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DISCUSSIONS:

KUHN ON INTRA-THEORETIC APPLICATION OF TRUTH*

I

Edison's analysis of Popper and Kuhn makes for a very interesting and stimulating reading. Central to his analysis is the ever reoccuring issue of truth, its importance and role in scientific theorizing. Edison opens the discussion by claiming "that in attempting to answer these questions on behalf of the two philosophers, I do not commit any serious errors of misinterpretation."[1]

My reply to Edison's paper stems from the fact that his analysis of Kuhn's position on truth commits the "very serious error of misinterpretation"[2] which Edison claims to try to avoid. Nothing can be more stimulating than his eclectic approach to Popper's position on truth in philosophy of science. However, I disagree with him on "the imputation of relativism" against Kuhn vis-a-vis the issue of truth in scientific theorizing.

I will concentrate on the following passages among others:

(a) So, Kuhn's hesitancy aside, I consider Kuhn to hold ... that truth is an intra-theoretic concept, not inter-theoretic ... the framework according to Kuhn contains the truth within it, and truth is *not* outside the framework; it is not an independent or

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* A response to J. Edison, Popperian and Kuhnian Theories of Truth and Imputation of Relativism, *Indian Philosophical Quarterly*, Vol. XII, No. 1, 1985.

absolute or objective concept, but is relative to the theory utilizing it.[3]

(b) "Kuhn is a relativist with respect to truth."[4]

(c) In contrast to the central role truth plays in Popper's philosophy of science, truth for Kuhn ... has a negative part to play; it is a problem, a hindrance for Kuhn, something which has to be explained away.[5]

Edison, therefore, wonders how Kuhn "can forsake such a powerful analytical artifact as truth."[6]

In view of the foregoing, I will firstly attempt to take a look at Kuhn's position on truth and secondly proffer a reappraisal of that position using as it were an epistemological relationist model.

II

Let us take a look at the following passage of Kuhn with which Edison opened his discussion.

> Granting that neither theory of a historical pair is true, they nonetheless seek a sense in which the latter is a better approximation to the truth. I believe nothing of that sort can be found . . .[7]

In another passage Kuhn claims that there is a stereotype procedure which is becoming fashionable with philosophers of science "which I refuse to take",[8] which is to appraise theories as representations of nature, "as statements about what is really out there."[9] These passages are perhaps hard to reconcile with Kuhn's other remarks. For instance, he writes: "I do not doubt ... that Newton's mechanics improves on Aristotle's and that Einstein's improves on Newton's as instruments for puzzle-solving."[10]

One may be inclined to ask how Kuhn can make this claim if there is paradigm neutral "nature" that different

systems of mechanics solve puzzles in? Puzzle-solving cannot occur in the absence of a paradigm. Rather, paradigms attempt to conceptually organize, describe, and develop insight into the workings of the world in which the puzzles exist. If Kuhn recognizes the imrovement in different theories of mechanics, he should as well recognize the context in which that improvement occurs — and that means *ipso facto* recognizing a paradigm neutral nature, or "reality" which provides the context in which normal scientific puzzles are solved. To call a paradigm "more true" than its predecessor, then, is simply to judge it superior in its recognition and mastery of the environment in which it solves puzzles. Moreover it might appear that Kuhn demonstrates a confusion regarding these issues when he claims that theory approximation to the truth does not "refer to the puzzle-solutions and concrete predictions derived from a theory but rather to its ontology . . . to match between the entities with which the theory populates nature and what is really there."[11] I agree with Edison that the above is further corroborated by Kuhn's "if I am right, then 'truth' may, like proof, be a term with *only* intra-theoretic applications."[12] It could be argued that this is perhaps an overstatement on Kuhn's part. The judgement of the truth of a theory never refers *just* only to ontology. For a theory, in order to be judged nearly or approximately true, has to make successful predictions, to report accurately on the outcome of yet-to-be conducted experiments. Such prediction is not simply a matter of the entities a theory postulates; it is also a matter of the properties or dispositions these entities are said to have and the relations that are said to hold between them. The mere enumeration of a plausible set of entities would in no way elicit a judgement concerning truth from the philosophers of science the generalizations Kuhn mentions comes from. Attribution of truth to a theory is a much more complex affair than Kuhn's remarks indicate.[13] It is obvious that Kuhn underrates in his discussion of truth, the importance of that con-

