
UNIT 3 POPPERIAN METHOD AND NATURALIZED EPISTEMOLOGY

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3.0 OBJECTIVES

Our course has dealt with justification of knowledge rather extensively. In the second block there were units that dealt with the method of justification adopted by pre-modern thinkers and the foundationalist method of the modern thinkers. The third block had a unit on the linguistic turn of philosophy and the challenge it poses for justification, especially the impossibility of a purely foundational justification. In the last two units of this block we found that the extreme claims about the demise of epistemology is unwarranted; only the modern kind of foundationalist epistemology is seen to be impossible. A more moderate form of foundationalism that combines some coherentist features was advocated in the last unit. In this unit we shall explore some further developments in contemporary epistemology, especially what epistemology can learn from the practice of the sciences. By the end of this unit, you will be familiar with:

- The basic idea of naturalized epistemology
- A preliminary understanding of the hypothetico-deductive (H-D) method
- Some Implications of Naturalized Epistemology.

3.1 INTRODUCTION

Modern Western philosophy is beset with a paradox: the tremendous explosion of scientific knowledge on the one hand, and an unscientific approach to theory of knowledge, on the other. The modern approach to theory of knowledge, if not unscientific in the sense of going against science, is unscientific at least in the sense that it was not based on what practicing scientists actually do in acquiring knowledge. Naturalized epistemology, including the Popperian method can be seen as attempts to overcome this paradox of modern

epistemology. Both seek to learn from the actual practice of scientists to see how knowledge –understood as beliefs that have been justified or given reasons for believing to be true— is acquired and suggest that epistemology should be modelled on their practice. Let us see these in more detail.

3.2 BACKGROUND TO NATURALIZED EPISTEMOLOGY

The famous philosophical schools of empiricism as well as rationalism are good examples of philosophical reflection that neglects the actual process of coming to knowledge. The empiricists talk of knowledge through the senses and the rationalists proclaim knowledge through reason. But both fail to see that we have very little (if any) knowledge that actually comes to us either from the senses or from reason alone. Most of our knowledge is the result of joint working of the senses as well as reason. Ignoring this, they tried to build their foundationalist epistemologies.

Foundationalism, as we saw in the last unit, is not only the privileging of some beliefs (whether rational or empirical) but also ambition to build our knowledge from “God’s eye view”, having no prior beliefs at all. This was the way in which modern thinkers (both empiricists and rationalists) attempted to overcome scepticism, the main difference between them consisted in what each took to be foundational: for the one, sense experience was foundational and for the other undeniable truths of reason (like Descartes’ *cogito*) were foundational. With the eventual realization that the whole edifice of our knowledge cannot be rebuilt from the beginning, that too on indubitable truths, disillusionment was bound to set in, which, in turn leads to relativistic claims.

Disillusionment with foundationalism was not the only crisis faced by modern epistemology. There was also the sense that it was powerless even to carry out its main task of adjudicating cognitive disputes. Epistemology was seen by the modern thinkers in the role of a judge whose responsibility it was to pass judgements on candidates to truth. Instead, it was seen to engender disputes within its own ranks. For example, how does one adjudicate between empiricism and rationalism? The result of such disputes is that in spite of its professed goals, the fate of modern epistemology became like that of a village *panchayat* (originally set up to resolve the conflicts of others in the village) where the judges, instead of resolving the conflict, themselves come to blows. It is against these and other crises faced by modern epistemology that we must see the emergence of Naturalized Epistemology.

3.3 NATURALIZED EPISTEMOLOGY

One cannot discuss the naturalistic turn of contemporary epistemology without taking the name of W.V. Quine. His 1969 essay, “Epistemology Naturalized” is a landmark. This essay begins with the foundationalist attempts of the empiricists to re-build the ship of scientific knowledge on the firm foundations of sense experience. Given that we are sure of our sense experience, if all other knowledge could be derived from these experiences, then the sceptic would be put in his place. This was the hope. Examining the long history of the empiricist attempts to rebuild the body of scientific knowledge in this manner, Quine, comes to the conclusion they have failed. Given this failure

of traditional epistemology, Quine suggests that such attempts be given up. In place of such epistemology we need to re-conceive epistemology in a new way. His suggestion is that in the new setting, epistemology be seen as an examination of how we come to have our understanding of the world from the sensory stimulations we receive. This is a factual question to be investigated by psychology and not a matter for armchair speculation. It is for this reason that he makes the bold claim that “Epistemology, or something like it, simply falls into place as a chapter of psychology and hence of natural science.” A “conspicuous difference between old epistemology and the epistemological enterprise in this new psychological setting is that we can now make free use of empirical psychology,” says Quine. Obviously such a view of epistemology goes against the view that epistemology provides the foundations for sciences. From this initial suggestion of Quine, naturalized epistemology has developed in various ways. But we will not discuss them all.

