even if this sense experience is included in "S", the categorical statement and the hypothetical statement are not asserting the existence of the same things. The sense experience which initiated the objective belief may be very indirectly related to the physical object described in the objective statement. Seeing a light in a window may cause me to form the belief that there is a person in the house. The objective statement asserts the existence of a person, the sense experience statement could only assert the occurrence of a sense experience of light. There is no direct relationship between the sense experience of light and a person. Berlin also uses the example of a categorical statement about a physical object which is not immediately seen. This statement asserts the existence of that object. However, he claims that the corresponding sense experience statements do not even assert the present existence of certain sense experiences. This is simply another example of the sense experience statement either not asserting the existence of any sense experience at all, or else asserting the existence of sense experiences totally unrelated to the physical

object discussed in the objective statement.

Frankly I cannot see any plausible way in which Lewis or any other phenomenalist could defend himself against this criticism. Lewis might decide to limit the statements which can be verified by means of terminating judgements only to those statements which refer to presently existing and presently sensed physical objects, but this would be almost equivalent to abandoning his whole theory. If these are the only sort of objective statements which can be verified and justified by, and be equivalent to, statements about sense experience, there seems very little reason to maintain the theory at all. After considering Berlin's objections, I think it would be very difficult to maintain that the meaning of objective statements can be expressed by statements about sense experience which are implied by the objective statement itself.

The final criticism I want to examine is that of Chisholm.

Chisholm's criticism is directed against Lewis' claim that objective statements entail sense experience statements.[1] Chisholm claims that objective statements, which he calls "thing-statements", entail sense experience statements only in conjunction with other thing-statements about the observation conditions. A thing-statement by itself does not entail any statement about

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1 Roderick Chisholm, "The Problem of Empiricism", (Journal of Philosophy, 1948, pp. 512-517).

sense experience.

The example Chisholm uses is that the thing-statement, "P", "This is red", only entails the sense experience statement, "R", "Redness will appear", if it is conjoined with the thing-statement, "Q", "This is observed under normal conditions, and if this is red and is observed under normal conditions, redness will appear". This second thing-statement is both a statement of the observation conditions and a "psychophysical" statement which refers to what sense experiences will occur under certain physical conditions. Taken in conjunction with another observation-condition statement, for example, "S", "This is observed under conditions which are normal except for the presence of blue lights; and if this is red and is observed under conditions which are normal except for the presence of blue lights, redness will not appear"[1], the thing-statement may not entail the sense experience statement but rather its contradictory. If "P" and "S" entail "not-R", then "P" alone cannot entail "R".

Of course, Lewis' sense experience statements are of a much more complicated form than the one used in the example. However, Chisholm maintains that the same objection will hold for them as for the simpler example. No matter how much the sense experience statements are qualified, it is always possible to

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1 Ibid., p. 513.

find a statement about observation conditions which in conjunction with the original thing-statement will entail the contradictory of the given sense experience statement. So long as this is so, the thing-statement alone does not entail the sense experience statement.

To this criticism I have the advantage of having Lewis' own answer.[1] In his reply Lewis divides the criticism into two separate questions. First he deals with the specific objection, that "no statement of objective fact has any consequences in terms of direct experience without further premises specifying objective conditions of the experience in question".[2] Secondly, he explains what he meant by "entails" when he said that an objective statement entailed a set of statements about sense experience.

His answer to the first objection is to point out that we do acquire knowledge about physical objects from sense experience, and so there must be some justification for it. We learn somehow that certain sense experiences are related to certain physical objects. Even if we see a square box from an oblique angle, so that what we sense is not a square but a skewed parallelogram, we know that this sense experience is representative of a square box. In many cases, the observation conditions

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1 C.I. Lewis, "Professor Chisholm and Empiricism", (Journal of Philosophy, 1948, pp. 517-524).

2 Ibid., p. 518.

which make us sense the square as a skewed parallelogram are evidenced within the sense experience itself. That is, when we have the sense experience of a skewed parallelogram we immediately judge that the skewed parallelogram is really a square, but that it is at an oblique angle to us.

