

THE THEORY OF KNOWLEDGE
AND CONCEPTS IN EDUCATION

by

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ABSTRACT

This study is intended to examine epistemology from the perspective of education. After examining the variety of senses in which the term 'knowledge' is used in ordinary language, an attempt is made to discover whether or not there is more than one type of knowledge. It is shown that 'knowing' is not always a kind of doing and so it is a mistake to reduce all knowing to 'knowing how'. It is argued that ability to draw distinctions between different types of knowledge is advantageous in educational contexts, yet to pursue a course of detailed classification noting all the minor items of differentiation and naming each variety distinctly with a label is to defeat the very purpose for which classification is recommended.

In chapter two the epistemological considerations of cognitive knowledge are elucidated showing how they are relevant to pedagogical concerns. It is argued that knowledge entails neither certainty nor infallibility. It is shown that the question of its justification is crucial to distinguishing genuine knowledge from chance belief. Formulation of an adequate procedure for evidential appraisal differs very widely in varied situations for they involve judgments that may differ from person to person.

The last chapter presents the essential elements of connection between the concepts of 'knowing', 'teaching' and 'learning'. It is shown that proper elucidation of the relationship between these concepts has great relevance to educational activity.

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INTRODUCTION

The question 'What is knowledge?' has been the most pertinent question in philosophy from the earliest times. Ancient philosophical literature produced in the forest universities of India from 2000 B.C. to 1400 B.C. constitutes a stupendous attempt on the part of Hindu seers to answer this question. The earliest philosophers in the Western tradition who raised this question were the sophists who in the fifth century B.C. attempted to raise doubts about the possibility of the attainment of knowledge. This was quickly followed by Plato's attempts to arrive at an explanation of the concept of knowledge in his immortal dialogue, 'The Theaetetus'. The history of philosophy of the last two thousand years testifies to the fact that the inquiry into the meaning of knowledge has been the basis for the development of a very complicated structure of traditions of fully blown philosophical theories. Philosophers' search for the meaning of knowledge spread over a period of four thousand years is still vigorous.

Epistemological and Educational Questions

The study of the mutual involvement of epistemology and education is of the utmost importance to both teachers and philosophers. For Vedic philosophers education meant attainment of knowledge. A close examination of some Sanskrit terms as they were used in literature will clearly show the close relationship between education and the theory of knowledge.

Sanskrit

English rendering

vid
vidyā

- to know
- knowledge

SanskritEnglish rendering

vidyārthi

- a student, a seeker of knowledge

vidyālaya

- a school, a place for learning

vidyāvān

- an educated man, a man of knowledge

vidwān

- a scholar

The theoretical build-up of epistemological findings is bound to influence the theory and practice of education. For example, if it were up to Plato to decide what kind of education should be considered as the ideal form of education, perhaps mathematical education would score the highest marks. But for an empiricist natural science would be the basic model of education. If knowledge was taken as a body of true statements then the educational programme would consist in collecting the true statements and in getting them accepted by the learners through exercise, guidance, authoritative enforcement or any other form of educational process. Education in this case will assume the form of a distinct body of methodology to transmit knowledge which is created or collected from somewhere else. " It is, therefore, proposed that while examining the concept of knowledge, we should also consider the examination of the related concepts in education. Improper understanding of these concepts in education as well as in ordinary discourse is bound to create a great deal of confusion. Our first step, therefore, will be to study the wide range of the everyday use of the concept of knowledge. This search will naturally lead to an examination of some of the traditional epistemological considerations such as knowledge and truth, knowledge and certainty, knowledge and belief, and knowledge and evidence. This entails the examination of some of the theories raised against the validity of traditional epistemology. The discussion will be concluded by bringing educational concepts such as 'learning' and 'teaching' into sharper focus to reveal their relationship with knowing.

CHAPTER I

FORMULATION OF THE QUESTION

The question which represents the traditional way of formulating a problem in epistemology is 'What is knowledge?' Before proceeding to explore an answer to this question it will be advantageous to clarify what is asked by the question as the answer may be determined in part at least by the way the question is asked. It may be necessary to reformulate the question. Care must be taken to avoid being misled by the form of the question that is asked. Unfortunately there is no known and accepted technique that will assure the exact location of knowledge criteria. Consequently it will be necessary to consider some methods that have been used and then attempt to formulate an improved version.

COMMON FORMULATIONS

The problem has been formulated as 'analysis of the concept of knowledge', but this does not resolve the difficulty. A metaphorical use of the term 'analysis' implies that the problem is related to the realm of natural sciences. Analysing tends to be interpreted as a chemical process designed to discover the elements of a composition. Use of this language may suggest that knowledge is similar to a substance which is composed of recognizable components that can easily yield to scrutiny. Here the emphasis is on the availability of techniques which, if applied, will analyse knowledge into its parts. This view of the structure of knowledge seems to be misleading.

The word 'analysis' may be replaced by the word 'mapping', and the problem restated as 'mapping of the concept of knowledge'. Instead of identifying knowledge with a chemical substance, the analogy is topographical. This yields the idea that accurate mapping enables a clear view from above. The method implies the availability of a well-defined technique which, if followed scrupulously, will yield precise results, i.e. the making of an accurate map of the concept of knowledge. Unfortunately we do not have any such techniques and so it is better to avoid such metaphorical language in the formulation of problems regarding mental concepts.

One is likely to fall into the temptation of rewording the question as "what is the meaning of the word knowledge?" or "what do we mean by knowledge?" The grammatical form of this question might create confusion, by leading to a search of some 'entity' called 'meaning' of knowledge.

The statement 'knowledge has meaning' seems to suggest that knowledge is an entity and it possesses some special meaning as John possesses his coat. The fact is that words do not have (do not possess) meaning in this sense.

Can the word 'meaning' be substituted by 'definition'? Is it possible to arrive at a precise definition which can reveal the true meaning of the word 'knowledge'? Philosophers have been discussing the problem of knowledge for the last four thousand years and yet have not been able to arrive at a definite solution in the form of a precise definition. If they had succeeded in doing so, the question about the meaning of knowledge would not have to be asked now. The fact that the question is still asked proves that it is not a question of definition.

PROPOSED FORMULATION

Knowledge is a mental concept and it stands in a very complex relationship with other mental concepts. To determine the meaning of such a concept is to reveal the logic of the proposition in which it is used, that is, with what other propositions it is consistently used; with what other propositions it is inconsistent; what other propositions can logically follow from its use; what presuppositions underlie its use in a certain proposition. These considerations naturally lead to the conclusion that the question of the concept of knowledge is neither a question of its true meaning nor a question of its precise definition. It is a question of its uses in various propositions. The question will be formulated as:

- (1) What is said when the word 'know' is used in a proposition? or
- (2) What do we try to make explicit when we say, "we know that something is the case"?

A WIDE RANGE OF THE USES OF THE TERM 'KNOW'

It would be interesting to examine the following statements:

- (1) John knows that the earth is round.
- (2) John knows that this tree is tall.
- (3) John knows that his pen is black.
- (4) I know that this is my right hand.

In these statements sense-perception plays an important part in forwarding the claim for knowledge. The claim of knowledge made here is related with an intellectual appreciation of the everyday experience of life and

matter and the laws that govern them. When someone says, "I know the difference between liquid and gas", he describes the act of comprehension of a principle or particular characteristic that distinguishes one from the other. This kind of knowledge includes the familiarity with things, places, and subjects, and the possession of some ostensible truths on matters of facts. Knowledge of material things derived by means of senses is considered by some as the most dependable and therefore most important form of knowledge. Much of what is taught and learned in educational institutions is this kind of knowledge. It is argued that one can ascertain with little difficulty that a particular object is an orange. We can state whether the orange is soft or hard; whether it is sweet or sour in taste, whether it is round or square in shape. It is believed that a person who holds a tomato in his hands, who observes its colour and shape, and who eats it, gets to know the tomato in certain terms. The well-known educational principle that pupils can learn the nature of material things by having first-hand experience of them is based on the belief that knowledge derived through the senses is the most certain knowledge. It is sufficient to point out at this stage that the term 'know' is used in the sense of knowing material objects. This raises the question whether one can come to know material objects as they are by sense observation. Discussion on this point will be considered adequately at a later stage.

Knowledge of mathematical certainties and logical truths,* according to some, forms a genuine body of knowledge which is innate to mind and reasoning and independent of sense experience. When someone says that seven plus five equals twelve, he is giving an example of knowledge which can never be proved false. It is believed that this knowledge is obtained independently of the senses and for that reason it is held to be superior. In classical literature

extreme claims are made that there exists only one kind of genuine knowledge and it is in the form of mathematical certainties and logical truths which are products of pure reason and are independent of sense experience. When John arrives at the conclusion that A is taller than C through the premises that A is taller than B and B is taller than C, he arrives at knowledge that cannot be wrong. In such cases we use the term 'know' to refer to mathematical propositions.

The statement 'John knows Tom' may mean different things at different times. It may mean that John has seen Tom once and though he does not remember his name he can identify him as one whom he had met. Or it may mean that he knows him so perfectly that he can predict his behaviour as a result of his intimate knowledge of his habits, tendencies and propensities. Between these two senses of knowing a person, there may exist a number of levels of knowledge concerning a person's habit of thought, abilities and temperament. It is not necessary to enter now into a detailed enquiry as to in what sense one can know persons; for our purpose will be served for the time being if we recognize the fact that 'know' is used in ordinary language in this sense.

When John says that he knows how to drive a motorcar he may mean that he has mastered the art of driving a car with sufficient practice, and that he is able to perform that act of driving whenever he is called upon to do so. It may mean that he knows how to drive a car and that there is nothing wrong with his driving though he does not hold a valid Driver's Licence because the laws for issuing a licence are very strict. Or he may mean that, though he knows how to drive a car and he holds a Driver's Licence, yet he lacks the confidence to drive the car on busy roads. Here the use of the term 'know' denotes the possession of the ability of driving the car - a skill, a trained

capacity, or a technique. Here also a number of questions can be raised. Is acquisition of a skill the same thing as the acquisition of factual knowledge? What happens if a person possesses a skill but is not capable of expressing in words the procedures which are followed for the successful performance of the skill? A person follows the appropriate procedures to attain his end but is unable to make them explicit even to himself. If 'knowing how to swim' implies a kind of capacity, in what way does the capacity of a person to answer the question, "Who discovered America?" differ? Just as there are cases of 'knowing how to swim', there are cases of 'knowing how to answer questions'. 'Knowing how' is also used in sentences such as 'John knows how the accident happened' or 'John knows how the murder was committed'. Here John claims to possess knowledge about some occurrence which can be described in statements. The sentence 'John knows how the accident happened' really tells us nothing specific about some skill. At the most John will be able to give a series of statements describing the conditions that caused the accident. But if John says that the road was slippery, he is at least in possession of some knowledge about the slippery condition of the road. We also find several other uses of 'knowing' in ordinary language. 'John knows what a mule is' implies among other things that John knows how to distinguish a mule from a horse. This is the case of dispositional knowledge where John has the capacity to recognize what a mule is when he sees one. Or this is the case of classificatory knowledge which means that John knows that a mule is a species of ungulate, the generic class to which the mule belongs. When John says that he knows who his teacher is, he means that he can recognize his teacher. When John says that he knows why he murdered his wife, or why temperature of liquids rises when heated, what John means is that he is in possession of some kind of knowledge which refers to

reasons that can explain the occurrence of a certain event or phenomenon.

The examination of the different uses of the term 'knowledge' leads to the identification of valid and valuable distinctions between different types of knowledge. Detailed discussions of the various types of knowledge will be taken up in the next section. It is sufficient here to stress the fact that ordinary forms of language are pregnant with assumptions that distinguish one type of knowledge from the other; and the acceptance of such distinctions is very useful for a better and deeper understanding of the concept of knowledge, not only from the logical point of view, but also from the pedagogical point of view which recommends classification and categorization as basic modes of arrangements for all types of knowledge.

'KNOWING THAT' AND 'KNOWING HOW'

An examination of the various ways in which the term 'knowing' is used in ordinary language reveals that there could be more than one type of knowledge. Therefore it will be quite logical to employ some useful strategy to discover basic distinctions between the different types of knowledge. The best strategy would be to examine the work of similar nature already done in that direction. Gilbert Ryle in his distinguished book The Concept of Mind draws attention to two fundamental types of knowledge: (1) 'Knowing that something is the case' which is termed 'knowing that' and, (2) 'Knowing how to do something' which is termed 'knowing how'. He considers these as genuine forms of knowledge and argues that knowing how to play chess does not necessarily imply any theoretical knowledge about playing chess. In his own words:

There is no incompatibility between being well-informed and being silly, and a person who has a good nose for arguments or jokes may have a bad head for facts.

Part of the importance of this distinction between being intelligent and possessing knowledge lies in the fact that both philosophers and laymen tend to treat intellectual operations as the core of mental conduct; that is to say, they tend to define all other mental-conduct concepts in terms of concepts of cognition. They suppose that the primary exercise of minds consists in finding the answers to questions and that their other occupations are merely applications of considered truths or even regrettable distractions from their consideration.¹

According to Ryle, when someone is described as shrewd or silly, the description imputes to him not the knowledge of ignorance of this or that truth, but the ability, or inability to do certain things. He argues that 'knowing' is a capacity verb and so both types of knowing - 'knowing that' and 'knowing how to' - are capacities which imply the ability to do something under certain conditions but do not imply frequency, regularity or tendency. The distinction between these two abilities or dispositions is really a distinction between 'knowing how to perform skills' and 'knowing propositions about facts', and this distinction is fundamental. Any two cases of 'knowing how' can be compared and it can be said that one of the persons involved in a given activity may know how to perform that activity better, but the cases of 'knowing that' cannot be compared in the same manner. Either one knows that something is the case or one does not know. There exists no other level of 'knowing that'.

It is further argued that the distinction between these two forms of knowledge becomes clearer when one observes how one determines whether or not one knows. In Ryle's words:

It should be noticed that the boy is not said to know how to play, if all that he can do is to recite the rules accurately. He must be able to make the required moves. But he is said to

know how to play if, although he cannot cite the rules, he normally does make the permitted moves, avoid forbidden moves and protest if his opponent makes forbidden moves. His knowledge *how* is exercised primarily in the moves that he makes or concedes, and in the moves that he avoids or vetoes.²

A further distinction between the two is drawn by Ryle who asks us to see how knowledge is achieved. 'Knowing how' is learned by watching the performance of others and not necessarily by memorizing the rules expressed in language. 'Knowing that' depends on the use of language for it is through language that it acquires its expression. It will be proper to note that one of Professor Ryle's intentions in making this distinction was to chastise philosophers who held the belief that all knowledge was propositional. The idea that any intelligent skill performance depends mainly on the prior acquisition of the 'knowing that' about the rules, was strongly opposed by him. He wanted to show that propositional knowledge which had so far received all attention from the philosophers was not the only basic form. An apt strategy to examine Ryle's distinction will be to see whether one kind of statement can be reduced to other kinds of statements.

