Addendum

Myth and a Philosophical Question

Throughout this treatise I have assumed a philosophical stance, for instance, over the question of the relationship between our knowledge and the reality it purports to know. It is a position, somewhat of a compromise between a naive realism and an utter relativism or subjectivism, commonly labelled "critical realism". My aim in this brief end-note is to develop a question as posed specifically by near-recent philosophy of science, and then to travel with it using the notion of myth we have been visiting.[1]

KUHN AND THE LOGICAL STATUS OF THEORIES

In Chapter Three, in trying to describe the nature of scientific language, I worked in terms of the paradigms of science as introduced by Thomas Kuhn. A standard example in some area of scientific investigation is taken as the paradigm for future work within that discipline. When a paradigm is unable to perform its function adequately, a revolution occurs in which a more promising alternative replaces the now exhausted one.

But Kuhn's position faces serious problems. Is the choice between competing paradigms purely arbitrary, a matter of personal taste? Or could it be one based on reason, a rational choice in which a set of tradition-independent criteria can be used to arbitrate between rival research traditions? Kuhn suggests there are what he calls "values" which are shared by all scientists:[2]

> Probably the most deeply held values concern predictions: they should be accurate; quantitative predictions are preferable to qualitative ones; whatever the margin of permissible error, it should be consistently satisfied in a given field; and so on. There are also, however, values to be used in judging whole theories: they must, first and foremost, permit puzzle-formation and solution; where possible they should be simple, self-consistent, and plausible, compatible, that is, with other theories

currently deployed. (I now think it a weakness of my original text that so little attention is given to such values as internal and external consistency in considering sources of crisis and factors in theory choice.)

These rules or values, however, do not stand independent of the scientist, for there is variation between individuals in judging their application and in the relative weights ascribed to them; the values are to some extent dependent on the scientist. The problem of relativism still stands.

We could look at the problem in this way. What is happening in these scientific revolutions: are we more nearly approaching the "truth" through them? Do they result in more accurate descriptions of independent reality? If they do not result in this, why should we bother with alternative paradigms? Kuhn charactrizes science as evolutionary, and Richard Pendergast expresses the analogy this way:[3]

> Normal science might be compared to the successful spread of a well-adapted species into new territories. The breakdown of normal science resembles the crisis a species encounters when it enters a new and different environment or when the old environment changes. Novel ideas are like mutations. Those which are accepted and become paradigms are like successful mutations which spread throughout the species, altering its genotype, phenotype, and behavior, and enabling it to adapt to meet the challenge.

Such a caricature of science, however, portrays scientific knowledge progressing only in the sense that it becomes more complex, better articulated, encompassing a larger number of phenomena, and on the basis of which nature is more able to be controlled. It is not necessarily closer to the truth, more valid, or even more valuable. The values or standards which Kuhn provides as the criteria for assessing alternative paradigms and guiding the evolution of scientific knowledge do not ensure this.

Actually, Kuhn's writings are more complex than the above paragraph makes out, for he wavers between this sort of relativism and the desire for objectivism,[4] harkening after a progess in science which smacks of objective criteria for so judging this to be.

It has also been remarked that these values are really psychological and sociological and not rational and independent.[5] In seeking to understand the reasons for inter-paradigm decisions, we turn to the disciplines of psychology and sociology. But what can these provide? There is no guarantee that they will come up with any "truth" for they too are branches of science and paradigm-dependent, and anyway, from what competing paradigms within these disciplines will we choose our explanatory theories? Hence there is no non-arbitrary basis for paradigm choice even if we seek it in sociological or psychological motivations.

Kuhn's writings can, in fact, be seen as an attack on the usual understanding

of rationality in science: as based on a set criteria, independent methods and data, as verifiable or falsifiable, as cumulative and approaching more nearly the truth.[6] Roger Trigg puts it this way:[7]

> It is important to stress just how fundamental an attack is being made on the assumptions with which we normally operate. It is being claimed that all the most important decisions we make in life — whether in the sphere of religion, of ethics, or science, or of politics — must in the last resort be regarded as subject to causal factors of which we may very well be unaware, or which, even if we are aware of them, we will be unable to control.

Trigg adds that being able to control these factors requires a decision as to whether to do so and this again implies reasons for choice.

Despite the extreme interpretations of Kuhn which his critics assume, there do appear to be a collection of criteria which are held in common by different research traditions and which can be used as independent criteria for the evaluation of paradigms and theories. But there is no means of guaranteeing the uniform and unambiguous application of them. And what are they; what constitutes rationality? Even to do this is not easy. The list Earl MacCormac gives ("intelligibility, coherence, absence of inconsistency, and confirmation")[8] seem the usual assortment,[9] and are, he shows, necessary aspects of rationality. But they are not sufficient, for there are two theories in genetics which vie for dominance, and which equally fulfil all these conditions.[10] So overall, it appears that judgement between paradigms is possible, but is not undertaken on a purely rational basis, nor is it on a purely psychological/sociological basis either, but on a bit of each.[11]

One of the criteria mentioned was "confirmation", reflecting a concern that scientific theories be rooted in and confirmed by observations, by data. From Kuhn's position it does seem as if observation exerts some control over theory choice, and that observations need not necessarily be relative to the theory in question. And even when we reach more comprehensive theories which are more highly resistant to falsification, observation plays a commanding role. Barbour writes:[12]

> an accumulation of anomalies, or of *ad hoc* modifications having no independent experimental or theoretical basis, cannot be tolerated indefinitely. . . . A research programme is even more resistant to change than a theory, but may eventually be abandoned in favour of a new programme which has greater promise of explaining known data, resolving anomalies, and predicting novel phenomena.