In saying that epistemology simply falls into a chapter of science, Quine would seem to be advocating that we bid farewell to traditional epistemology and replace it with psychology. This view is known as Replacement Naturalism. Replacement Naturalism, however, is beset with difficulties. The most important difficulty was perhaps pointed out by Hilary Putnam: it eliminates the normative or evaluative dimension of epistemology. Notions such as a belief being “justified”, being “rationally acceptable” are fundamental to any theory of knowledge. What is important is to notice that these notions are unmistakably normative. Without such normative notions there cannot be any epistemology. The biggest problem with naturalized epistemology, according to Putnam, is that it tends to eliminate such normative notions and focuses exclusively on matters of fact, i.e., of how we come to have the beliefs we have. Without the normative, the notion of truth itself disappears since there is no way of arriving at true beliefs; without the notion of truth the notion of evidence disappears since there is nothing to distinguish “right” kind of evidence from the wrong ones. For these and other reasons, replacement naturalism is not a popular view today. What is even more remarkable is that in spite of his recommendation to replace epistemology with a branch of natural science, Quine himself never followed his own suggestion. He has always pursued normative investigations in his epistemological carrier. In his later writings, especially in *Pursuit of Truth*, Quine has toned down his earlier view of replacement naturalism.

A more modest and more popular form of naturalism is called Cooperative Naturalism. This view does not seek to replace epistemology with psychology. It holds that while evaluative questions are essential to epistemology, empirical results from sciences are important and useful for addressing evaluative questions. It holds that empirical findings concerning our psychological and biological limitations and abilities cannot fail to be relevant to the study of human knowledge. Moreover, it can be shown and has been argued that a purely *a priori* armchair approach to epistemology is more an aberration of modern philosophy than the norm. Aristotle and Aquinas, for example, begin their epistemology with a psychology of the human knower. In other words, attention to psychology needs to be seen as necessary for epistemology, not as replacing it. The basic difficulty with Cooperative naturalism seem to be that while it rightly acknowledges the role of psychological findings in the study of human knowledge, its relation to the traditionally important question of justification of knowledge or the relationship between belief and evidence

remains unclear.

There is also a broader understanding of naturalized epistemology than the views regarding the role of psychology in human knowledge. Such a view can be found in James Maffie's survey article, "Recent Work on Naturalized Epistemology" (1990). Maffie identifies the distinguishing feature of naturalized epistemology to be the affirmation of continuity between science and epistemology. This is a broad characterization that lends itself to further elaborations. It could even be considered as a version of cooperative naturalism, although its concern is with sciences in general than only with psychology. Maffie discusses various kinds of continuity between sciences and epistemology. We shall limit our discussion to two such continuities: the methodological and the contextual. These can be seen as responses to the two crises we have mentioned: methodological continuity as a response to internal conflicts and contextual continuity as a response to the crisis of foundationalism.

Check Your Progress I

Note: Use the space provided for your answer

- 1) What prompted Quine to propose naturalized epistemology? What did he suggest?

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- 2) Discuss the two main forms of Naturalism

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- 3) How does James Maffie describe naturalism?

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3.4 CONTEXTUAL CONTINUITY BETWEEN SCIENCES AND EPISTEMOLOGY

Contextual continuity is the idea that epistemology, like science, does not start with rock bottom foundations that presupposes no other beliefs. On the contrary, both sciences and epistemology are embedded in specific contexts

and hence have their presuppositions. Think of the example we considered in the last unit, the case study of how Dr. Semmelweis found a solution to the problem of childbed fever. We see that Semmelweis is not interested in undoing and rebuilding the whole of medical knowledge of his times, (much less the whole of human knowledge..) Rather, as a trained physician he takes for granted the medical science of his times. But then he comes across a problem for which he had no readymade solutions. It is this problem that prompts his experiments.