Lack of Difference Between Verbal Performances and Other Types

When Tom says, "John knows that Columbus discovered America", he makes a clear statement of a fact recorded in history. John claims that he knows the fact that Columbus discovered America. If John wants to establish his claim of knowledge, he has to express it in a statement. The fact that he is able to make a statement indicates that he has some capacity or disposition to act in a certain way. When this capacity is exercised the statement of fact is obtained. This exercise of making a statement is a kind of performance of verbal nature. How do verbal performances differ from other types of

performances such as the act of swimming or the act of playing chess? John's claim that he knows that Columbus discovered America solely depends on the exercise of his skill in answering the question "Who discovered America?" This skill of answering a question is just like any other skill which can be performed satisfactorily or unsatisfactorily. That a particular person does not know how to answer questions well is similar to the statement that John does not know how to swim well. Hartland-Swann in his article "The Logical Status of Knowing That" suggests a unique technique to deny that there is any basic difference between 'knowing that' and 'knowing how'. He argues that all cases of 'knowing that something is the case' can be reduced ultimately to "cases of knowing how". Hartland-Swann after quoting from The Concept of Mind says:

Attention has been drawn to certain parallelisms and certain non-parallelisms between the concept of 'knowing that' and the concept of 'knowing how'. A further non-parallelism must now be noticed. We never speak of a person having partial knowledge of a fact of truth, save in the special sense of his having knowledge of a part of a body of facts or truths.

Either he knows this fact or he does not know it. On the other hand, it is proper and normal to speak of a person knowing in part how to do something, i.e. of his having a particular capacity in a limited degree.³

He argues that "The French for 'knife' is couteau" is a clear case of 'knowing that', but to be able to translate 'Le bourgeois gentilhomme' into English is an equally clear case of 'knowing how'. He thinks that the distinction between these two cases cannot survive if it is shown that to know that the "French for knife is couteau" is the same as to know how to "translate knife into the French couteau". Hartland-Swann argues as follows:

Can it (i.e. distinction between "know that" and "know how") survive any analysis of knowing...in accordance with Ryle's own classification as a capacity verb? "Either he knows this fact or he does not know it" must surely be translated "Either

he is able (know how) to give the correct answer - for example, that Sussex is an English county -- or he is not able (does not know how) to do so. In other words far from having established a non-parallelism between the concepts of "knowing that" and "knowing how", Ryle has implicitly demonstrated, by his own admirable analysis of "know" in other parts of his book that "knowing that", when unpacked, always turns out to be a case of "knowing how".⁴

Knowing a Capacity and Therefore Dispositional

Hartland-Swann argues that the capacity involved in every case of 'knowing that' is the capacity to state correctly what is the case. So "P knows that X" is the same as "P knows how to state correctly that X". This argument needs further examination. Swann puts emphasis on the word 'correctly' which admits of more than one interpretation. 'John knows that Vancouver is in British Columbia', according to Swann's formula, can be reduced to 'John knows how to state correctly that Vancouver is in British Columbia'. To state correctly may refer to (1) grammatical correctness of the statement or (2) correctness of the fact 'that Vancouver is in British Columbia'. In the first instance, if a person makes a grammatical mistake, he loses his case. In the second instance, the statement appears to be redundant; for there is no difference between stating what the case is, and stating 'correctly' what the case is. This line of argument may be carried further by comparing the examples of John who says, "X is dead", and Tom who says, "X is alive". One of these two statements is true, i.e. it correctly describes what the case is. Can it be said that there is no difference between these two claims? Can such a consequence which logically follows from Mr. Swann's attempt at reduction be accepted? Even if 'correctly' is interpreted to mean having sufficient grounds, the main difficulty will not

be solved. If the statement 'John has the capacity to state correctly that P' means 'John is not only able to state that P', but also 'John has sufficient grounds for making such a statement', John's evidence for X will necessarily consist of other propositions that John knows. If 'knowing that' involves having grounds, then 'knowing that' cannot be a verbal capacity alone. Swann's criticism is largely based on Ryle's description of knowledge being dispositional. John Hartland-Swann argues that if 'know' is a capacity verb and therefore dispositional, then all cases of 'knowing that' must be reduced to cases of 'knowing how'. He writes:

The only way, therefore, to maintain this distinction at a philosophical level is to abandon the view that 'knowing' is a purely dispositional concept. But this is a price which I assume, Ryle, together with most other philosophers, would be unwilling, and in my view rightly unwilling, to pay.⁵

Two Different Kinds of Dispositions Underlying the Use of Knowing

Swann agrees with Ryle's description of 'knowing' as a dispositional or capacity verb (see the underlined words in the above quotation). Using this agreement as a basis for his attack on Ryle's analysis, he arrives at a conclusion that is quite opposite to that of Ryle. This may be due to Swann's inability to observe the difference between two very different kinds of dispositions that underlie the use of 'knowing'. Achievement of certain capacities presupposes some kind of practice while the achievement of some other capacities does not presuppose any kind of practice. If X happens to see John hunting a deer, X can make a statement straight-a-way: "I know that John is hunting". X does not need any practice at all to enable him to make this statement or to answer the question, "What is John doing?" But if X says

that he knows how to swim, he presupposes that he had some practice before making a claim for knowledge of swimming. No one can know how to swim or speak a second language unless he had practiced swimming or tried to speak a second language previously. This can be stated in another way. If John happens to say, "I know how to play chess", we will be within our rights to ask him whether he had even tried to play that game. If his answer is in the negative, then we will safely say, "You do not know how to play chess". But if you say that you know that the space-ship landed on the moon, it will be inappropriate on our part to ask you whether you had tried to make a statement like that, or whether you had practised the answer to the question on that point before. Jane Roland favours the acceptance of practice criterion as a basis for revealing the distinction between 'knowing that' and 'knowing how':

I would like to suggest that the feature which distinguishes these two kinds of capacities from each other is *Practice*. That is, "knowing how to swim" is a capacity which implies having learned how to swim through practice; "knowing how to answer the question 'Who murdered Y?'" is a capacity which does not imply having learned how to answer the question through practice. When Jones was a witness to the murder, he knew immediately that X murdered Y and did not need to practice stating facts or answering questions... On the other hand, Jones could not know how to swim or speak French unless he had at some time practiced swimming or tried to speak French.⁶

'Practice' is a vague term yet its application in this context is quite helpful to realize that the notion of practice is relevant to many skills which are typically built up through repeated trials and performances. It is also essential to note that some skills are so inter-related that practice or repeated trials for one skill may serve as an adequate practice for the other. It is difficult to point out when (at what point) the practice ends and when exactly the skill begins; yet the acceptance of some notion of practice helps to a very great extent in the comprehension of the basic difference between 'knowing that' and 'knowing how'.

Another point that should be considered here is that of the relationship between 'knowing' and 'believing'. When John claims that he knows that the earth is round, he also expresses his belief that the earth is round. But John cannot say that he believes how to make a statement that the earth is round or he believes how to answer the question 'what shape is the earth?' Statements of facts can be believed but skills cannot be believed. In other words, when John claims to have propositional knowledge, he also claims that he believes that something is the case, but when he claims to have the knowledge of skills, he does not claim that he believes those skills. Thus, 'knowing that' involves 'believing that', whereas 'knowing how' does not involve 'believing how'. If 'knowing that' is to be reduced to 'knowing how', then the belief condition must be abandoned and surely this will not be accepted by most philosophers.

One can learn how to play chess by simply watching for a sufficient period of time without using language at all. It is possible for John who is deaf and dumb from birth and who does not know how to speak or read or write to know how to swim by simply watching and imitating; but it is not possible for anyone to determine whether John knows how to swim without using language. The presence or the absence of John's 'knowing that' cannot be determined without the use of language. In other words propositional knowledge is expressed in language and for this reason 'knowing that' may be called cognitive knowledge as opposed to 'knowing how' which is not cognitive in the same sense.

Before concluding this chapter some claims for identifying other types of knowing must be mentioned. Jane Roland thinks that there is a special category of 'knowing how' which represents quite a distinct type of knowledge from 'skill dispositions'. She examines the statement, 'John knows how the

accident happened', and points out that though linguistically this sentence belongs to the 'knowing how' category, it should not be classed with that type for, she thinks, linguistic criteria are not sufficient. She argues that it is neither a tendency which implies frequency or regularity, nor the type of capacity which must be acquired through practice as is done with swimming. It is not even a case of 'knowing how' in the sense of performing an operation. She admits that the statement 'knowing how the accident happened' involves knowing a series of descriptive factual propositions but argues that these propositions are quite different from the 'knowing that' propositions. She writes:

However, the statement "Johnny knows how the accident happened" is less informative than a statement of the Type B variety (i.e. knowing that variety). Its very broadness renders it uninformative. We know only that Johnny has certain knowledge which presumably could be elicited from him upon demand. But we do not know the specific details of his knowledge, which in turn means that we are not given the specific details of the way the accident happened. A Type B sentence, whether it be "Johnny knows that X murdered Y", or "Johnny knows that Columbus discovered America", or "Johnny knows that the road was slippery and the car skidded", gives us a greater amount of information because it is more specific and thus excludes a greater number of alternatives. Moreover, it gives us information about two things at once: about what Johnny knows and about the factual proposition which he knows.⁷

The right strategy to meet this sort of argument is to find out what criterion she provides to distinguish 'Johnny knows how the accident happened' from the other two types. It is not difficult to understand that it does not belong to the 'knowing how' category for it does not need any practice nor is it a kind of performance as swimming. Even if it is agreed that it does not fall into the class of tendencies, propensities or habits, it is difficult to accept her explanation for creating a new class simply because this statement is less informative than the usual 'knowing that' propositions. Even if her

argument that the statement "Johnny knows how the accident happened" is less informative than the statement "Johnny knows that the road was slippery" is accepted, it does not point to a distinct type. If at all, it is a case of difference of degree and not of kind. A proposition which gives less information is not quite distinct from the proposition which gives little more factual information. Such a distinction is neither logically fundamental nor pedagogically useful. She says at one place:

To be sure, "knowing how the accident happened" appears to involve knowing factual propositions. Indeed, this is why practice is not required.⁸

Her doubt expressed in the phrase "... appears to involve knowing factual propositions" is quite groundless. This can be proved by reducing the sentence to 'knowing that' pattern. 'Know how the accident happened' can be reduced to several propositions of facts that explain the occurrence of the accident. Martin argues that the statement 'Johnny knows that the road was slippery' gives information about two things at once and so it forms a type which is quite distinct from the propositions which give information about only one thing. This argument needs to be examined. The proposition, 'Johnny knows that Armstrong landed on the moon's surface on Monday at 2:00 p.m.' gives information about (1) the person called Armstrong, (2) the moon, (3) the moon's surface, (4) the period of time named Monday, and so on. This proposition not only gives more information but also gives information about more than two things. If "by two things" she means 'two distinct kinds of information', then her proposal for creating a new type of knowledge may be accepted but looking at her propositions under scrutiny one finds difficulty in distinguishing between the types of information. "Johnny knows how the accident happened" informs one in unambiguous terms that Johnny knows all about the

occurrence of the accident. This proposition is in no way different from propositions about Johnny knowing all about the revolution of the earth around the sun. If further information on "all about the occurrence of the accident" or "all about the revolution of the earth" is needed, a few more questions could be asked of Johnny. But this does not make these propositions quite distinct from the 'knowing that' propositions.

There is no doubt about the fact that classification or the ability to draw distinctions between different types of knowledge is advantageous in educational contexts, yet to pursue a course of detailed classification noting all the minor items of differentiation and naming each variety distinctly with a label is to defeat the very purpose for which classification is recommended. For the purpose of understanding the subject matter or for the mastery of the skills what is needed is the recognition of fundamental distinctions useful for pedagogical purposes.

Explanatory and Classificatory Knowledge

Professor Broudy has attempted to indicate three types of knowing, namely: "Knowing that something is the case" as in "There is a cloud in the sky"⁹; "Knowing what something is the case" as in "Synapse is the point of connection between two neurones"¹⁰ (classificatory knowledge); and "Knowing why something is the case" (explanatory knowledge) as in "He knows why iron gets rusted after a rainstorm".¹¹ He qualifies his statements about the classification of knowledge as based on pedagogical grounds. In his own words:

For one thing, is there only one or more than one type of knowledge to be mastered or understood? Speaking in the context of school subjects, there seem to be three different

kinds of statements that we are called upon to understand.¹²

Do we understand by this that the distinctions he points out are not basic distinctions and so they can be reduced to any one of the basic types?

He states at one place:

Actually all three are involved with each other, because the terms used in stating facts and theories are concepts and these, in turn, affect what we perceive the facts to be.¹³

This is a very useful statement for it clearly points out the relevancy of certain types of classification to certain kinds of activities. The suggestion that this kind of classification is relevant to teaching-learning situations carries with it the assumption that such sentences could be reduced to propositions of the basic types. We might, then, quickly dispose of the above mentioned candidates for distinct types of knowledge by reducing them to one or the other basic type. The best thing to do is to take the examples given by Broudy and see whether they can be reduced to 'knowing that' and/or 'knowing how'. His example "John knows what metal is" could be reduced in two ways: firstly, 'John knows that aluminum is a metal'. In other words, John knows that aluminum is a specie that belongs to the class of metal. Or it can be reduced to 'John knows how to recognize (a possession of some learned technique) aluminum if he is presented with a piece of aluminum'. In the second example 'John knows why iron gets rusted after the rainstorm', John is called upon to explain the cause of rusting by giving a proved theory. It can be reduced to 'John knows how to explain the scientific cause for the rusting of iron'.

'Knowing' is not always a kind of doing and so it is a mistake to reduce all knowing to 'knowing how'. 'Knowing how' should be regarded as basic to conceptual analysis. But this search for distinctions should not be under-

taken lightly. Pedagogically, knowledge may be classified into various sub-types for the efficient execution of the teaching-learning process but such sub-divisions may not be considered fundamental.

Most of the pedagogical types of knowledge are identified with the subject matter of school curriculum and the case of 'knowing that' has figured quite prominently in educational contexts. This does not mean that skills are not taught in schools. Even in the case of teaching skills cognitive knowledge in the form of 'knowing that' statements plays a significant part. As the main aim is to deal with knowledge from the perspective of education, attention will now be given to the consideration of propositional knowledge from the standpoint of epistemology.

FOOTNOTES

1. G. H. Ryle, The Concept of Mind, (London: Hutchinson & Co., Ltd., 1966), pp. 25 - 26.
2. *Ibid.*, p. 41.
3. John Hartland-Swann, "The Logical Status of 'Knowing That'", Analysis, Vol. 16 (1954-56), p. 112.
4. *Ibid.*, p. 113.
5. *Ibid.*, p. 114.
6. Jane Roland Martin, "On the Reduction of 'Knowing That' to 'Knowing How'", in Language and Concepts in Education, ed: B. O. Smith and R. H. Ennis, (Chicago: Rand McNally & Co., 1961), pp. 62-63.
7. *Ibid.*, p. 65.
8. *Ibid.*
9. H. S. Broudy, "Mastery" in Language and Concepts in Education, op. cit., p. 77.
10. *Ibid.*
11. *Ibid.*
12. *Ibid.*, pp. 76-77.
13. *Ibid.*, p. 77.