MYTH AND THE LOGICAL STATUS OF THEORIES

The problem of the logical status of theories centres on the requirement that

observational data play an important part in the choice of theories or research traditions. Somehow objective reality has to be seen as playing a guiding role in the choice of our understandings of that reality. And yet with so much subjectivity involved in the acquiring of observational data and in their consideration, it is difficult to see if objectivity or rationality has much of a role at all and is not mere wishful thinking. Certainly the compromise between the relativism thought to be Kuhn's and the desire for an objectivity has not lead to a secure and easily defined place for that objectivity, for not all observational data are decisive factors (the decision whether to consider any, or to modify theory in the face of them, is still relative) and there is no guarantee of data being unladen of some theory.

But this quest for a place for objectivity is important since it is the mainstay supporting our *belief* that our theories are to some extent objective, in some way reflecting the actual nature of reality. And this in turn is our way of explaining how our theories can be so successful at leading to the control and manipulation of our environment. Somehow we want rationally to establish our belief in the objectivity of some of our theorizing, be that scientific, or even more especially, of our common knowledge. MacCormac thought it justified that the heliocentric theory of the solar system be taken as objectively true since it had passed into common discourse, was well proven and lacked any tentativeness, and he saw the objectiveness of ordinary language grounded in the process of ostension. But his arguments are, I believe, unconvincing;[13] how can we justify the taking as objective our theories and knowledge, especially those in ordinary discourse? We commonly believe that it is possible to hold objective knowledge and we do not want to counter that necessary belief.

I would like to suggest the following schema based on the theory of myth that I have been proposing. Like all such proposals, one could suggest that it too is relative and therefore truthless, but it still may prove a less vulnerable proposal than others.

(1) I suggest that we examine our notion of objectivity, of there being an objective reality which we can to some extent accurately describe.[14] This, I think we will find, is mythic, part of our modern Western mythology. That is not to degrade the notion, but to put it in a perspective with our other basic assumptions. It is a realization which comes from the relativists' attack on rationality, but it is not to take a relativist's position since it is not a denial of the concept of rationality or objecivity.

(2) This belief is mythic and we have assumed it to be true; in fact, like many of the myths for various peoples, it *is true* for us. We believe that there really is an objective reality and that we really do have the ability accurately to describe it. But because it is a property of myth to *define* what is true for us, to say what is the *actual* nature of things, perception, etc., the myth of rationality

is fully valid and true. It is true that there is an independent reality which we can in some measure accurately describe, because that is part of what the word "true" defines and means for us, that is part of its use.

(3) There is in this defence of rationality no recourse in trying to deduce from an assumed set of certainties (i.e., objective reality) a proper proof of our rationality. Rather, it is an explanation of why it is reasonable for us to accept the rationality we commonly assume.[15] But more than that, why it is *necessary* for us to accept it. Basic myths are necessary for there to be any thought or human life, and this belief appears to be basic for us since it is so much assumed by our common discourse.

(4) And in this schema it is also comprehendable that we can influence and control reality on the basis of our understandings of it (and this appears to be decisive for those who desire an objective base for our theories). One of the influences on our myths is our physical survival: myths are produced in an evolutionary selective fashion so as to enable more efficient understanding and control of the environment. Our physical survival is one of the factors influencing the content of myths: the more efficient a myth is at enabling control of the environment through the understandings it presents, the more likely it is to be selected and continue. Our scientific understandings of reality, therefore, enable our effective control and manipulation of reality because they have been evolutionarily selected so to do. It says nothing about the "truthfulness" (in some sense of equating or correlating with reality) of the understandings.[16]

Returning to the problems of Kuhn's interpretation of science, we might understand now why it is hard rationally to prove the apparent objectivity of science; such a conceptual assumption is a myth. But since it is a necessary myth it is important to see where it lies and some of what it means in the doing of science. In other words, it is laudable that we attempt to understand what is the process called rationality and where objectivity lies in science, but we can understand that it is not possible to give a precise and eternal definition of it, nor should we seek to undermine it *completely*. Trigg reacts strongly to the attempted attacks on the rationality of science by trying to point out their logical inconsistencies. The position I have just outlined, however, I think *justifies* "the assumptions on which we normally operate" on a more constructive and reasonable basis.[17]