Contextual continuity claims that this applies not only to the sciences but to all knowledge. Naturalized epistemology, then, does not seek to rebuild the whole of human knowledge from a few absolutely certain beliefs, as the foundationalists attempted to do. Rather it begins by taking for granted a lot of beliefs that are not problematic. Taking all such beliefs for granted, it focuses upon beliefs that are problematic. Popper is such a strong advocate of contextual continuity that he goes to the extent of saying that “any rational theory, no matter whether scientific or metaphysical, is rational only ... because it is an attempt to solve certain problems.”

Since naturalized epistemology does not begin with a zero point, it retains some features of coherentist justification, popularly identified with Neurath’s boat metaphor we have already seen. Our knowledge is like a ship and the epistemologist is like the voyager in the ship in the middle of the sea. Even if he notices that his ship is leaking, he cannot come to shore to repair it or get a new one. All that can be done is to repair it even while remaining in it. For that he stands on planks that are relatively healthy and tries to replace other parts that are leaking. So too, with our knowledge: taking for granted those beliefs that are relatively unproblematic, we try to replace those beliefs that are problematic. On the other hand, science is not purely coherentist either. Notice that there are observable consequences on the basis of which Semmelweis rejects or accepts a hypothesis. This takes us to a discussion of scientific method and the methodological continuity between sciences and epistemology.

3.5 HYPOTHETICO-DEDUCTIVE METHOD

When we examine the procedure employed by Semmelweis, we find that it has three basic steps:

- 1) It begins with a problem he confronted, namely, the high death rate due to childbed fever in the First Division of the hospital;
- 2) Various tentative solutions (called hypotheses) are suggested as possible solutions to the problem;
- 3) Those hypotheses are tested to see which of them, if any, is rationally acceptable; a series of five hypotheses were rejected in this manner and a sixth that occurred to him merely by chance came to be accepted on the basis of evidence.

Since it begins by identifying a problem and tries to find solutions to it, this model of knowing is sometimes referred to as the problem solving model. It is Karl Popper (1902-94), one of the best known philosophers of science of the 20th century, who made this method the corner stone of his philosophy.

What is crucial to the method is the third step of testing a hypothesis. There are two things to be noted about the third step. The first is the distinction between discovery and justification we made in the last unit. No hypothesis is accepted just because it seems to offer a solution or because it was suggested by celebrity or because it was one's pet idea. The genesis of an idea is not important; what is important is the process of justification. Only a hypothesis that can withstand a rational scrutiny is accepted; others are rejected. Justification is a matter of logic. Consider for instance, what prompts Semmelweis to abandon the third hypothesis (that the deaths were caused by rough handling by the medical students). Upon scrutiny, Semmelweis found that the midwives who attended to the patients in the Second Division examined the patients in much the same manner as the medical students did in the First Division. Therefore, *prima facie*, the hypothesis is false. Even then he decides to test it. He reduced the number of medical students in the First Division by half on an experimental basis. Only when this measure failed to bring down the death rate was this hypothesis abandoned. The fact that acceptability of a hypothesis is a matter of logic is important in as much as it eliminates the danger of subjectivity that is involved in the search for certainty. It is for this reason that Popperian epistemology is "epistemology without a knowing subject", to use Popper's own words. It means that in checking whether a belief is true, the individual psychology of the believer is not important. A proposition can be checked for its truth, even if no one believes it.

The second thing to be learned about the third step is the kind of logic that is used. The reasoning is in the form of a hypothetical syllogism. If the hypothesis *p* (high mortality rate is due to rough handling by medical students) is true, then by doing action *A* (reducing the number of medical students), an observable consequence *q* (low mortality rate) would follow. Action *A* is undertaken but the result does not follow. Therefore, the hypothesis is abandoned as false. The argument has the following form:

If *p* then, *q*; not *q*; therefore, not *p*.

Since this procedure involves deducing an observable consequence from a hypothesis and observing whether that consequence really obtains, this method is called the hypothetico-deductive (H-D) method. Leaving out other complexities involved in the actual practice of the method, the logical procedure seems simple enough. If a logically deduced observable consequence of the hypothesis does not obtain, then the hypothesis is to be considered false.