CHAPTER II

CONDITIONS OF KNOWLEDGE

The common question, "What do we know?" attempts to bring the nature of objects of knowing into sharper focus. If one claims that one knows 'that P', one is not only expressing one's affirmation that one believes 'that P', but also that 'that P' is independently true. It will also become necessary to deal with the question: 'How do we know?' This would, then, involve the consideration of proper evidence in relation to knowledge. In the statement 'John knows that Milton wrote Paradise Lost' John is sure about his assertion that 'Milton wrote Paradise Lost'. This links knowledge with sure belief. Another important point is that the assertion 'Milton wrote Paradise Lost' is true independently. In other words, if one accepts that John has come to know that something is the case, one commits oneself to the truth of John's statement. Before one accepts John's statement, one is entitled to know how John has come to know that something is the case. Suppose John has learned 'that P' from his teacher and he has no other evidence except that his teacher had mentioned it in the class. Or suppose that John had learned this assertion just to pass the examination and he did not attribute belief in the learned fact. Or suppose that the statement 'Milton wrote Paradise Lost' is completely wrong and the teacher had mentioned it wrongly in the class. All these cases do not qualify as 'knowing that'. In the first case John has no other authority to support his assertion except the authority of his teacher. It can be that his teacher is a learned person and has written a very authentic book on this subject but John does not know about it or John does not mention it to support his claim. If the teacher himself makes the claim that he

knows that Milton wrote *Paradise Lost* and if he produces sufficient evidence in the form of a book that he has written and if this evidence comes up to the standards required, and if it satisfies the other conditions of knowing (the truth condition and the belief condition), then the teacher's claim to knowledge can be accepted, but certainly not that of John who had just heard his teacher mentioning it in the class. This leads to the problem of evaluating the evidence, for evidence can be adequate or sufficient in many different ways. An examination of the grounds on which the teacher bases his claim 'Milton wrote *Paradise Lost*' is quite relevant here. He may have quoted passages from other works of Milton and closely examined the style, the use of certain words and phrases and idioms and so on. Should it not be asked whether he had explored every possible piece of evidence before he had come to that conclusion? How can one know that the teacher has not left out something worth considering? Is it possible to produce complete and precise evidence? Can the teacher's claim for knowledge on the basis of incomplete evidence be accepted? What is meant, then, by complete evidence? If the word 'sufficient' evidence is used in place of 'complete evidence', then the question may arise 'sufficient to whom?', and 'sufficient to what?'

Consider the case of John who has learned just with a view to passing an examination that Milton wrote *Paradise Lost*. He can correctly state this fact in the form of an answer to the question, 'who wrote *Paradise Lost*?' or he can correctly write it in the examination answer paper but at the same time he can say that he does not believe that such and such was the case. In this connection some more cases should be examined. Suppose Musa, a young uneducated African, says that he believes that the God of Rains controls and guides the movements of clouds in the sky. He has learned this fact from a witch

doctor who had convinced Musa completely about the truth of his belief. This strong belief of Musa does not entitle him to claim knowledge. We cannot accept Musa's claim to knowledge on the grounds that at least he has a very strong belief in God's capacity of controlling and guiding rains. Such commitment would be repugnant to us in the absence of evidence as to the truth of the statement. Strong belief in the God of Rains on the part of Musa does not necessarily lead us to say that he knows that something is the case. Statements like 'I believe in God, or I believe in John's ability to lead the country' do express the speaker's faith in the existence of God or his faith in John's ability in leading the country. Suppose John says, "Victoria is a city in B.C." and he further gives clear evidence of his belief that he is quite sure of the fact. Can the condition of John be described as one of 'knowing' or 'believing'? Let it be supposed for a moment that there exists no such city as Victoria in B.C. However strong the faith of John may be in the existence of the City of Victoria, his claim of knowledge would not be accepted. John's claim for knowledge not only should express the proper state of his mind (i.e. his complete faith or his firm belief), but also the proper state of the world that John is referring to (i.e. the existence of Victoria in B.C.). In this context John will be described as having 'belief' and not 'knowledge'.

The previous discussion has clearly indicated certain significant points relating to the nature of the concept of 'knowing'. A brief statement of these points may lead to the formulation of conditions of 'knowing'.

By "John knows that P", what is meant in the first place is that 'that P' is true. Thus 'knowing' is linked with truth. Secondly, John surely believes 'that P'. Thus 'knowing' is linked with 'believing'. Thirdly, John

has adequate evidence to believe 'that P' and he is prepared to produce the required evidence to support his belief. Attempts have been made to state conditions of knowledge in various ways and a brief survey of these attempts may lead to the clarification of some of the difficulties in the proper understanding of the various epistemic terms.

The classical conception of knowledge is well represented by Plato's formulation of the conditions in Theaetetus. According to him, knowledge is true opinion or belief combined with reason. By including reason in belief Plato suggested the third condition which refers to evidence. Plato did expect that one who claims knowledge could give adequate grounds, rational account or justification as evidence to the truth of knowledge. His definition can be expressed in the following form:

S knows that P

if and only if

- (i) P is true,
- (ii) S believes that P,
- (iii) S is justified in believing that P.

From among the contemporary philosophers we will consider the definitions advanced by Ayer and Chisholm. Ayer writes:

First that what one is said to know be true, secondly that one be sure of it, and thirdly, that one should have the right to be sure.¹

R. M. Chisholm writes:

The following, then, will be our definition of 'know':
S knows that h is true means:

- (i) S accepts h,
- (ii) S has adequate evidence for h, and
- (iii) h is true.²

According to these definitions the first requirement is that one can-

not know what is not so. The second requirement is that one cannot know what one does not believe. This condition is quite useful to eliminate the possibility of an illogical statement such as, 'I know that P but do not believe it'. The third condition is crucial, for it distinguishes genuine knowledge from belief. We shall examine each of these conditions in detail and see whether knowledge of this kind exists.

KNOWLEDGE AND TRUTH

The first condition stresses that what is known has an independent reference to some state of affairs which is true. When John says that the earth is round, what he refers to is the shape of the earth which he knows to be round. Thus, John's claim of knowledge does not only describe the state of John's mind which is one of sure belief but also the state of the world on which John has no control. The question of whether or not the earth is round should be raised before admitting John's claim for knowledge. If, on examination, it is found that the state of the world is as described by John, then there is no difficulty in admitting the claim. The class of empirical propositions which refer to facts and material things is large.

KNOWLEDGE OF MATERIAL THINGS

It seems that things are perceived because they are thrown up in a way that the sensory contact makes perception possible. It is common experience with teachers that a student, who holds a particular object in his hands

and also observes its properties through sense-experience, comes to know the object better than one who reads its description in a book. People say that some men know more than others. People say that modern technology rests on a vast amount of knowledge. All these statements point to the vast class of statements concerning material objects known through sense-experience. David Rynin makes the following statement:

...It seems to me that the tacit assumption that knowledge is indeed sensation underlies many views that regularly show themselves in epistemological discussions... If someone strongly desires to use the term 'knowledge', or any of its forms or variants with the sense of 'sensation', I would not try to prevent it.³

As against this what had Socrates to say?

In the dialogue when Socrates asked Theaetetus for the definition of knowledge, Theaetetus suggested that knowledge was perception. Socrates argued that if he accepted sense-experience as knowledge, then no established body of knowledge could ever exist. He explained that man and his nature constantly changed and so also must change constantly the sense-experience of man. Knowledge which depended on constantly changing human nature could not be absolute and he argued man could never act on the basis of such relative knowledge. Thus, Plato dismissed the theory of sense-experience as the source of knowledge. The idea that sense-perception is a ground for knowledge was further discredited by John Locke's⁴ skeptical realism which stated that the world as perceived really did not exist, but the world that really existed was not knowable.

This leads to Berkeley's idealism which asserts that human experience is the only evidence for knowledge. His famous dictum "esse est Percipi" (i.e. to be is to be perceived) enunciates that there are no objects independent of perception. This will raise the counter argument: What happens to things when they are not perceived by man? If the principle that things exist

because they are perceived by man is accepted, then it follows that things do not exist when they are not perceived by man. If the literal meaning of Berkeley's dictum is accepted, then the houses will cease to have real existence as soon as men leave them to go to their work. In the same manner things that are seen in dreams must be credited with real existence when they are perceived in dreams.

Physical Objects

Berkeley built in his theory the idea of omnipresent God and referred to God's perception as an "ultimate reality".⁵ He emphasized that physical objects continued to exist even when they were not perceived by man because there was a God who perceived the objects. God, the ultimate reality, was behind all material existence and so all existence was as eternal and as real as God. If the phrase 'God's perception' is removed from Berkeley's idea, what results is the independent existence of material things and this was indeed a great step forward.

J. S. Mill accepted Berkeley's idea of the independent existence of material things and brought it to the level of human perception. Bertrand Russell replaced the word 'perception' with 'perceptive experience' and explained how things of the world were perceived and how perceptive experience became a part of man's knowledge. He takes the example of a cat whose presence stimulates any one of the senses. This event releases a chain of spontaneous events or a kind of elaborate inductive process consisting of expectations of usual accompaniments which transform the mere sensation into a perceptive experience which recognizes the cat. Perceptive experience thus refers to habit, which in turn points to man's past experience with an object

such as the cat. The fact that human beings recognize the cat when they see a cat presupposes that they have acquired a kind of habit of recognizing a certain object in a certain way. This habit is a kind of belief which interprets a perceptive experience in terms of seeing the cat. This belief is built up of a number of expectations; if it is a cat, it is expected that it will mew, or feel soft, or move in a cat-like manner. If any of these expectations do not come true, the interpretation of the perceptive experience will change. He writes:

In our environment it frequently happens that events occur together in bundles - such bundles as distinguish a cat from another kind of object. Any one of our senses may be affected by a stimulus arising from some characteristic of the bundle in question. Let us suppose the stimulus to be visual. Then physics allows us to infer that light of certain frequencies is proceeding from the object to our eyes. Induction allows us to infer that this pattern of light, which, we will suppose, looks like a cat, probably proceeds from a region in which the other properties of cats are also present. Up to a point we can test this hypothesis by experiment: we can touch the cat, and pick it up by the tail to see if it mews.⁶

He further elaborates that the knowledge about an object so inferred is not wholly derivable from "perceptive premisses"⁷ together with the principles of demonstration and probable inference but also from the "memory premisses".⁸ Russell's explanation reveals the complex nature of the whole perceptive process and the degree of probability of the resultant knowledge. Thus, though he accepts the independence of existence of material objects, he does not attribute certainty to the knowledge of these objects.

John's claim that he knows that stars twinkle in the sky at night cannot be accepted unless it is assumed that the stars exist independently and they possess some special characteristic of twinkling at night. The basis of this argument lies in the fact that stars constitute an object of knowledge which is capable of delivering immediate experience. We cannot speak of a

thing as existing independently except in so far as we know it to be capable of giving experience which is direct and immediate. So once it is granted a particular thing is capable of so stimulating senses as to give a direct and immediate experience, it follows that the thing exists and is knowable. When John claims knowledge about the stars, he refers to two things: (1) John has knowledge about the stars and their behaviour at night, (2) Stars do exist and they behave in a certain way at night. If Tom says that John's claim is correct, he accepts both his knowledge as well as the independent existence of stars and their behaviour at night. But if Tom says that John's claim is wrong or incorrect, Tom knows what is correct knowledge about the stars. Whether Tom affirms or denies John's claim for knowledge, it is assumed that he has proper knowledge about the stars and their behaviour at night.

The fact that John makes a proposition claiming knowledge about the stars and their behaviour and the fact that we understand what he says, presupposes that there are things in the world and their knowledge is quite possible; for if they did not exist John would not have been able to make propositions about them and we would not have been able to understand them. When John says that there are many apple trees in his orchard he is not making only one proposition, rather he is expressing several propositions and the acceptance of his first proposition implies the acceptance of an unlimited number of presuppositions: that there are knowers in this world, since John is one of them; that there are propositions, since "there are many apple trees in his orchard" is one such proposition; that there are things like apple trees and orchards in this world, since John speaks about them and we understand him; that some people have beliefs, since John holds the belief that there are apple trees; and so on. Thus John's claim about the apple trees and

orchard rests on the truth of a very large body of empirical propositions.

Empirical Propositions

By attributing independence of existence to material objects we do not attribute certainty to knowledge that is derived from them, for any empirical proposition is based on an unlimited number of presuppositions and to claim knowledge about all these presuppositions is absurd.

It will be quite interesting to examine Hume's arguments⁹ in this respect, who more than anybody else has provided a general argument against the possibility of an infallible method for ascertaining the truth of factual propositions. According to him, the contrary of every matter of fact is possible because it can never imply a contradiction. That the sun will not rise tomorrow is no less intelligible a proposition, and it implies no more contradiction than the affirmation that it will rise.

Empirical truths are neither intuited with certainty nor are they derived by thought alone from some initial agreements whose contraries are self-contradictory. How, then, could the truth of the empirical propositions be determined? Of course, one can depend on immediate experience and memory. It may be quite alright to know for the time being the truth of a statement by means of first-hand contact with the object. But the class of empirical propositions does not contain only this kind of proposition. It includes statements of facts that are far removed in time and space, and also statements of very complex nature which elude direct sensorial contact. Hume recommends that the relation of cause and effect can be accepted to extend the knowledge but at the same time he warns that the knowledge thus derived can only be probable and not at all certain.

Consequences of a Statement

A number of philosophers agree with Hume's thesis against the notion of certainty or infallibility of the empirical method. For further elaboration, let us take a concrete example. Suppose John says, "There is a piece of white paper before me."