cept to phlosophers of science. It may be misleading to postulate the existence of a theory which is "absolutely true" and explain scientific progress as successive approximation towards that theory, though Kuhn has not shown such conception to be misleading. Assuming Kuhn is right on this point, he would still be mistaken if he were to conclude from that, that science has nothing to do with truth. Truth is, after all said and done, one of the motivating forces and *raison d'etre* of scientific inquiry. As many writers have rightly pointed out, it would be hard to grasp the importance of scientific inquiry, and to comprehend the dynamics of such inquiry, without reference to the concept of truth. I believe that to underplay the importance of truth in these matters is perhaps a licence to all sorts of imputations on Kuhn's laudable contribution to philosophy of science. However, while truth plays, I believe, a fundamental role in scientific inquiry at least for the Popperians, the exact nature of that role is a matter of great debate. From the foregoing consideration which is akin to Edison's interpretation, he seems to conclude that since Kuhn upholds an intra-theoretic theory of truth, "I can see no way that Kuhn can avoid the charge of relativism laid against him with respect to truth."[14] I believe that this is a misinterpretation of Kuhn's position. The bone of contention here is the sense in which Kuhn claims in the "more essential one"[15] not to be a relativist. There is no doubt that Edison's paper has tried to revive the old continuity-discontinuity debate in science but of course with a Popperian slant. The debate is as old as science and it is bound to be ever coming back because I think it unanswerable.

There is no one clear cut answer to the question: "Is the history of science continuous or discontinuous?" Seen from a vantage perspective, it is continuous, from another, it is not. It is, that is to say discontinuous ("a chronological sequence" — Edison p. 17) seen from Kuhn's dynamics of science whereas if viewed from Popper's (and Edison's?), it is continuous. It is difficult to resolve the problem because

proponents of these views (continuity — discontinuity) can always cite historical examples to clinch their argument. In fact that kind of debate can best be described as being circular, in the sense that each interpretes the same historical data through its perspective. For instance, one can argue from Popper's theory of verisimilitude that the transition from Newtonian to Einstein's dynamics is a continuous process, which is to say "a better or more approximation to the truth,"[16] in the sense that Newton's theory can be reduced to Einstein's.

On the other hand, proponents of discontinuity in science argue that Einstein's dynamics represent an incommensurable and incompatible way of practising 'science from Newton's. As a result, the emergence of Einstein's dynamics marks the "overthrow" and "displacement" of Newton's. To clinch the point I am making, let us consider a line "L" drawn by a painter "P" with his painting brush across a white piece of canvass. When you ordinarily view the line "L" with the traditional eye, "L" appears as a continum; but when you place "L" under the microscope and take another look at it, "L" is seen as made up of discrete, discontinuous markings. Can one then conclude that "L" is a collection of discrete, discontinuous markings or just a continum? Were one to develop a theory of "L", it would be ridiculous to develop it in such a way that only continuous marking could be considered as proper evidence, since the discontinuous marking under the microscope would be equally proper; and vice versa. In other words, a proper view of the dynamics of scientific change and progress in science must make sense of both of these historical perspectives.[17]

III

This finally brings us to the "intra-theoretic application" of truth in Kuhn's dynamics of science, a position which according to Edison, "makes Kuhn a relativist."[18] For the

sake of illustration, I will briefly formulate the relativism charge against Kuhn as sharply as possible: An actual paradigm change is described by Kuhn in "Sociological-psychological language."[19] In this way one gets the impression of a complete parallel with religious and political power struggles. Kuhn expressly identifies the "progressives" with the "Victors" in a paradigm struggle.[20] Let us assume that one literally takes this on its surface value. Assume further to this picture is added the Kuhnian thesis of incommensurability. All these add up to relativism. On this assumption, Edison concludes his paper by saying: "to sum up, then, Popper is an absolutist and Kuhn is a relativist with respect to truth."[21] To avoid any circulatory debate as well as reducing the whole issue to a problem of semantics, it is necessary to make a distinction between "absolutism" and "relativism". Phillips in *"Epistemology and Sociology of Knowledge"*[22] makes the distinction between the two concepts. According to him, to accept that each separate culture or group should decide by its own standards what probably counts as scientific understanding, we opt for relativism, while on the other hand when we "accept the existence of universal, abstract definitions of scientific understanding . . . we land ourselves in absolutism."[23] Relativism has long been an issue in philosophy and sociology of science. One goes back to Karl Marx to see the connection between knowledge and socio-historical conditions. For Marx, knowledge serves to distort reality, a distortion which is functional in the sense that society is based upon the antagonism among social classes. This distortion is upheld because the members of society operate under a "false consciousness", which is to say that the knowledge about society which they believe to be true is in fact false. Thus, Marx introduced the negative connotation of the relationship between knowledge and socio-historical conditions. Karl Mannheim in *The Ideology and Utopia*[24] sees the converse to be the case. Mannheim uses "ideology" to describe the elements of a positive relationship; and "utopia" to describe the elements of a negative