Lewis thinks that because he has included the element of probability in his terminating judgements, he has eliminated a large part of the problem concerned with abnormal observation conditions. If the conditions are abnormal then the predicted experience may not occur, but its non-occurrence does not invalidate the entailment relationship. The objective statement, "P", does not entail a sense experience statement, "E will occur". If it did and E failed to occur, "P" would be falsified. Rather, "P" entails a hypothetical of the form "If S and A, then probably E." If E does not occur, the hypothetical is not falsified. "Not-E" is completely consistent with "If S and A, then probably E." Since the hypothetical is not falsified, the physical object statement which entails it is not falsified either. Therefore it is possible for "P" to be true when E does not occur.

After pointing out that physical object statements entail hypotheticals, Lewis goes on to discuss the entailment relationship between objective statements and statements about sense experiences. He explains that the entailment relationship does

not follow the ordinary rules when the statements entailed are probability statements. When the statements entailed are probability statements it is possible that on premise "P", "R" might be highly probable, but on premises "P" and "Q", "-R" might be highly probable. He states that "In my account of perceptual knowledge, it is probability-consequences of objective statements which are in question. These consequences are themselves hypothetical in form...but that affects nothing here in question."[1] This last statement presents a problem. Does he mean that the premises probably imply the consequences or that the premises imply consequences which are themselves only probable? I discussed this question at the end of Chapter II and decided, on the basis of the material in the book, that he meant the latter. Although his meaning is unclear here as well as in the book, I suspect that the same interpretation is valid.

If Chisholm's criticism is simply that physical object statements do not entail sense experience statements because there are occasions on which the physical object statement is true and the sense experience statement is false, then Lewis has answered his criticism. If this is Chisholm's criticism, then he has claimed that Lewis' position involves an inconsistent triad: (1) $P \rightarrow (s.a. \supset e.)$, (2) P, and (3) $s_1.a_1.$ not-e_1. Lewis has replied that his position involves not the triad given by Chisholm, but a perfectly consistent triad; (1) $P \rightarrow (s.a. \overset{p}{\supset} e)$, (2) P, and (3), $s_1.a_1.$ not-e_1.

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1 Ibid., p. 523.

In order to justify his claim that objective statements entail statements about sense experience in virtue of their meanings, Lewis might offer a dispositional analysis of the properties of physical objects. For example, when used in the objective statement "This is red", "red" may be defined as a disposition to appear certain colours under certain conditions. Thus "red" might be defined by "$s_1 . a_1 \xrightarrow{P}$ redness will appear and $s_2 . a_2 \xrightarrow{P}$ orangeness will appear", and so on, where "s" and "a" describe the conditions under which the various colours will appear. If "red" is defined in this way then "This is red" does entail "Redness will appear".

The problem which arises from this analysis, and the problem which Chisholm points to, has to do with "s" and "a". Can s and a be fully described in terms of sense experiences? To maintain his position Lewis would have to say "yes". Chisholm, on the other hand, might well say "no". He might claim, first of all, that "s" and "a" cannot be totally expressed in terms of sense experiences but rather involve at least one physical object statement describing the conditions of observation. Or secondly, he might claim that even under this interpretation of such words as "red", the physical object statement does not entail statements about sense experience. If he claimed this, to prove it he would have to produce an example where the physical object statement was true and the sense experience statement

false. Frankly, I do not know if either of these criticisms which Chisholm might make would be valid. I only suggest that the last two paragraphs might contain an analysis of what Lewis intends in his theory and possible criticisms of this analysis.

CHAPTER V

CONCLUSIONS

The first criticism I mentioned in explicating Lewis' epistemology was that the expressive statements which he asserts are certain and indubitable are as a matter of fact neither. Any statement using general terms can at best be only highly probable.

The correct form of the terminating judgements, which express the meaning of the objective statement which entails them, is not clearly set forth by Lewis. After considering the various formulations proposed, I concluded that he intends the formulation to be: "If S and A, then probably E". This introduction of the probability factor into the terminating judgement is inconsistent with Lewis' remarks about the relationship between "SA" and "E". Lewis claims that this relationship, a "real" or "necessary connection", includes the truth of material implication. I explained why this claim must be false if "SA" only probabilifies "E". I also noted that his account of this real or necessary connection is extremely difficult to understand since the most obvious interpretation of his statements can be shown by example either to result in logically false statements or to force a radical revision in the interpretation of the terminating judgements. The exact nature of this real or neces-

sary connection is thus never satisfactorily described. Although Lewis later defines probability in terms of estimated frequencies, I do not think saying that the relationship between "SA" and "E" is one of probability includes all that Lewis wants to say about the relationship.