In what circumstances can it be wrong? If what John sees is not a white piece of paper, then the statement is wrong. The piece of paper may really not be white though it looks white. In that case his statement is wrong. If John picks up the paper and tries to tear it into pieces and it does not yield because it is not a piece of paper, then also John is wrong in his statement. Suppose he takes some solution and tests the piece of paper in question for the purpose of verification. If it turns out to be something else, then John's statement is wrong. Suppose that the test that is carried out supports the proposition that there is a piece of paper before him. What happens then? Does it mean that he has come to know the truth? Not necessarily, for he may have committed some mistake in carrying out this experiment. It may be that on some future occasion it would be proved that what he sees now is not the paper. We cannot rule out the possibility of any further verification in the future. Thus, it is clearly seen that there always lurks some theoretical possibility of a mistake. In the words of C. I. Lewis:

To quibble about such possible doubts will not, in most cases, be common-sense. But we are not trying to weigh the degree of theoretical dubiety which common-sense practicality should take account of, but to arrive at an accurate analysis of knowledge. This character of being further testable and less than theoretically certain, characterizes every judgment of objective fact at all times; every judgment that such and such a real thing exists or has a certain objectively factual property, or that a certain objective event actually occurs, or that any objective state of affairs actually is the case.¹⁰

To clarify the statement about the fallibility of empirical knowledge, this argument may be put in a different way. Suppose John says, "There is a dog under this table." If he touches that dog with his toes, he must feel the fur. If he whistles to call it out, it will come out and wag its tail. If he kicks it hard, it might bark and come out. And one can go on adding many more such observations to this list. Can there be any limit to this? Suppose we call the statement 'There is a dog under this table', P. Then, the argument that it is difficult to prove 'that P' is certainly true. It is true that the object under the table is present before us and it is quite possible for us to have first-hand sensorial contact. The statement, 'P' simply describes a fact which is present before us and even if the whole course of nature changes after a second (say an atom bomb is exploded and everything is destroyed) the description for the present event cannot go wrong for the description is not related to anything that is to happen in the future. This argument is not tenable. The object which is referred to, say, a dog or a piece of white paper, has a life of its own beyond the boundaries of man's present experience. To say that this is a white piece of paper is to say that certain visual, tactual and other phenomena exist and are associated in a certain way. These phenomena are surely not all given at the same moment in the same manner, and this involves the theoretical doubt in all that is claimed as knowledge. Returning to the above example, it can be safely said that 'P' has consequences or expected results. Suppose all these consequences (namely if one touches the dog with his toes one would feel soft fur...etc. etc.) are named 'S'. It is quite important to see the relationship between 'P' and 'S'; 'P' does not entail 'S'. In other words the statement that 'there is a dog under this table' does not entail the consequent statements: "he feels the soft

fur...etc." So if we say 'P but not S', it is not self-contradictory. Yes, 'S' can be inferred from 'P' but 'P' does not entail 'S'. The number of 'S' that can be inferred from 'P' is unlimited and any of these consequent statements may not turn out as expected or may prove to be false. So at no time can one claim certainty or infallibility in knowing empirical statements. The following quotation from Carnap's paper "Testability and Meaning", gives a strong representation to this argument:

These inferred sentences are predictions about future observations. The number of such predictions which we can derive from the sentence given is infinite; and therefore the sentence can never be completely verified. To be sure, in many cases we reach a practically sufficient certainty after a small number of positive instances, then we stop experimenting. But there is always the theoretical possibility of continuing the series of test observation. Therefore here no complete verification is possible but only a process of gradually increasing confirmation.¹¹

BASIC PROPOSITIONS

The preceding discussion has pointed out in unambiguous terms that neither knowledge entails certainty nor the method in inquiry entails infallibility. But the question of basic propositions is still undecided. They are called incorrigible propositions or expressive statements in the sense that they claim to describe the phenomenal facts accurately. It is argued that such propositions are not predictive -- have no consequences -- and hence there is no possibility for one to go wrong when one describes any physical event. Instead of saying that there is a dog, if one says "It looks to me as if there is a dog" not implying that there is a dog, one is expressing a basic proposition and is not likely to go wrong. Accurate description of each

phenomenal act in purely sensory terms is humanly possible. Again the difficulty is bound to arise from the state of mind of the perceiver himself.

A. J. Ayer has given the following example. Quoting Berkeley's statement:

"if we were placed in such and such circumstances, and such or such a position and distance, both from the earth and the sun, we should perceive the former to move." A. J. Ayer adds:

It might very well happen that when we were placed in them we did not perceive the earth to move at all, not because it was not moving but because we were inattentive, or looking in the wrong direction, or our view was in some way obscured, or because we were suffering from some physiological or psychological disorder...we might rule out the possibility of physiological disorder by adding a further hypothetical to the effect that if the physiologist were to examine him or rather, were to seem to examine him...but then we should require a further hypothetical to guard against the possibility that the physiologist himself was undergoing an illusion: and so ad infinitum.¹²

Again the difficulty against the assumed certainty of the description of each phenomenal act arises from the fact that each of the present judgments is to be decided in future when one will have to depend on memory. For the sake of argument let us suppose that the phenomenal event has been correctly described. Does the accuracy of the present description alone by itself guarantee the certainty of the basic proposition? If an inferred experience does not occur, then evidently there was some error in the description of the original basic proposition. It is, then, not incorrect to conclude that the program of expressing each of the successive phenomenal acts cannot be accurately carried through. Common sense rejects the notion that knowledge entails certainty in the sense of a basic proposition.

But this line of thinking should not lead one to the conclusion that there is no knowledge as such. By removing certainty from knowledge we do not destroy knowledge itself. Before this conclusion is drawn some discussion on

the sense-datum argument is quite necessary.

It has been argued that it is unlikely or impossible for anyone to ever perceive a physical object as it really is because of the frequency of appearances with which one is deceived. It is the sense-datum which is directly perceived. Suppose an envelope is held up to an audience and it is seen by all. Suppose John was also sitting there and he viewed the envelope from a reasonable distance from where it looked like a white patch of a certain colour. This image of a white patch is the first thing presented by his senses and this initial after-image (as commonly termed by G. E. Moore) is the sense-datum. It is argued that this after-image of the envelope is different from person to person. G. E. Moore argues:

There is an absurdity in supposing that any one of the after-images which I saw could also have been seen by anyone else: in supposing that two different people can never see the very same after-images.¹³

But the acceptance of Moore's argument creates some difficulties. If no two persons can see the very same after-images, then no two persons will perceive the very same object. It follows that the knowledge attained by perception is highly subjective and not objective at all. This is a very unpleasant conclusion indeed to say that the knowledge attained by sense-perception through after-images is such that no two different persons can ever be in agreement and yet in the scientific world "objective method" and "common-agreements" are the most prized phrases.

How can one find out that the after-images seen by 'A' and by 'B' are not the same. This leads to the application of some procedure to carry out an experiment to record the after-images accurately. It is highly improbable to discover some such technique to ascertain the truth of this statement.

This after-image or sense-datum only endures for the limited period of its apprehension. If the impression of the envelope has already been formed in the mind of the perceiver, then the sense-datum of the envelope will be sufficient to produce an awareness that an envelope has been seen by him. Proper interpretation of the sense-datum of any physical object thus presupposes the existence of a proper concept of the physical object in the mind. This rules out completely the possibility of seeing the whole object by direct perception. The concept of the whole object is already in the mind. What the perceiver does is that he catches a glimpse of the sense-datum which is a part and not the whole of the object, and then the rest of the object is construed within one's mind through the concept that already exists. And by this process then, one will be led to the illusion of one's mind. This discussion will be concluded after reviewing the argument that only the 'appearances' or 'looks' of objects and not the physical objects are seen. G. E. Moore says that in the case of a transparent body like a drop of clear water, it is possible that one can see the whole object at once; but when one sees an opaque body, one does not see all the parts of its surface nor its inside. A necessary condition of direct perception is that one should see every bit of it at once. If one does not see that, then he sees the 'appearances' or 'looks' of the physical objects but not the objects. According to the above argument these 'looks' and 'appearances' are quite distinct from the objects. In other words one who perceives the 'appearances' does not perceive the objects. Appearances, thus, are misleading and deceive human perception. They lead, it can be argued, to the acquisition of wrong information about the objects. It is quite likely that sometimes (but not all times) we are deceived in knowing the true nature of an object. For example, the 'appearance' of a

stick put into water gives wrong information about the true nature of the stick. But to generalise from this that only illusions are seen and not real objects is highly improper. It is true that one does not directly see every bit of an opaque body at once, but at the same time one does not think that one sees only that part of the surface of the hand turned towards one, and not the hand itself. When we look at the clock, we do not think that we just see the face of the clock and not the clock itself. Similarly we do not say that we see the roundness of the coin and not the coin itself. Do we ever think that we perceive the appearance of an object separately from the object itself? Such language creates confusion. We see that the look of the coin is seen separately from the coin. The special terminology used in this context leads one to think that appearances of things are interposed somewhere between the perceiver and the objects and that these appearances have physical forms of their own which make them apprehensible separately from the objects. This looks rather absurd. Indeed, one becomes aware of the 'looks' of an object but this awareness is not thought of as something quite separate from the object. Is the green look of the leaf perceived at one time, and the green leaf itself at another time?

Knowledge Is Possible

In the end, therefore, in rejecting the 'sense-datum' we reject the linguistic confusion and the misleading terminology full of words as 'looks', 'appearances', 'seems', 'as if' and so on, but not the essence of the argument that knowledge is not certain. This acceptance of uncertainty in knowledge of empirical propositions in no way leaves one in the lap of the skeptic who just scoffs at one's pursuit of 'knowledge' which is non-existent from his stand-

point. Knowledge is possible and it is derived from experience and is further tested in experience. It is true that experience does not directly yield all knowledge; most of it is indirect and is verified by the use of inductive inferences based on direct observation. There is nothing wrong in accepting the claims of probabilities as knowledge, for there is no other kind of knowledge. And this is the answer to the question whether the knowledge of material objects derived by means of sensorial contact can claim the status of true knowledge.

MATHEMATICAL CERTAINTIES AND LOGICAL TRUTHS

In this section the question will be: Can one justifiably claim absolute certainty and infallibility for mathematical certainties and logical truths? It is claimed that knowledge of this kind is independent of the senses and so belongs to a superior *a priori* order. This kind of knowledge, it is argued, is not coloured by the senses or opinions of people and hence it is more trustworthy than the knowledge of the physical world derived through sense-experience. According to the rationalists, the only source of knowledge is thought, and whatever truths that the world has come to know, it has come to know through human thought. Ideal mathematical objects have no physical existence. They can be understood, but their exact exemplification is impossible. Again, if a geometric figure fails to demonstrate the relationships or specific principles for which it is constructed, it is not the principles that are falsified but it is the figure that falls short of fully representing the truth of the ideal mathematical figure. Rationalists

claim that this kind of knowledge is necessary and certain, for evidence from observation can never refute it and it is a waste of time to doubt about its certainty.

As against this, it is argued that propositions of mathematical certainties and logic were inductive generalizations based on such a large number of instances that it seemed incredible to imagine that a contrary case could ever arise. Past experience of their application has given very good reasons for supposing that they are certain but like empirical hypotheses, they are theoretically fallible.

These truths are not innate in the sense that men are born knowing them. It is quite obvious that they have to be learned in the same way as other subjects are learned. It is not difficult to agree with Mill when he states that they are based on experience. One has experience of particular squares before one forms an idea of the universal squareness. One's early experience of particular squares enables one to perceive a relationship between the universal squareness and certain properties such as rectilinearity or equilateralness. But at the same time it should be accepted that to some extent they are independent of experience in the sense that they do not need any reference to experience for their verification. In this sense they are different from empirical propositions. Once a mathematical proposition is discovered through an inductive process, it attains quite a different status in being at once necessary and universal. But the attainment of their universality largely depends on agreement not to allow them to be otherwise. To abandon the common agreement is to abandon the very principle on which is based the superstructure of mathematics and this cannot be done without self-contradiction. In short, mathematical propositions are in a sense commonly

accepted rules by which the game of mathematics is played.

The question whether mathematical truths constitute *a priori* knowledge will be best understood by a brief reference to Ayer's criticism of Kantian identification of pure mathematics with pure knowledge on the grounds that mathematical statements are synthetic as against analytic judgments in which the predicate 'B' belongs to subject 'A' as something which was covertly contained in the concept of 'A':

Analytic judgments add nothing through the predicate to the concept of the subject, but merely break it up into those constituent concepts that have all along been thought in it, although confusedly. Synthetic judgments, on the other hand, add to the concept of the subject a predicate, which has not been in any way thought in it, and which no analysis could possibly extract from it.¹⁴

Kant tried to qualify the expression ' $7+5=12$ ' by calling it a synthetic judgment on the grounds that the idea of '12' could not be thought of by analyzing the concept of the sum of 7 and 5. He argued that to deny this proposition ' $7+5$ is not equal to 12' is not self-contradictory and yet it is wrong. This was a very clever way of avoiding the criticism against *a priori* knowledge as tautologous. Ayer on the other hand suggests that a proposition is synthetic when its validity is determined by the facts of experience and analytic when its validity depends solely on the definitions of the symbols it contains. He gives the example of an analytic proposition as "Either some ants are parasitic or none are."¹⁵ This is obviously a valid proposition independent of experience. Such analytic propositions are empty of information, yet they "do enlighten us by illustrating the way in which we use certain symbols."¹⁶ $A=C$ is inferred from logical premises as $A=B$ and $B=C$, which is at once a certain inference, for given the truth of the premises, it cannot be anything else. Propositions of this nature cannot be confuted in experience because they do

not make any assertion about the empirical world. The argument that the proposition ' $7+5=12$ ' cannot be refuted, rests on the fact that ' $7+5$ ' is synonymous with ' 12 ' and it does not give any empirical information. These mathematical propositions are all traceable to initial agreement which cannot be denied without involving self-contradiction. It is quite conceivable that some different initial agreement can be employed as a basis of mathematical and logical propositions.

From the preceding discussion it is quite evident that the mathematical certainty rests on the acceptance of some kind of initial agreement which may have been reached on some false grounds and that deductions inferred from a false initial premise cannot yield a body of true knowledge. This line of thinking has no justification looking to the mass of valid inferential knowledge deduced from the initial premises of logic and mathematics. Premises of valid deductions are highly probable inductive generalizations. Again it would be a mistake to infer that logic and mathematics have lost their status because their starting points or initial premises are probable inductive generalizations. It is difficult to agree with the rationalistic tradition in its claim that these truths are innate and known in a pre-earthly existence only to be revealed to right subjects through the exercise of some infallible mental faculty or an error-free intuition. To deny this claim is to free knowledge from its untenable mysterious metaphysical web fashioned by perfectionists.

The argument that knowledge is the outcome of the exercise of some infallible mental faculty or error-free intuition can be attacked from a different standpoint. According to the infallibilists, knowing refers to some special state of mind and it is asserted that it is impossible for anyone to be

in such a state of mind unless what it (this special state of mind) reveals to him is really true. In case what is revealed turns out to be false or in other words if what one has come to think to be true should prove to be false, then it is argued that one is mistaken about the character of one's state of mind. It means that one cannot know anything unless he is in this special state of mind. This line of thinking makes the possession of a special state of mind not only a sufficient condition but also a necessary one. It is claimed that this special state of mind is unique in character and defies any analysis. Is there any evidence to support the existence of any such state? It may be agreed that people experience a kind of feeling when they say, "We firmly or reluctantly or hesitantly believe that something is the case." But 'being in a state of firmly believing that something is the case' does not always lead one to true knowledge. If, for the sake of argument, the feeling of 'being quite sure' is pointed out to be the evidence of some kind of special infallible mental state of knowing, then what is firmly believed should be necessarily true, but this is not the case. So it follows that 'being quite sure' does not testify to the existence of a special infallible mental state of knowing. If there exists some special state of mind which when exercised institutes infallible truth, it must be one of some superior nature, or superior order to the one which leads to a firm belief. Consider the following statements to illustrate the argument:

- (1) John believes that P
- (2) John knows that P

In the first statement John reveals his firm belief. In other words, he has performed some special kind of cognitive act in having firm faith in P. In the second statement, according to the above line of argument, John per-

forms a higher infallible cognitive act of some superior order which puts him in a special mental state of knowing. Now what happens when we take the example 'John knows that P' meaning that John also has come to firmly believe that P? Here, John is supposed to have performed, if the above line of argument is accepted, two acts -- one of being in a special mental state of believing and another of being in an infallible mental state of knowing at the same time. This is absurd. When John says, "he knows that P" he is in no way performing any superior cognitive act other than that of 'being sure'.