What needs to be carefully noted is that this procedure only helps us refute or falsify a hypothesis, and not to validate or prove it. For this reason, this method is also called the "falsification method". One might object: why should it be considered suitable only for refuting a theory? After all, did it not enable Semmelweis to accept the last theory as true? Yes, he did accept the last hypothesis. The hypothesis was that the high mortality rate in the First Division was caused by the "cadaveric matter" unconsciously introduced into the blood stream of the women by the medical students. It was assumed that this happened because the medical students came to examine the women without taking enough care to clean their hands properly after performing autopsy. If this assumption were true, it would solve the problem. But how to know if it is true? It had to be tested. In order to test this hypothesis he asks the medical students to clean their hands thoroughly before attending to the women. The result was a significant improvement in the situation and based

on this observation, Semmelweis accepts this hypothesis as true. While this is what happened as a matter of fact, does the observation that clean hands led to a decline in the mortality rate logically prove the hypothesis true? Let us examine its logic. It has the following logical form:

If p then, q; q; therefore, p.

It does not take long to see that this is NOT a correct form of argument. Rather, it a fallacious argument, known as the fallacy of affirming the consequent. The following example will make the fallacy clear:

If it rains, the ground will be wet;

The ground is wet

Therefore, it has rained.

This, obviously, is not correct argument, as the ground could become wet in other ways than by rain. Somebody could have watered it. The point is that though a hypothesis is accepted as true for all practical purposes, it cannot be logically proved to be true. Even if numerous experiments have shown that the expected observational results follow, still the hypothesis is not logically proven, and cannot be proven either. At best, those numerous supporting observations can be taken as confirming the hypothesis; they give us evidence for considering the hypothesis true, but that is not the same as logically proving it. No true statement can be logically proved; but something that is not true can be shown to be false.

Check Your Progress II

Note: Use the space provided for your answer

- 1) Briefly explain the contextual continuity between sciences and epistemology.

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- 2) Briefly describe the H-D method

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- 3) Why is it impossible to prove a scientific hypothesis?

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3.6 METHODOLOGICAL CONTINUITY BETWEEN SCIENCES AND EPISTEMOLOGY

At the heart of methodological continuity lies the reflexivity of the knowing process. It begins with the assumption that we already have some knowledge. We examine that knowledge with a view to discovering the canons and principles through which we have come to possess it. In other words, by examining what we already know, we come to understand the method of knowing. And by applying that method we can learn more about the world.

But what we have learned about the method of knowing can be applied not only for knowing more about the world; it can also be applied to the process of knowing itself. It is for this reason that Quine's description of naturalized epistemology as "science self-applied" is a good one. The idea of epistemology as self-application of method is very important in the light of the second crisis of epistemology we have discussed, namely the internal conflicts in epistemology. We saw that although modern epistemology aimed at settling disputes regarding truth and knowledge, it ended by creating more disputes within its own ranks, like a malfunctioning village *panchayat*. Therefore, if epistemology is to perform its assigned task, it must first of all put its own house in order. It is trying to put its own house in order that epistemology discovers the value of methodological continuity. Since epistemology aims at settling cognitive disputes, to the extent that epistemology itself makes controversial knowledge-claims, the method it applies to others must be applied also to itself. The perennial demand, "Physician heal thyself." lies at the heart of methodological continuity between sciences and epistemology.

If naturalized epistemology is a matter of applying the method used for knowing about world to the process of knowing itself, what is that method being applied? Although we have considered the H-D method in some detail and tried to say that epistemology can also learn from it, we should not go to the other extreme of identifying epistemology with the H-D method. There are also differences. Therefore, we should not take the "continuity" of method to mean "identity" or "sameness" of method. What continuity implies is that there are significant similarities in the methods of knowing. While there could be differences in the various methods of human knowing there is a core dynamics of the knowing process that is common to the different methods. It is this dynamics of knowing that is indicated by methodological continuity.

The core dynamics of the H-D method was spelt out in terms of the three steps we enumerated: finding a problem, suggesting possible solutions, and testing them. An important difference between epistemology and science is that epistemology is theory of knowledge of all kinds, whereas science is one kind of knowledge. Being a theory of knowledge applicable to different kinds of knowledge, we should not expect epistemology to follow exactly the same method that is followed by one kind of knowledge (science). Keeping this basic difference in mind we can reformulate the three steps of involved in H-D method in the following manner:

Clarifying the Problem

In the case of Semmelweis the problem was very clear. It concerned the high rate of deaths in the hospital. But epistemology, being the general kind of inquiry it is, the problem are often not very clear; very many different issues are often mixed up. Therefore, there is abundant need for analysis and clarification so as to find the exact problem for which a solution is sought. To take simple example, we often talk about the problem of truth. But there is no one problem of truth; there are several. Is the issue the meaning of truth (What is truth?) or whether a given statement is true (Is it true that water has been found on the moon?) or the criterion for deciding something to be true (On what basis shall we decide whether a given statement is true?). The second question is an empirical one and the philosopher's concern is with the other two. But in a given context, one must be clear as to which of the two is being dealt with. This calls for clarity. This is only an example. So too with other epistemological problems.