I next discovered that Lewis' claim that terminating judgements can be conclusively verified or falsified is wrong. Like all other empirical statements, terminating judgements can only be confirmed as probable to some degree. The discussion of this problem led to my suggestion that Lewis should make a distinction between general and particular terminating judgements. Such a distinction seems necessary to the process of verification.

At the beginning of his discussion of non-terminating judgements or objective statements, Lewis states that immediate experience "cues" the objective belief expressed in the statements. I tried to give a reasonable account of what he might mean by "cues", and what the implications of this position are.

Lewis makes a number of different statements about the relationship between non-terminating and terminating judgements. Since this is an important aspect of his position, I examined in great detail the section where he claims that non-terminating judgements imply terminating judgements in virtue of the sense meaning of the former. I concluded that his claim that the

intension of a term is indefinitely large must be very carefully qualified, or else his views on intension would be inconsistent with his theory as a whole. I suggested possible qualifications. I also suggested that the same qualifications must be made of terminating judgements. Unfortunately, making these qualifications leads to a number of difficulties. However, I decided that these problems are surmountable while those which would result from not making these qualifications are not.

The most serious problem in this section results from Lewis' claim that the sense meaning of an objective statement corresponds to what would fully verify it. I explained why such a claim cannot be made in reference to statements about the past. I also suggested that the terminating judgements contain within them an implicit time factor.

In the third chapter I explained at length Lewis' analysis of probability, giving an account of the key terms used. I discussed each of the three different accounts he gives and explained why I think one of them is more representative of his position than the others. I also discussed a criticism made of Lewis' account of probability and explained why I think it is not really applicable. In Lewis' account of the principle of inverse probability I showed that another criticism made of this section of his thesis is not really valid, since it presupposes a misinterpretation of one of Lewis' statements.

In discussing Lewis' account of the verification of objective statements, I included the refinements I made in his epistemological structure in the previous chapters. I suggested that some of the probability relations between the various elements of the system are difficult to make consistent with Lewis' account of probability.

I explained that Lewis' process of verification is only directly applicable to statements about the present. This was not a view held by Lewis. I also pointed out that Lewis' claim that the meaning of objective statements is expressed by the terminating judgements which verify them is untenable. This is a more serious flaw, since this claim is what justifies the whole process.

I presented Lewis' justification of the validity of memory and stated that I found this section entirely adequate.

In the final section of this chapter I discussed whether or not Lewis ought to be called a phenomenalist. I concluded that he should in spite of his arguments to the contrary.

I examined several criticisms made of phenomenalism in general and explained why I think they are not applicable to Lewis' theory. However two critics, Berlin and Chisholm, present objections to the thesis that objective statements entail statements about sense experience. Berlin's criticism I think is valid. As it is presented Chisholm's criticism is not valid.

However, it suggests another criticism which may be valid.

Lewis' purpose, in outlining his epistemology, is to describe the procedures we use when we attempt to verify and justify the objective statements which we make, and also to show that these procedures are legitimate. His conclusion is that we attempt to verify and justify objective statements by appealing to immediate sense experience. Although I disagree with many of the details in this part of his theory, I think that on the whole he is right. I do think that we eventually do attempt to verify statements about physical objects by statements about immediate experience. I also think that we eventually reach back to immediate sense experience when we attempt to justify our beliefs about physical objects. Perhaps Lewis is not entirely correct about the details of the procedures we use when we attempt to verify and justify objective statements, but the general pattern he suggests seems to be accurate.

Lewis claims that the procedures we actually follow in attempting to justify and verify statements about physical objects are legitimate, i.e., are themselves justified, because physical object statements <u>entail</u>, in virtue of their meanings, statements about sense experiences. This part of the theory is epistemologically more interesting and correspondingly more difficult. The answer given by Lewis to this question does not appear to be right.

In any case, he does not present a convincing case. Thus I must conclude that on the whole Lewis' attempt to construct a tenable theory of knowledge is unsuccessful.

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