Belief indicates in its common use different levels of believing; for example, believing firmly, or reluctantly or hesitantly, but knowledge does not. People do not say "knowing reluctantly or hesitantly" and as such knowing and believing cannot be classified as cognitive acts along the same continuum. When John says that he believes firmly, or believes hesitantly, what he reveals are his varying cognitive mental states, but when one says that one knows, one does not describe one's subjective mental state. To understand properly the statement 'John believes that P', what is needed is to find appropriate indications about the psychological state of John's mind (whether he firmly believes or reluctantly believes that P) and only after carefully examining this state can one say that the belief held by John is correct or without grounds; but one can never say that belief does not exist. One can only reflect and give one's opinion about the correctness of John's belief but one cannot totally reject it. With knowledge one can reject the claim straight-a-way without referring to the person's psychological state but merely by proving the inadequacy of the truth of factual reference. This explanation points to the inadequacy of the traditional view that knowing and believing are related forms of mental activity. It leads to denying that know-

ing has merely a mental or psychological reference.

It is not difficult to agree with the view that 'believing that' has a purely psychological reference but to extend this qualification to 'knowing that' and assert that it is merely a cognitive faculty or mental state is to violate the truth condition which explicitly refers to factual assertion. It is said so aptly by J. L. Austin:

Similarly, saying "I know" is taking a new plunge. But it is not saying "I have performed a specially striking feat of cognition, superior, in the same scale as believing and being sure, even to being merely quite sure": for there is nothing in that scale superior to being quite sure.¹⁷

Knowing Is An Achievement

This notion of an infallible state of mind can also be attacked from a different angle. Knowing is an achievement and not a mental performance or psychological act. As an achievement verb, it is quite different from the activity or process or task verbs. For example, the question 'what are you doing?' can be answered by saying, "I am writing", or "I am running", or "I am reading", but not by saying, "I am knowing". An activity can be slow or quick, carefully planned or carelessly carried out but this does not apply to an achievement. According to Ryle¹⁸ proper understanding of the distinction between achievement verbs and task verbs will lead to a better understanding of the truth condition with regard to knowledge. To separate achievement verbs from task verbs, according to his contention, is to undercut a likely source of the traditional notion that knowledge implies not only truth but also certainty. The reference to rationalistic tradition indicates that mathematical propositions are not only true but also certain. If the argument

is reversed, it can be said that the mind which comes to know certain truths (which cannot fail), must be possessed of some special infallible faculty.

In other words, certain truths could be derived only from an error-free cognitive faculty. This can be illustrated by considering the mathematical statement ' $7+5=12$ '. One may argue that the statement ' $7+5=12$ ' cannot go wrong in the sense that it is not dependent on the changing state of the world. From this one may be led to conclude further that the derivation of the truth of the expression ' $7+5=12$ ' is the result of the activity of some error-free intuitive faculty. Ryle¹⁹ points out that this line of argument stems from the failure to grasp the distinction between task verbs and achievement verbs. Knowing is not a performance at all and so it cannot be an infallible performance. Knowing is rather an achievement. It may be quite easy to understand the distinction between verbs like 'fight' and 'win', where the achievement verb 'win' suggests not only that some performance (i.e. that of fighting) has been gone through but also that something has been achieved by the subject as a result of going through this activity. But with a verb like 'knowing', it becomes difficult to find its corresponding task verb. Can 'strive to know' be a corresponding task verb? Is knowledge a result of some kind of conscious striving? Generally speaking, knowing takes place without trying at all. The contrast between the task verbs and achievement verbs of this kind is very obscure and this will raise many difficulties in the application of Ryle's theory in other cases. Yet it helps by pointing out a kind of achievement-task relationship between verbs. 'Knowing' being an achievement involves no trying. It denotes some inquiry procedure which may or may not fail, but if one knows 'that P' one cannot be mistaken. This is how the verb 'knowing' is used in ordinary language. It does not indicate the existence of some

cognitive state of mind.

KNOWLEDGE AND JUSTIFICATION

We may now turn to the third condition which is crucial to distinguishing genuine knowledge from chance belief. Just because X is the case and John is sure that it is, John will not be entitled to say, "I know that X is the case". This becomes quite relevant in a class situation. When a teacher asks a student whether he knows that the sum of the angles of a triangle is equal to two right angles, what the student is called upon to do is to offer some proof to support his claim to knowledge. When Tom says, "John knows that the earth is round" what he expresses is his acceptance of John's evidence in support of his claim to knowledge. This may raise serious questions.

The first is the problem of the adequacy of evidence. For example, when Tom says, "John knows that P", what Tom is doing is expressing his acceptance of the entitlement of John's claim to know 'that P'. Now suppose we try to find out from Tom the grounds on which John had based his claim to know 'that P'. If it is found that John's standard of evidence is not adequate, then we are entitled to say, "John does not know that P". This difference between our judgment and that of Tom in the acceptance of John's evidence clearly points out the fact that standards of evidential appraisal can differ very widely from person to person.

Can it be argued that the evidence condition does not constitute a sufficient condition for the truth of a proposition? In other words, is it possible for a person to be justified in believing a proposition that is in fact false? Suppose John sees two men entering his office, one of whom is

his friend Tom who is carrying a leather bag in his hand. The other is Bill whom John does not know. John considers Tom to be a reliable and honest man. Suppose Tom informs him that he owns the bag which he carries in his right hand. In fact he shows the cash-memo to John to assure him that he had bought the new bag on that very day. On the basis of this evidence, John will be completely justified in believing that Tom owns a new bag. From the statement 'Tom owns a new bag' John deduces another statement: 'Someone in his office owns a new bag'. Is John justified in believing the second statement? The validity of the second statement lies in John's belief in the truth of the first statement. Now suppose Tom had deceived John by telling him that the bag belonged to him. In fact the bag belonged to Bill and not to Tom. The statement 'Tom owns a new bag' is false. What about the second statement: 'Someone in his office owns a bag'? This statement is true even though John has no evidence for it except that it is deduced from the first statement which is false.

To avoid this situation, Michael Clark has suggested to add one more condition to the original three to strengthen the force of the third condition. According to him these four conditions will "jointly give the necessary and sufficient conditions for knowing that P".²⁰

His four conditions are as follows:

S knows that P if

- (i) P is true,
- (ii) S believes that P,
- (iii) S is justified in believing that P,
- (iv) S's belief that P is fully grounded.²¹

Consider the following example to determine whether the addition of a further condition helps the definition of knowledge any more.

Suppose that John believes that Bill owns a Ford on the grounds that

his friend Tom had told him yesterday that Bill had always owned a Ford. Tom was a reliable friend and his information was correct. But today, in the morning, Bill sold his Ford and replaced it with a Dodge. An hour later Bill was lucky enough to win a Ford and now he is the owner of two cars. Clearly this example satisfies Clark's condition of 'fully grounded belief'.

It is quite obvious that this is a clear case of knowledge, for it is based on 'fully grounded belief' and yet the fact is that John's belief that Bill has always owned a Ford is correct only because of a lucky coincidence -- that Bill sold his Ford and after an hour he won a Ford in a raffle. This shows that Mr. Clark's definition is still too weak.

A person may have evidence to justify his belief completely, and yet he may fail to be completely justified in believing what he does. Suppose John is a detective and after considerable research comes to believe that Tom had committed a crime. In doing so, let us suppose that he rejected the truthful testimony of a reliable eye-witness to the crime, but accepted the wrong testimony of a clever but ignorant person. Both the eye-witness and the ignorant person testified that Tom had committed the crime. John rejected the former but accepted the latter and thus his belief, though true, was based on incorrect evidence. Can this belief be called justified belief even though the belief has incorrect evidence for its justification?

A person may have evidence to justify his belief completely and his belief is based on correct evidence; yet he may fail to be completely justified in believing what he does. In this case he may be unable, rather say incapable, of providing a line of reasoning to show how his belief is based on that particular evidence. Suppose a detective has a complicated mass of evidence to conclude that John is the murderer and suppose that this is a fact

and that the detective has a firm belief that John is the murderer; and yet he fails to provide a complete line of reasoning to show how he had reached his conclusion that John is the murderer.

The difficulty also arises when the procedure of supplying evidence is examined. My belief 'that P' is justified if there is some other belief 'that S' which supports it. And the belief 'that S' is justified on the grounds of another belief 'that M'. Consider the following conversation:

- "John, what are your grounds for saying that Bill owns a house?"

- "Well, Tom told me."

- "What are your grounds for claiming that Tom knows that Bill owns a house?"

- "He is reliable and honest. He had seen Bill living in his own house."

- "What are your grounds for saying that Tom is a reliable person?"

- "I am his close friend and as far as I remember he has never been unreliable."

- "What are your grounds to believe that your memory is reliable?"

And thus one can go on and on, putting questions that would generate infinite regress. Can such a regress be halted? A natural step is to ask whether all justification has to be of this inferential kind.

In the school situation quite a number of techniques of evidential appraisal are applied. The main educational objective is the achievement of knowledge and in this context what a student has come to learn is most often interpreted as he has come to know. The commonest way for the student to earn his right to 'knowing that' from 'learning that' is to produce adequate evidence. It is equally essential for a teacher to know whether his students have come to know whatever he has taught or in other words whether his teach-

ing has been successful. This desire for the teacher to arrive at a correct assessment of his work with his students naturally leads him to formulate some suitable testing procedure. And this formulation of an adequate procedure for evidential appraisal will differ very widely in varied situations for they involve judgments that may differ from person to person. Outside the school situation in everyday life one has to face many complex situations and one has to be very careful in considering the adequacy of the evidence forwarded in support of knowledge claims.

This question has also reference to time. Suppose John makes a statement about a general principle which was supposed to be supported by certain explanations. Further research in that field shows that the grounds which were once shown to be supporting the general principle were wrong. A more competent and better explanation is now available. Can the old evidence still be regarded as sufficient to justify the proposition about the general principle? We would rather expect John to provide us with the new explanation in place of the old one. The evidence which was considered adequate at a certain time is not adequate now.

This question of adequacy has also reference to the quality of evidence provided. Suppose John has completely memorized the proof of a certain geometrical theorem without fully understanding all the steps involved. When the student is asked whether he knows the theorem he presents the proof correctly. Of course he secures full marks for the correct representation of the proof. The question will be: Does he know the theorem? He is sure that the theorem is true, for it was in the geometry text book and further his teacher's authority had supported his belief in the truth of the theorem. His demonstration in the form of 'accurately written proof' clearly indicates his having

the right to be sure. His imperfect understanding of some of the steps of his proof may perhaps prevent him from arriving at the complete truth of the theorem but one may never know that he did not understand some of the facts. Does he earn his entitlement to the claim of knowledge? The answer is provided in the affirmative by giving him full marks for his accurate demonstration, yet his claim should be rejected on the grounds of the quality of evidence.

So far the cases that point to different standards of evidential appraisal have been considered. We will now turn to the actual definitions and find out whether or not there is one which can cover most of the cases.

Chisholm's Interpretation

In elaborating the evidential condition Chisholm writes:

...S has adequate evidence for h would refer to some mark of evidence. A mark, for any subject S, ...would be, first, some state of condition of S which could be described without using "know" or "perceive" or "evident", or any other epistemic term. It would be, secondly, a state such that S could not be said to make any mistake at any time about his being in that state at that time...And a mark for S, that S has adequate evidence for a proposition or hypothesis h, would be, thirdly, a state or condition such that, whenever S is in that condition, S then has adequate evidence for h.²²

According to Chisholm there is a certain mark which entitles S to possess adequate evidence and that mark is a 'state of condition'. This phrase is quite misleading. In the first place it is required to detect whether or not 'S' is in that 'state of condition' before accepting evidence. How can one detect that 'state of condition' which can be described without using 'know', 'perceive' etc.? When John is asked to give evidence for his claim of knowledge, he thinks for a while, engages himself briefly in the private activity of gathering evidence and then lines up his reasoning in a

logical manner. It appears that he is in some unique state of condition but actually this is *nothing more than a kind of disposition to behave in a particular way*. It is a kind of performance as any other performance is and individuals differ widely in their performances. If it were some special state of condition, it would be unique in its nature and would not be different with different individuals. His second condition is much stronger and it singles out this state of condition as so unique and special as not to be mistaken at any time about S's being in that condition. The third condition is quite trivial for it just states 'S is S'. To be in that condition is to possess sure evidence, or conversely, to possess sure evidence is to be in that 'state of condition'. If this is so, why should one detect that 'state of condition' which is indicative of 'sure evidence'? S having sure evidence is as good as having that 'state of condition'.

Evidence

The term 'adequate evidence' does not cover all the legitimate candidates of knowledge. Suppose in a statement 'John knows that P', 'P' refers to some geometrical theorem. What John is supposed to give to claim his knowledge entitlement is a valid proof of the theorem. If he is able to give valid proof, he knows 'that P'. If he is not able to do so, his claim for knowledge will be rejected. In this case the term 'evidence' is not used at all and yet it is undoubtedly the case of knowledge. In proving that one has knowledge of mathematics, one provides 'valid proof' and not 'evidence'. The form of evidence may rightly be used by a magistrate when he calls upon the defendant to provide adequate evidence for his defence but when mathematicians meet, they rather talk about 'giving proofs' rather than gathering 'evidence'.

The following example is borrowed from Chisholm:

'Every act of charity is right'.

Is it appropriate to use the phrase 'gathering evidence' for ascertaining the truth of the above judgment? When John says, "Every act of charity is right" John will be asked to give reasons for his statement but not some 'evidence', or to indicate the 'state of John's mental condition'.

Knowledge of Feelings

The real difficulty with the use of the term 'evidence' arises with regard to the knowing of feelings and sensations. Suppose John says, "I know that I am very angry." If we want to question John about his private feelings, how shall we go about it? Here the questions of evidence, or proof or reasons do not apply at all. He may not be able to produce any proof or logical reasoning for feeling that way. Strict adherence to the 'evidence condition' will lead to John's losing his claim for knowledge. At the most he can say that he is quite sure that he is angry. And if John's statement about his own feelings is not accepted without adequate evidence, what about John's statement about the feelings of some other person? Can one ever know the thoughts and feelings of other people? If 'knowing the feelings' involves producing adequate evidence, then it can never reach the status of knowledge. And yet it is a fact that other people's feelings are known; for if it were not so, we would not use the term 'knowing that' in ordinary language while successfully communicating with our fellow human beings. It is common experience that people do know their pains and they also sense the feelings of other people. For the sake of providing evidence we do not inspect our minds or other people's minds in order to know their feelings; what we ask instead is

whether or not we or the others are sure about their feelings and pains.

Theoretical possibilities of being fallible in the belief that people are sad or angry or in pain are not completely ruled out. What is important to note is that one can claim knowledge without having 'adequate evidence'. Strict adherence to the 'evidence condition' will disqualify quite a number of cases; namely, those of 'giving proofs', 'giving reasons', 'giving descriptions of symptoms or signs', and 'giving statements covering people's moods and feelings', and so on.