Describing the Phenomena

Once a problem is identified, there are some phenomena that are relevant to that particular problem. A phenomena is something that is available to all, either by looking out or by looking into one's consciousness. These relevant phenomena need to be described and the irrelevant ones kept out. Something similar is there in H-D method too. In the given example of Semmelweis, the phenomena relevant to the problem include the fact that the death rate in the other Division is lower, there are no reports of epidemic in the town, mortality rates among the "road birth" cases are low and so on. All of these are external facts. But in epistemology there are likely to be also phenomena that are not external, but to be found only by looking within consciousness. Philosophers have always been experts in looking into one's consciousness. But the speciality of naturalized epistemology is that it looks for the phenomena from whatever source it can find, its attention to outside sources, including various sciences. This makes naturalized epistemology inherently an interdisciplinary affair.

Finding a Coherent Account of the Phenomena

This corresponds to the testing of a hypothesis in the H-D method. Semmelweis could predict observational consequences of the hypotheses he was testing. But there is hardly has any place for prediction in epistemology. In its place epistemological theories need to be tested by checking whether the theory is able to give a coherent account of the relevant phenomena. A theory that is able to account for all the phenomena must be accepted; others improved or even rejected. But this is not a matter of coherence between beliefs, as coherentist method of justification suggests. Rather, it is a coherence of phenomena where phenomena are understood as non-controversial observational data available either through the senses or the mind. Thus we see that there are similarities and differences between the methods of sciences and epistemology.

3.7 SOME IMPLICATIONS OF NATURALIZED EPISTEMOLOGY

One result of forgoing foundational ambitions is the acceptance of the fallibility of knowledge. What is accepted as true in science today may be replaced by something else tomorrow. Popper would say that the scientific theories are like a building built on piles erected in a swamp. We stop drilling the piles deeper, “not because we have reached firm ground” but because “we are satisfied that the piles are firm enough to carry the structure, at least for the time being.” This can be said of other kinds of knowledge too. Fallibility of knowledge, then, is one of the major implications of contextual continuity.

A second implication concerns the goal of epistemology. Having accepted that human condition is like that of Neurath’s sailors in the sea, naturalized epistemology cannot hope to rebuild the whole edifice of knowledge anew as the foundationalists hoped. What does it seek to do then? Popper would say that the central problem of epistemology is the growth of knowledge, not that of confronting sceptics. This is related to the reflexive character of epistemology we have mentioned: reflecting upon what we already know we discern the dynamics of knowing and then applying that dynamics to what is not known, we increase our knowledge. Although confronting sceptics is not its primary task, naturalized epistemology does not shy away from that task. But it does not consider global scepticism, where everything can be put to doubt at once, as a serious option. This follows directly from the acceptance of contextual continuity.

Check Your Progress III

Note: Use the space provided for your answer

- 1) Briefly explain the methodological continuity between sciences and epistemology.

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- 2) Naturalised epistemology is inherently inter-disciplinary. Explain.

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- 3) What are some of the implications of naturalized epistemology?

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3.8 LET US SUM UP

Naturalized epistemology is best seen as an attempt to deal with the crises faced by modern epistemology. As opposed to the method of *a priori* armchair reflection promoted by the moderns, naturalized epistemology looks at the practice of scientists and seeks to learn lessons from that for knowing in general. Although the initial versions of naturalism focussed almost exclusively on the relationship between cognitive psychology and epistemology, a broader view takes sciences and epistemology as continuous with each other.

3.9 KEY WORDS

- Cognitive dispute** : a dispute or a difference of opinion regarding the truth of a knowledge claim
- Foundationalism** : the idea that the whole body of our knowledge can be built up or justified from the beginning without assuming any prior knowledge. This view is opposed to the coherentist view.
- Coherentism** : the view any justification of beliefs is done by relying on some set of beliefs that are taken for granted as true. It opposes the foundationalist idea that we can get rid of all our beliefs and begin building our knowledge from the beginning.
- Phenomena** : plural of phenomenon, something that is observable and therefore, non-controversial. Observation may be done either through the senses or the mind.

3.10 FURTHER READINGS AND REFERENCES

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