Knowing Involves Giving Authority

J. L. Austin ridicules the idea of having 'adequate evidence' in the following quotation:

To suppose that the question 'How do I know that Tom is angry' is meant to mean 'How do I introspect Tom's feelings?' (because, as we know, that's the sort of thing that knowing is or ought to be), is simply barking our way up the wrong gum tree.²³

Austin's thesis is that if John knows that something is the case, then John cannot be wrong. By this he does not want to attribute infallibility to John for he accepts that human intellect and senses are inherently fallible and delusive and any theory of knowledge which does not accept this liability is bound to deny knowledge. What he asserts is not only that knowledge exists but also that when John claims knowledge by the expression, 'I know that P', John cannot go wrong. The question of evidence does not rise at all for, by saying "I know...", John performs a kind of ritual of binding himself to others, staking all his reputation. Thus, saying "I know that P" involves a claim of authority on John's part to make the assertion 'that P' and this authority adequately covers all the doubts about the validity of John's claim,

leaving no room for evidence, proof, reasons, and so on. Comparing "I know..." with the expression "I promise..." he writes:

When I say "I promise", a new plunge is taken: I have not merely announced my intention, but, by using this formula (performing a ritual), I have bound myself to others, and staked my reputation, in a new way. Similarly, saying, "I know" is taking a new plunge...When I say "I know", I give others my word: *I give others my authority for saying that "S is P".*²⁴

According to him, not to accept the knowledge claim of the speaker is to insult him for it is something like refusing the authority which the speaker wants to pass on. When John says "I am sure that P" we may question him about his sure belief and we may accept 'that P' or reject 'that P' on grounds of validity or on any other adequate grounds. But if he says 'I know that P' there is no room left for further questions, doubts or grounds, for John will back up his claim for knowledge by all the authority he has. Austin has very clearly pointed it out in the following words:

If someone has promised me to do A, then I am entitled to rely on it, and can myself make promises on the strength of it: and so, where someone has said to me "I know", I am entitled to say I KNOW too, at second hand. The right to say "I know" is transmissible, in the sort of way that other authority is transmissible.²⁵

For J. L. Austin the knowledge claim in 'I know that P' assumes the importance and reliability of a pound bill or say a dollar bill which is backed up by the total authority of the state which issues it by saying "I promise to pay the bearer on demand a sum of etc." Thus he dismisses the whole issue of evidence by suggesting that the question 'how do you know that P' is not a question at all in the context of the ordinary use of the term 'know'. The problem now is whether there exists some workable ground between Austin's total rejection of 'well-grounded' evidence and the over-emphasis

given to it by certain other philosophers. Consider Austin's suggestion that "I know" involves authority. A Fakir solemnly declares "I promise to give you the kingdom of heaven." Indeed he is performing a ritualistic act which involves the Fakir's authority to back up his declaration. But is it not common sense to inquire of the Fakir whether or not he has the required authority to promise so. Suppose in a very courageous mood he declares "I promise to give you the kingdom of Hawaii." It is quite legitimate to ask whether he has the authority to do so or whether he was just fooling around. In the same manner if John says, "I know that Jesus will come to have dinner with me this evening", one has a right to ask what right (authority) John has to be so sure about his belief. One may agree with Austin not to ask the question "How do you know?" but this cannot prevent one from asking John about his right to know. In ordinary circumstances people do not question the authority of the Bank of England in issuing a pound bill which solemnly declares to pay the stipulated sum of money to the bearer of the bill on demand, but at the same time it does not prevent the receiver from questioning whether the bank has authority to promise so or, in other words, whether the bank has the right to issue such promissory notes. So even if one accepts Austin's claim (e.g. "When I say 'I know', I give others my word: I give others my authority for saying that 'S is P'.")²⁶ One still has the right to ask whether a person has legitimate authority to give his word or not. And this demand definitely directs the 'giver of the word' to offer sufficient assurance to prove that he has the required authority. If the term 'evidence' is not appropriate then any other appropriate word may be used. The utterance of the proposition "I know that P" by John cannot prevent us from asking him "What right have you to be so sure that P?" The word 'right' as it is used here is very crucial for

it at once accepts Austin's explanation of the verb 'to know' as performative. It is not doubted whether or not John has taken a new plunge by saying "I know". It is not difficult for us to agree to Austin's proposal that John by saying 'I know' has bound himself to others, has given his authority to others and we do not have any intention to undermine John's knowledge about his having this authority. But one is surely entitled to ask whether or not John possesses the right or authority; in other words, whether or not John has earned his right.

To return to the analogy of the pound bill, one may not doubt the promissory note itself, but one is entitled to ask whether or not The Bank of England has legal authority to issue such a promissory note. The Bank may earn this authority in many ways: it may produce evidence, or demonstrate proofs, or show reasons or give brief descriptions of symptoms or signs. This definition is a very comprehensive one which covers almost all the uses of 'knowing' and has also the merit of agreeing with Austin's analysis of the concept of knowing in legal terminology (e.g. "authority", "transfer of titles", "transmissible rights" and so on). Again the phrase 'to earn the right' is a very flexible one. It admits of full consideration of all the circumstances that are relevant to the problem. Legal interpretations vary widely depending on various cases to which they are applied and different situations in which they are made operative. Circumstances may change and this change will certainly call for a change in the standards to earn one's right to be sure. It is quite evident that there cannot be one or two or a number of foolproof standards of earning one's right to be sure to meet all the cases. Thus the question of adequacy is the question of meeting with standards -- but which standards? Can one build satisfactory criteria of con-

structing adequate standards? A. J. Ayer suggests that the building of strict criteria will not yield a very useful definition of the evidence condition:

The right (to be sure) may be earned in various ways; but even if one could give a complete description of them it would be a mistake to try to build it into the definition of knowledge, just as it would be a mistake to incorporate our actual standards of goodness into a definition of good.²⁷

This explanation of the evidence condition has the advantage of keeping the door open for multiple interpretations and its acceptance does not bind anyone in earning one's right to be sure in a particular fashion.

FOOTNOTES

1. A. J. Ayer, The Problem of Knowledge, (Middlesex: Penguin Books Ltd., 1966) p. 35.
2. R. M. Chisholm, Perceiving, (New York: Cornell University Press, 1966) p. 16.
3. David Rynin, "Knowledge, Sensation, and Certainty" in Epistemology-New Essays in the Theory of Knowledge, ed. Avrum Stroll, (New York: Harper and Row Publishers, 1967) pp. 8-9.
4. H. W. Burns and C. J. Brauner, Philosophy of Education, (New York: The Ronald Press Company, 1962) p. 79.
5. *Ibid.*, p. 81.
6. Bertrand Russell, An Inquiry Into Meaning and Truth, (Middlesex, England: Penguin Books Ltd., Harmondsworth, 1965) pp. 125-126.
7. Russell defines 'Perceptive premiss' as "as 'perceptive premiss' may be defined as a belief caused, as immediately as possible, by a percept."
Ibid., p. 128.
8. By 'memory premiss' Russell means a premiss containing information from memory.
Ibid., p. 129.
9. David Hume, Enquiry Concerning Human Understanding, Section IV, Part II as quoted by I. Scheffler in Conditions of Knowledge, (Chicago: Scott, Foresman and Company, 1965) p. 34.
10. C. I. Lewis, An Analysis of Knowledge and Valuation, (La Salle, Ill.: The Open Court Publishing Company, 1946) p. 180.
11. R. Carnap, "Testability and Meaning", in Philosophy of Science, III, (London: Routledge & Kegan Paul Ltd., 1936) p. 245.
12. A. J. Ayer, Language, Truth and Logic, (New York: Dover Publication, 1963) p. 91.
13. G. E. Moore, Knowledge and Certainty, (New York: Penguin Books, 1956) p. 77.
14. A. J. Ayer, Language, Truth and Logic, op. cit., p. 79.
15. *Ibid.*
16. *Ibid.*, p. 80.

17. J. L. Austin, "Other Minds" in Philosophical Papers, (Oxford: Oxford University Press, 1961) p. 67.
This paper was originally published in Supplementary Proceedings of the Aristotelian Society, (Vol. 20, 1946).
18. Gilbert H. Ryle, The Concept of Mind, (London: Hutchinson House, 1949).
This discussion is found in pages 130-135 and 150-153.
19. *Ibid.*
20. Michael Clark, "Knowledge and Grounds" in Analysis, (Vol. 24, 1963-64) p. 47.
21. *Ibid.*
22. R. M. Chisholm, Perceiving, (New York: Cornell University Press, Ithaca, 1966) p. 67.
23. J. L. Austin, "Other Minds" in Philosophical Papers, p. 84.
24. *Ibid.*, p. 67.
25. *Ibid.*, p. 68.
26. J. L. Austin, "Other Minds", op. cit., p. 67.
27. A. J. Ayer, The Problem of Knowledge, op. cit., p. 35.

CHAPTER III

KNOWING, LEARNING AND TEACHING

After having dealt with the wide range of the everyday uses of 'knowing' in Chapter I, the logical and pedagogical distinctions between different types of knowledge were considered in detail. That the case of 'knowing that' has figured most prominently not only in educational context but also in classical discussions in epistemology was asserted. In Chapter II the epistemological implications of 'knowing that' were brought into sharper focus. Attempts to relate the discussion to the educational context wherever possible were made but the main emphasis was on the consideration of formal epistemology. As the aim is to deal with epistemological considerations from the perspective of education, attention is now directed to problems relevant to school situations. This entails examination of general connections between knowing, teaching, and learning.

'Knowing' and 'Learning'

'Knowing' and 'learning' seem to be so closely related that the terms are employed interchangeably on many occasions. This may be because both terms to some extent represent a certain outcome, a certain goal integral to teaching. The following conversation between a teacher and a principal will illustrate this point.

Principal: John, did you teach them (students) the properties of solids on Monday in the third period at 10:30 a.m. as shown in your lesson notes?

John: Yes, Sir, I taught them solids last Monday as specified in my program book.

- Principal: No, John, I cannot believe that. They know nothing about solids. I asked them questions in your presence, and you have seen that they haven't learned anything about it.
- John: Sir, I am sure, I taught them the properties of solids.
- Principal: Whatever you may say, they seem to have no knowledge about solids. We will decide the question whether you have taught or not later on, but it is certain that no learning has taken place.

The use of the underlined terms, 'know', 'learned', 'knowledge' and 'learning' indicate the interchangeability of the use of knowing and learning in ordinary educational discourse. To suggest that what one has learned one may not know is strange to many. People do so: "He is a man of knowledge", or "He is a man of learning", or "A little learning is a dangerous thing". Most people take for granted that teaching results in learning or in other words knowing. The terms 'learning' and 'knowing' seem to be related to teaching in the same manner. Consequently, an examination of the relationship between the terms 'knowing' and 'learning' prior to a discussion of teaching is indicated.

Does 'learning that' imply 'knowing that'? If a student has learned that Columbus discovered America, normally it is supposed that the student has come to know that Columbus discovered America. If we examine Jerome Bruner's ideas on 'knowing', we will find that the implication of knowing is strongly suggested in learning. Bruner thinks that 'knowing' implies a model-building procedure. Its structure is subject to review, revision, change and even complete replacement by another model. His formulation of knowing as a model helps the learner in getting at it in an organized way. Once a student has become familiar with the methodology of getting at one model, he can move from one structure to another with great ease. His model of knowing is not

something that is permanent or infinite. It perpetually undergoes modifications. These modifications which indicate the development of a learner's higher cognitive processes are the bases of new structures or models of knowing. Thus knowing is identified with the *process of developing cognition* which is *learning*. He writes:

I shall operate on the assumption that discovery, whether by a school boy going in his own way or by a scientist cultivating the growing edge of his field, is in its essence a matter of rearranging or transforming evidence in such a way that one is enabled to go beyond the evidence so reassembled to new insights.¹

According to Bruner, knowing is discovering or reassembling the evidence to new insights. This description is applicable to learning which is nothing else than discovering or knowing. The following paragraph makes this point quite clear.

Emphasis on discovery in learning has precisely the effect on the learner of leading him to be a constructionist, to organize what he is encountering in a manner not only designed to discover regularity and relatedness but also to avoid the kind of information drift that fails to keep account of the uses to which information might have to be put. Emphasis on discovery indeed, helps the child to learn the varieties of problem solving, of transforming information for better use, helps him to learn how to go about the very task of learning.²

For Bruner, knowing is the process of discovering or learning which leads the learner to new constructs or new organized systems of insights. The young learner (or knower) must discover new models of 'knowing' through the process of learning which is often dependent upon guessing, intuiting, problem solving and inquiry. The question whether or not learning is a process should be considered first. In this respect it will be interesting to examine the distinction between activities and processes. Castell has made an attempt to distinguish activities from processes:

You can illustrate the distinction between activity and process by contrasting the scientific behaviour of an astronomer with the non-scientific behaviour of the solar system, or the behaviour of his brain and nervous system. His (astronomer's) behaviour is activity. Their behaviour is process. For example, activity is fallible, purposive, critical, experimental, reasoned, responsible; whereas process is none of these. You cannot say that the behaviour of the solar system, is fallible, or purposive, or critical or experimental, or reasoned, or responsible; whereas you must say these things about the behaviour of the astronomer when he is astronomizing.³

Learning is something that is performed by a person and not something that happens to him. To think that someone is learning normally indicates that he is engaged in an activity of learning rather than caught up in a process similar to that of the nervous system. Learning implies trying or some kind of effort and care and even intention to bring about something that represents success. Consider the activities of students engaged in the task of learning. Even a young child while learning how to walk or how to talk follows some sort of 'trial and error' technique. When one is sleeping or sitting in an armchair engrossed in morbid thoughts of committing suicide, one is definitely not learning. Mental faculties must be organized to carry out certain activities which bear a generic name of learning. Suppose John wants to learn that something is the case. He occupies himself in activities which enable him to master that particular fact of history or certain steps of a geometric theorem. Thus learning is performing some activity. This performance is purposive and is quite fallible. One may work hard for, say, half an hour and yet may fail to learn. We speak of so-called 'unintentional learning' in which the learner brings about a certain kind of learning. For example, a child learns to recognize his parents or his parents' friends without making an apparent effort. A student learns certain mannerisms of his teacher without being aware of his intention or the effort he has put into

learning them. The point that the child and the student do not remember putting forth effort or having any intention cannot be used to conclude that they had not undertaken any effort or had no intention. Learning involves performance of some kind of activity for some purpose. John learns English to be able to express his thoughts in English. John learns how to swim so that he may not get drowned. John learns that something is the case to pass the examination, or get a better job, win a prize or look more respectable in the eyes of his fellow men. All these examples clearly indicate the implications of intentions involved in learning. To common sense a learner means a person who follows certain activities to achieve specific goals. In other words 'learning' as it is used in ordinary language strongly implies a sense of activity rather than a process in which the learner is unconsciously caught up.

Secondly, most tests of learning in educational contexts are devised to see whether or not someone has acquired whatever was supposed to be learned. If the student can perform such activities so as to give adequate proof of learning, the learning will be called successful; otherwise it will be said that he has failed to learn that something is the case.

Against this Israel Scheffler argues in the following terms:

To say of a child that he is learning to walk, that he is learning several new words every day, that he is learning how to conduct himself socially, that he is learning to express himself well in speech, does not in itself normally convey that he is trying to accomplish these things. It does not even convey that he is engaged or occupied in them, in the sense of thinking of what is going on, focussing his attention, and acting with care. Learning it might be thus said is not an activity but rather more nearly a process.⁴

Consider the example of a child learning to walk. The child surely focusses his attention and acts carefully when he is trying to learn walking.

One would be blind if one does not find the child learning something

new without being occupied or engaged in trying to learn it. Can a child get at the meaning of a new word without being occupied in learning it in the sense of thinking what is going on? It is common experience that the child focusses his full attention whenever he is faced with a new situation. When a child happens to see a new face, it is often observed that he looks at it with all the attention possible, rather gazes at it without even blinking. If children did not think about what was going on, they would not learn anything. Scheffler⁵ has not elaborated on this issue and he has not given any supporting evidence to prove his statements in the above paragraph. It is difficult to accept his statement that learning is a process and not an activity on the basis of the example he has given. On the contrary, the very example of a child learning a new word or learning how to walk shows that the child is engaged in an activity which is commonly termed in ordinary language as the learning activity. Learning is often described as "getting to know", which indicates that (carefully note the words "getting to") it is a kind of activity of which knowing may be the possible outcome. It is perfectly alright if John answers, "I have been learning new words from a book 'Spell-Well' all this morning" as a response to a question, "John, what have you been doing all this morning?" Thus, learning expresses continued activity spread over an extended period of time.

Attention can now be turned to the question raised during the discussion about 'knowing' and 'learning' viewed as logically similar concepts. It is shown above that learning is an activity whereas 'knowing' is an achievement. This explanation should clear the confusion often created by the mistaken interpretation of knowing as learning. To say, "We learn so that we may know" is not the same as to say, "We know what we learn". In the first sen-

tence it is asserted that knowledge may be the outcome of learning, but in the second it is implied that wherever there is learning, there is knowledge, which is at once false. For example, John may have learned the names of the rivers of China but he does not remember them and so John does not know the names of the rivers of China. Suppose John learned the multiplication tables only yesterday but he is unable to repeat them now. This means that though he had pursued the activity of learning, it has failed to bring about knowledge. We can consider some more examples to show that all the cases of learning do not necessarily attain the status of knowledge. John has learned what in the Anglo-American world are considered to be the causes of the Second World War. He has learned them so well that he can repeat them and even teach them to his students. But the fact is that he does not believe them to be the real causes of the War. In this case John can be credited with learning, but not with knowledge for the 'belief condition' is not fulfilled. In another example John has learned something which he is not able to support with adequate evidence. In that case he does not earn the right to be sure and therefore cannot claim knowledge. It is really erroneous to identify 'learning' with 'knowing' for that will promote serious ambiguity in educational discourse. On this point Marcus Brown says:

It is not necessary for me to know that Columbus discovered America in order to have learned that he did. I can, as we have seen, believe that Columbus discovered America without knowing that he did. Indeed, I wish to maintain that the proposition "I have learned that Columbus discovered America but I do not believe that he did" is not (necessarily) a self-contradictory assertion. Neither belief that "Columbus discovered America" is true nor knowledge that it is true is, on my view, a prerequisite to having learned that Columbus discovered America.⁶

Further examination of the uses of the terms 'knowing' and 'learning' in ordinary language reveals further distinctions. The use of 'learning to be'

is quite common in ordinary language but it is not so with that of 'knowing to be'. For example, one can say "John has learned to be an honest man or a cheat" but one cannot say "John knows to be an honest man or a cheat". Here John's learning has something to do with his behaviour or conduct. It implies doing and further correct management of his doing, and not believing some new knowledge. 'John has learned to be an honest man' or 'a graceful speaker' implies that he is undertaking this activity of learning with a certain intention (e.g. to be graceful) whereas 'knowing' is not intentional. John is not following this activity unwittingly or compulsively; rather he is fully aware of what he is doing and what its outcome will be. His activity will lead to the establishment of a new habit or a new pattern of behaviour which would dispose John to behave in certain ways. Knowledge of honest behaviour does not necessarily commit John to act honestly. One cannot reduce 'John has learned to be an honest person' to 'John knows what honesty is'.

In ordinary language we also use the expression 'learning to' as in 'John has learned to walk or to talk or to ride a horse or to count or to sing' but not the expression 'knowing to'. However, 'John knows how to talk or how to swim or how to sing', indicates John's acquisition of proficiency in some skill which is quite different from 'John has learned to sing' which means that he is engaged in some *suitable activities that indicate that he has learned* 'to sing'. 'John knows how to sing' presupposes that John already has learned this particular art and has acquired proficiency. The sentence 'John is learning to sign or play a particular game' indicates that he has not acquired proficiency in the performance of any of these skills.

'Learning to' is also used in ordinary language to indicate the attainment of some abstract quality as in 'John has learned to appreciate or to

understand some work of art'. One can 'learn to understand' the difficulties of solving a certain problem or performing some difficult trick but one cannot 'know to understand' that something is the case.

The above analysis shows that there are important logical differences between 'learning' and 'knowing', but it must not lead one to believe that 'learning' is never related to 'knowing'. It is often found that a prolonged activity of learning systematically carried out may result in knowing. A child engaged in the activity of learning a particular subject or a fact for a period of time comes to know that subject or the fact. Consider the example of scientists who are investigating the nature of the soil of the moon. Suppose John makes a statement on behalf of the scientists: "Scientists, after thorough investigation, have learned that the soil of the moon is three billion years old." The scientists will certainly be able to support their claim of knowledge by supplying appropriate evidence. Here the question of belief of the scientists in the truth of their statement may be sighted as a doubtful presumption. This objection can be met by saying that evidence in favour of the scientists' belief in the truth of their own statement is quite strong. In such cases 'learning that' will imply that the scientists not only believe that something is the case but also that they are justified in believing so. It is safe to conclude that, though 'learning that' does sometimes come up to the standard of 'knowing that', it is a mistake to think that 'learning that' implies 'knowing that' at all times. ^{Practice} Again the range of the uses of 'learning' is larger than the range of the uses of 'knowing', for we have seen above that there are several uses of 'learning' such as 'learning to be' and 'learning to' which do not correspond to 'knowing to be' and 'knowing to'.

TEACHING

Having examined 'knowing' and 'learning', we shall now attend to the concept of teaching which is a central pedagogical concept. The main aim in the examination of the concept is neither to report, describe or classify what teachers do when they are supposed to be teaching in the classroom, nor to describe how teaching is carried out in the classrooms. It is rather to report the common understanding of the meaning of teaching or to examine the conditions under which the term 'teaching' is applicable. The strategy will be to press for revealing distinctions between the concepts of 'teaching' and 'learning'. It should be clearly noted that the aim is not to find out the one real meaning of teaching which would fit the formula that teaching really means X and nothing else. The process is more complex than simply finding out a linguistic substitute for 'teaching'.

Empirical Investigations and Teaching

It is sometimes argued that teaching is not 'merely teaching' but it is teaching something to someone. If 'teaching something' is a measurable quantity then one can arrive at some criteria about successful teaching. This line of argument has given great encouragement to all sorts of empirical investigations. But it disregards the multi-dimensional nature of 'success'. There appear to be as many different kinds of effectiveness as there are different kinds of teachers, pupils, subjects and situations. No one specific measure of success can be built into the concept of teaching. An effective teacher of one subject is not necessarily an effective teacher of another sub-

ject. Again, an effective teacher of one subject may not be equally effective with students of different age groups or in different situations even though he is teaching the same subject throughout. Again, pupils' achievement can take place at various levels and no general measure can be devised to account for the measurement of different kinds of achievement. It is a mistake to think that empirical investigations can yield useful criteria for teaching. This kind of thinking presupposes that teaching is always 'successful teaching'. If one has not achieved any success in one's teaching, one has not taught at all, for measuring teaching from this point of view is measuring its success and nothing else. But what about the use of 'teaching' which does not imply success? Suppose John is standing before his students and is engaged in various activities. Tom who is standing near John's class is asked, "What is John doing?" Tom will instantly answer, "John is teaching." Tom does not make sure whether the students achieve something before answering that way. For Tom it is sufficient to see John operating in a certain context to pronounce the statement that John is teaching. He makes no reference whatsoever to success. Consider another example of a principal of an elementary school who makes the statements: "John teaches in his school" and "John is a very successful teacher." The last word 'successful' definitely adds some more information to 'teaching'. So it is erroneous to think that 'teaching' is always successful. 'Teaching' and 'success' are two different concepts and this realization should at once put an end to the argument that the measure of success in teaching is the measure of 'teaching'. It is obviously a mistake to pursue empirical investigations about successful or effective teaching in order to arrive at some criteria for the concept of teaching. What constitutes teaching is not an empirical question and any definition of teaching

based on empirical grounds will erroneously involve considerations of success or effectiveness or some such notion as part of the concept of teaching.

Another example of the definition of 'teaching' may be considered here. Scheffler seems to think that he has a very clear idea of the concept of teaching. He writes:

The notion of "teaching", unlike "learning", has, typically, intentional as well as success uses... To say of someone that he is teaching conveys normally that he is engaged in an activity, rather than caught up in a process. It is to imply contextually that what he is doing is directed toward a goal and involves intention and care. He is, in short, trying, and what he is trying to bring about represents success in the activity, rather than simply the end state of a process.⁷

Thus he separates the success use of the term teaching from its intentional use. Scheffler's success use implies learning while the intentional use has learning as its goal. Unless what one does is done in the attempt to get John to learn, one cannot be said to be teaching. Thus teaching is a kind of activity aiming at learning. But all efforts to achieve learning are not to be regarded as teaching. Scheffler warns:

Furthermore, we must not suppose that teaching can be reduced to trying to achieve someone's coming to believe something. One may try to propagate a belief in numerous ways other than teaching--for example, through deception, insinuation, advertising, hypnosis, propaganda, indoctrination, threats, bribery, and force.⁸

After separating 'teaching' from all other kinds of goal-seeking activities aimed at effective learning, he further qualifies 'teaching' by relating it to rational explanation and critical dialogue. He thinks that teaching in the success sense implies not only 'learning' but also 'knowing'. He thinks that the teacher while teaching, reveals his reasons for a particular belief which he wants to transfer to his students and this develops his students' power of critical thinking through dialogue. This is clearly pointed out in the following paragraph:

Teaching, it might be said, involves trying to bring about learning under severe restrictions of manner--that is to say, within the limitations imposed by the framework of rational discussion. Since teaching that Q presupposes that the teacher takes "Q" to be true (or at least within the legitimate range of truth approximation allowable for purposes of pedagogical simplification and facilitation) and since the activity of teaching appeals to the free rational judgment of the student, we might say that the teacher is trying to bring about knowledge, in the strong sense earlier discussed. For the presumption is that a person who is encouraged to form his beliefs through free rational methods is likely to be in a position to provide proper backing for them. The teacher does not strive merely to get the student to learn that Q, but also to get him to learn it in such a way as to know it--i.e. to be able to support it properly.⁹

Scheffler proceeds by first stating that 'teaching that Q' presupposes that the teacher takes 'that Q' to be true. Is this a statement of fact or is it Scheffler's stipulation? If a teacher wants to proceed with his activity of teaching, is it quite necessary for him to take the subject matter which he wants to teach to be true? It is quite obvious that it is not true in the case of every teacher. Sometimes a teacher may not believe in the truth of what he teaches and yet he may be carrying out his duties as a teacher by employing all the required teaching devices available. For example, a teacher may not believe that there is a God as described in the Bible and yet he may be described as teaching that there is a God to his students in the period assigned for the Bible reading. If anyone asked him about what he was doing, he would answer that he was teaching the Biblical knowledge to his students. I remember my old geography teacher who taught that the earth is round by providing all the necessary proofs but he confessed that he did not believe in them. And this can happen with many a teacher but it would be wrong to say that such teachers did not teach in the strict sense of the term. Israel Scheffler would argue that such teachers, as a matter of fact, did not teach but followed a sort of routine laid down by the administration, for teaching

in that manner will not lead students to knowledge. He has reduced teaching to some special kind of activity, some special kind of striving under "severe restrictions of manner" which disregards several cases of its use in ordinary language. 'Bible teaching' in the above example won't be called 'teaching' according to this definition. This is a clear attempt to change the meaning of 'teaching' or promoting an ideal under the guise of analysing a concept. According to Scheffler, any activity that smacks of suggestion, persuasion, propaganda, preaching or counselling and so on is a non-teaching activity. But a class situation where a series of activities are carried out makes it very difficult to separate Scheffler's teaching activities from non-teaching ones. Persuading, explaining and reporting an event go along with preaching, reasoning and emphasizing. Even while reporting an event the teacher by stressing this word or that may be passing on his judgments and his values and thus clearly persuading or, in stronger terms, brain-washing his students. How can one make teaching entirely free from suggesting or persuading?

Any activity that is devoid of rational explanation cannot lead to knowledge and, according to Scheffler's definition, is not teaching. The teacher's personality always exercises some influence on the students and his methods of dealing with the students and his way of guiding discussions cannot strictly be separated from his activity of teaching. How can one make his teaching entirely free from suggestion? If successful teaching is described as trying to achieve someone's coming to believe something and know something, how can anyone guarantee that such teaching can be entirely free from either suggestion and persuasion? What Scheffler tries to do by giving such a definition is to attempt a change in the meaning of the word 'teaching'. By ascribing knowledge (i.e. "rational explanation, critical dialogue, giving

reasons and welcoming questions")¹⁰ to teaching, he overlooks the simple fact that every teaching act does not lead to knowledge.

Scheffler points out that 'teaching' is an activity, and it is properly applicable only when the teacher is seen striving to achieve some end. But suppose that John who is a great artist is completely absorbed in making his painting and a student of his enters the place where John is doing his work and quietly watches what his master is doing. He knows that John does not like to be disturbed and so quietly learns some of the finer points of making a picture. At a later date if the student says that it was John who taught him those finer tricks of the trade he will be perfectly understood and one would not say that he had used the term 'taught' in a wrong sense. Here John is not shown "trying to teach" his student and yet in ordinary language people would say that he has taught his student. Is such a use of 'teaching' out of place? Scheffler's definition will not cover this kind of use of the term 'teaching' on the grounds that John did not do anything with the intention of teaching painting to his student. Scheffler's definition does not take into account the part played by contextual qualifications. The meaning of John's teaching art to his student in this case depends upon the context and such unintentional teaching must be regarded as a true candidate for teaching and should be covered by the definition. It may be further argued that John as an art teacher believes in this particular method of teaching art which he, from his own experience, has discovered to be very effective. He does not talk with his pupils at all when he teaches art to his pupils. He does not lead his pupils to any kind of discussion, critical dialogue, giving reasons or welcoming questions. This method does not allow any of these and yet it is a genuine candidate for teaching. Another case of teaching children to exper-

ience and enjoy poetry should be considered. Teaching to experience and enjoy poetry is hardly a matter of giving reasons and encouraging dialogue. The children are simply to be led to experience the poetry and are not to be goaded by the teacher's discourse. It may be that some children may disagree with the teacher and may not enjoy that particular piece of poetry. But he believes that his teaching technique demands that he should not enter into any sort of rational explanation or critical dialogue and that he is perfectly within his rights while teaching the poem not to involve himself or his students into any of these activities which are described as teaching activities. It appears that to Scheffler who is an educational philosopher that the idea of teaching philosophy to university students weighs more than teaching art and/or poetry, or teaching to younger children. One cannot teach in Scheffler's terms to very young pupils who will not be able to grasp rational explanations or employ critical thinking. Scheffler chases away from the field of his ideal teaching not only those who attempt to brainwash their students or indoctrinate them but also those who teach certain subjects which do not naturally yield to discussion and reasoning as well as those who teach very young children or who follow certain teaching techniques.

It seems that Scheffler is advancing an ideal which could be followed with difficulty even in schools with a democratic set-up. His stipulation of stricter conditions under which the term 'teaching' should be used clearly indicates that he has succumbed to the temptation of promoting an ideal. He is not reporting to us what teaching means but telling us what teaching should really mean. We can consider another example which will surely not be covered by Scheffler's stipulation. Suppose John teaches Tom some scientific generalization - say, for example, wood is a bad conductor of heat. John has

not enough time to carry out the whole operation of teaching this scientific fact by getting the student to perform various experiments. John does not even intend to try to get his student to believe the generalization, much less to know it. His main purpose is to prepare Tom for his examination and he would do only that which is quite essential for his student to pass the examination. John here does not care to know whether or not his student has come to know that wood is a bad conductor of heat. His main concern is to see that his student should know how to handle the examination questions relating to the particular topic. How does this example fare against Scheffler's Thesis of "severe restrictions of manner"? This kind of teaching does not lead students to free rational judgment. The teacher's activities in this particular case cannot be described as teaching activities for it is presumed that a person who is encouraged to form his beliefs through free rational methods is likely to be in a position to provide adequate evidence for holding his beliefs. Here the student will be in no way qualified to say that he has acquired knowledge for he will not be able to back up the acquired belief with adequate evidence. If Scheffler thinks that "teaching that Q involves knowing that Q"¹¹ then how should the activities of John be characterized who in this case taught his student that wood is a bad conductor of heat?

Scheffler has pointed out more than once that teaching acts are intentional acts and his further elaboration leads one to believe unmistakably that such acts must be carried out in such a way as to bring about 'learning that' and 'knowing that'. It seems that Scheffler is unconsciously mixing up two questions: What are teaching acts? How should one carry out such teaching acts? It is quite simple to accept that teaching acts are intentional acts. When he goes further to suggest that "teaching involves trying to bring about

knowledge under severe restrictions of *manner*",¹² he is answering the question: How should teaching be carried out? Such an imposition of a certain kind of "manner" on teaching creates further difficulties. The method of teaching generally depends on the kind of intention one has in following a certain activity. If the teaching activity is intended to bring about a certain facility in the reproduction of learned facts, the teacher may follow a manner which would involve encouraging the student to repeat his performance several times to achieve the required facility. It will be a poor definition of teaching if it does not cover this kind of activity of the teacher who makes his student repeat his performance several times. One fails to understand why one should moralise and say that teaching, to be called real teaching, should be carried out only in such and such a manner when answering the question, "What is teaching?" The suggestion to exclude value considerations from the concept of teaching is put forth not because they are unimportant or irrelevant to teaching, but only because they do not answer the question: 'What is teaching?' Instead of restricting himself to the task of answering the question, 'What is teaching?' Scheffler got involved in stipulating a method in which teaching should be carried out in democratic countries. It is methodology that has become all important and so instead of answering 'What' he has gone round about and answered 'How'. His emphasis on "severe restrictions of manner" leads one to think that what Scheffler is doing is related more to pedagogical methodology rather than to philosophical analysis.

Scheffler imposes severe restrictions on teaching and at the same time he tries to free teaching from learning. His argument will be spelled out in the following manner:

- (1) Teaching acts are intentional.
- (2) These intentions are to bring about learning and furthermore knowing.
- (3) Because of these intentions the teaching activities should be performed in a certain manner.
- (4) Whether or not learning takes place is immaterial.

Consider the third condition. It suggests that any activity to earn the title of teaching must follow a certain manner. Methodology is goal oriented and its justification lies in its achieving a goal. Methodology that fails to achieve a fixed goal is quickly repudiated. If a teacher following a certain method fails to achieve his goal, he is likely to say that though he seemed to be teaching he was not actually teaching. If the emphasis is placed on the methodology, teaching becomes goal oriented. Teaching which does not achieve its goal is not teaching in the strict sense of the term. If teaching acts are to be considered distinct from their outcome we must exclude the consideration of methodology from the concept of teaching.

Teaching and Learning

B. O. Smith, in his worry to separate teaching from learning, has heavily leaned on Gilbert Ryle's analysis of verbs. Gilbert Ryle has not explicitly analysed the concepts of learning and teaching, but he has pointed out distinctions between achievement verbs and task verbs. Achievements are not acts or operations whereas tasks are a way of being occupied, a kind of performance which has a certain outcome. According to him, achievement is just one piece of activity with a certain upshot. Ryle says:

But perception verbs cannot, like search verbs be qualified by such adverbs as 'successfully', 'in vain', 'methodically', 'inefficiently', 'laboriously', 'lazily', 'rapidly' ... They do not stand for performances, or ways of being occupied; *a fortiori* they do not stand for secret performances, or ways or being privily occupied. To put it crudely, they belong not to the vocabulary of the player, but to the vocabulary of the referee. They are not tryings, but things got by trying or by luck.¹³

Smith has extended this analysis to the examination of teaching and learning by assigning the task role to the former and achievement role to the latter. He thinks that teaching signifies proceedings between two or more individuals involving some sort of deliberation with adjustments of mutual claims in expectation that some result will issue. This description resembles to some extent John Dewey's explanation of the relation between teaching and learning in terms of buying and selling. John Dewey writes:

Teaching may be compared to selling commodities. No one can sell unless someone buys. We should ridicule a merchant who said that he had sold a great many goods although no one had bought any. But perhaps there are teachers who think that they have done a good day's teaching irrespective of what pupils have learned. There is the same exact equation between teaching and learning that there is between selling and buying.¹⁴

Smith accepts this analogy only so far as it points to the interaction between the teacher's performance of the teaching activity and the active endeavour of the pupils. He detects the obvious mistake in this equation and points out that selling entails buying whereas teaching does not seem to entail learning. Instead of this he turns to the distinction which Ryle made between task words and achievement or success words. Learning is classed by him as an achievement word to the parallel task word teaching. He remarks:

Achievement words signify occurrences or episodes. ...On the other hand, task verbs always signify some sort of activity or extended proceedings... We may treat a patient skillfully or unskillfully, but the restoring of health is neither skill-

ful nor unskillful. It makes sense to say that we teach unsuccessfully. But it is self-contradictory to say we learned French unsuccessfully.¹⁵

This explanation seems to be logically true. But we should also consider whether it is adequate to describe it as a contradiction in other contexts. It can very well happen in the case of a student who learns French for the sake of passing an examination. Several examples of unsuccessful learning can be pointed out in an examination-oriented school situation. We hear people saying, "He has passed the examination but he has learned nothing." Secondly, he has argued that 'teaching' and 'learning' are like "treating" a patient and the resultant "cure". The patient is cured although he remains quite passive. Can the student be taught if he remains inactive? It is pointed out that learning is the possible outcome of teaching just as the cure is the outcome of a doctor's treatment. But this is not the case, for the student has to remain equally active if 'learning' is to be the outcome. In this respect Paul Komisar's criticism of Smith's Thesis is relevant. Komisar points out three levels at which the term 'teaching' is used in ordinary language:

- (1) Teaching names an occupation or an activity habitually, characteristically engaged in.
- (2) Teaching refers to a general enterprise, some activity being engaged in.
- (3) Teaching characterizes an act or alludes to an act as being of a certain sort (belonging to a certain enterprise of teaching).¹⁶

Komisar's analysis shows that 'teaching' is "characteristically accommodating"¹⁷ and his aim is to point out various distinctions that show up in the use of this concept and ultimately to arrive at the most exclusive and precise "definition that succeeds in distinguishing teaching from those acts or

activities which stand in contrast to it at the various levels".¹⁸ At the occupational level teaching includes standard institutional practices such as lectures, correction of assignments and other schooling tasks. At the enterprise level teaching is viewed as an end-chasing performance with learning as the final goal. At this level teaching includes activities such as indoctrinating, preaching, training, and so on. The sense of 'teaching' at this level is not the most distinctive or exclusive sense of the term and it is intentional with 'learning' as a goal. But at the act level learning is not the goal of teaching. Komisar says:

.... as we become more strict regarding what is to count as teaching, the less it is the case that learning is the goal of the game, and more it is likely that teaching does imply the achievement of that which is the goal.¹⁹

He thinks that it is a mistake to suppose that all teaching acts (at the act level) have one type of outcome and therefore to say that teaching entails learning or does not entail learning is meaningless, for learning is not intended at that level. For example, in proving or demonstrating something one may succeed in one's aim though the point proved or demonstrated may be promptly forgotten by the student. In this case, he argues that learning has not occurred for learning was not at all intended. Teaching acts at the act level do not have one universal intention. Komisar points out that:

It strikes me that variety rather than uniformity characterizes act-goals.

... But the point about variety is not one to be strict about. If we *must* have a single expression to impose unity on these outcomes, then the best I can draw from a deprived imagination is 'awareness'. It doesn't cover very well the differences between, for example, seeing a solution and perceiving a fact, but it makes a brief final summary statement possible: *it is not some kind of learning but some form of awareness which is the intended upshot in the teaching acts under discussion.*²⁰

At the act level learning is not at all intended; and so the question

of the entailment of learning need not arise at all. But at the same time Komisar emphasizes in most certain terms that if not learning, teaching acts do have a variety of goals and they are so built in within the concept that teaching entails them. The new position may be described as follows:

- (1) 'Teaching' at the occupational level describes some kind of occupation which calls for a certain goal which is commonly named in ordinary language as learning. It is common experience that this goal may or may not be achieved. In other words teaching does not entail learning.
- (2) 'Teaching' at the enterprise level has also some goal in view which is commonly known as learning. It is common experience that this goal may or may not be achieved. Therefore at this level also teaching does not entail learning.
- (3) Teaching at the act level does not have learning as the goal and so here too teaching does not at all entail learning.
- (4) Ergo in NO CASE TEACHING ENTAILS LEARNING.

It appears that Komisar has arrived at the same conclusion as Smith and Scheffler. Where then lies the criticism? It lies in Komisar's emphasis on the point that (at the act level) though teaching acts do not entail learning, they do entail something which may be called "awareness". In other words, he wants to make it clear that if one arrives at the "*most exclusive and precise*"²¹ meaning of teaching, then awareness is the intended upshot. He thus affirms that teaching entails awareness. And from Komisar's point of view this is the most important issue. Awareness of what is taught is present all along the way the activity of teaching is pursued. The student is led through a maze by the teacher and as he passes along the path full of twists and turns, of course, he is quite aware of the way he is led along. The student may not be able to repeat his performance for lack of practice but he is fully convinced of the fact that he is led out of the maze by his

teacher. He has caught the point or he is aware of the experience he has passed through and according to Komisar's view it is the awareness that is entailed by teaching. One cannot separate the sense of being aware of what is taught from the teaching act. Suppose John wants to show Tom that the sum of three angles of a triangle is equal to two right angles. John leads Tom by an interesting logical staircase, step by step, to the final point where Tom sees for himself that the sum of three angles of a triangle is equal to two right angles. According to Komisar, the purpose of John in this case was just to make Tom aware of a certain logical relationship. "Being aware of the situation" or "seeing the point" is a necessary condition but not sufficient for one to be entitled to claim 'learning'.

Both Komisar and Smith accept that teaching is an intentional activity. They also agree that teaching is procedural though Komisar does not use this term. Since Komisar uses the term "teaching acts" (i.e. more than one single act) and that there can be some kind of relationship between these acts, it is safe to conclude that he conceives teaching as procedural, meaning thereby a number of teaching acts arranged in some kind of sequence. So far they agree. The difference in their standpoints refers to the question of entailment of learning in teaching. For Smith learning is an achievement and teaching may or may not succeed in bringing it about. In short, Smith thinks that learning is not built within the concept of teaching. For Komisar, on the other hand, learning is not the aim of teaching at the act level and so, it is no wonder that learning is not entailed by teaching. But he is not prepared to say that 'teaching' entails nothing at all. He rather argues that awareness is the logical consequence of 'teaching'. Komisar is right when he says that teaching involves some kind of signifi-

cant consequence. He suggests that awareness is the consequence. He thinks that awareness may be the umbrella term which covers up phrases like 'proving to the student', 'getting the student to grasp the proof', 'making the student aware of the point', and so on. Komisar admits that the term 'awareness' seems inadequate but he does not suggest any other more suitable term to cover that which teaching entails. It is fine to accept Komisar's analysis and his terminology and say that "being aware of the situation" or "seeing the point" is not a sufficient condition for claiming learning. "Seeing the point" is something that happens to a person whereas learning, as is shown earlier (pp. 63-66) implies activity. It is intentional and implies success or failure. One may work hard at learning something and yet fail to learn it. It is quite possible for John, according to the earlier example, to make Tom aware of a certain situation and yet Tom may not claim learning. Tom needs further elaboration, performance of some kind of mental activity to claim knowledge. What distinguishes 'learning from 'awareness' is that learning is dispositional whereas awareness is not. While John is learning that something is the case, what he is actually doing is linking the new facts with the knowledge already gained. He is performing an activity to link some compatible facts with his beliefs. If the new knowledge is not compatible with the beliefs already held, he is most likely to fail in learning it. When John claims that he has learned the proof of a geometrical theorem, what he claims is that he has understood the proof and no gaps are left between his previous knowledge and the proof newly learned. Bridging the gap between the belief already held and the proof of the theorem is the activity of learning which mind performs.

FOOTNOTES

1. Jerome Bruner, On Knowing, (Cambridge: Harvard University Press, 1964) p. 83.
2. *Ibid.*, p. 83.
3. A. Castell, "Pedagogy Follows Learning Theory" in Psychological Concepts in Education ed. B. Komisar and C.B.J. Macmillan, (Chicago: Rand McNally & Company, 1967) p. 160.
4. Israel Scheffler, Conditions of Knowledge, (Chicago: Scott Foresman and Company, 1965) p. 10.
5. *Ibid.*
6. Marcus Brown, "The Importance of a Theory of Knowing for a Theory of Learning" in Psychological Concepts in Education ed. B. Komisar and C.B.J. Macmillan (Rand McNally and Co., Chicago, 1967) p. 177.
7. Israel Scheffler, Conditions of Knowledge, op. cit., pp. 10-11.
8. *Ibid.*, p. 11.
9. *Ibid.*, p. 12.
10. *Ibid.*, p. 12.
11. *Ibid.*
12. *Ibid.*
13. G. H. Ryle, The Concept of Mind, (London: Hutchinson House) p. 151.
14. John Dewey, How We Think, (Boston: D.C. Heath & Company, 1933) p. 35.
15. B. O. Smith, "A Concept of Teaching" in Language and Concepts in Education, (Rand McNally & Co., 1961) p. 90.
16. P. B. Komisar, "Teaching, Act and Enterprise" in Studies in Philosophy and Education, II, (1968) p. 173.
17. *Ibid.*
18. *Ibid.*, p. 175.
19. *Ibid.*, p. 179.
20. *Ibid.*, p. 184.
21. *Ibid.*

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