relationship. As a general term, Mannheim employs "perspective" which refers to a "mode of conceiving things as determined by (a) historical and social setting".[25] Mannheim seeks to escape "relativism" by contrasting it with "relationism". He claims that relativism is a product of a combination of certain historical procedure and a theory of knowledge which does not account for the interplay between modes of thought and conditions of existence.[26] Thus construed, relativism is not an absolute epistemology but rather a certain historically transient form of epistemology which conflicts with the type of "thought oriented to the social situation".[27] Relationism on the other hand means that knowledge cannot be formulated absolutely but only in relation to the context of socio-historical conditions. Knowledge, whether in science or otherwise is related to a certain mode of conceptualizing nature, or interpreting the world, which in turn, "is ultimately related to a certain social structure which constitutes its situation."[28]

Relationism does not involve absolute criteria of truth or falsehood, rather, such criteria are formulated in relation to the perspective of a given situation. Our procedure in the remaining part of the paper is to examine Mannheim's relationism (perspectivism) in contradistinction to the traditional view of relativism; to show also that Kuhn's dynamics of scientific progress makes more sense if appraised through Mannheim's relationist model. In a sense, this is a kind of problem deflation by domain modification. Relationism according to Mannheim, states that every assertion can only be relationally formulated. It becomes relativism only when it is linked with other static ideal of eternal, unperspectivistic truths independent of the subjective experience of the observer, and when it is judged by inter-theoretic ideal of absolute truth.[29] Certain existential factors in contradistinction to "pure logical possibilities", "inner dialectics", "immanent laws", influence the emergence and crystallization of actual thought. Further, Mannheim notes that these existential factors influence not only

the concrete content of our knowledge, they are as well relevant in the genesis of ideas and penetrate into their form and content. They determine decisively the scope and intensity of our experience and observation, that is, they influence the perspective of the subject. Every tradition, therefore, has its characteristic point of view and consequently sees the same object from a new perspective.

IV

Two important points, however, are to be noted in Kuhn's dynamics of science concerning this argument. First, as Kuhn claims, his works have been influenced by his discovery of "the connected rudiments of an alternative way of reading texts", according to which to understand the Aristotelian universe, it is necessary "to some extent (to learn) to think like Aristotelian physicists."[30] As Kuhn himself notes, this discovery is a common place among historians, although it was for him a discovery of great importance which influenced many of his views about the correct way of proceeding in the history of science, concerning the origins of modern science, and concerning the nature of scientific change.[31] If the historian is to avoid distorting the history of science, his or her attitude should be "neither reverence nor contempt but first a kind of hypothetical sympathy."[32] The reason why we require hypothetical sympathy to understand for instance pre-seventeenth century mechanics is that during the seventeenth century there had been "a global sort of change in the way men viewed nature and applied language to it."[33] We have to learn to think like Aristotelians not because their way of conceptualizing nature is more primitive than ours but because in the words of Herbert Butterfield, scientists had put on "a different thinking cap", because they had picked up "the opposite end of the stick." Kuhn calls attention to the cultural and socio-economic factors which play an important role in the establishment of new areas of scientific investigation, while the sciences that have already achieved a significant

body of technical doctrine are seen as being transformed not by the discovery of new data but by the data already at hand being conceptualized in a new way. Similarly, Merton maintains that in much social behaviour, motive, purpose and effect are in fact radically disjoined. Merton shows that such actions can be reasonable and in fact comprehensible if we study them in terms of their origin and cultural effects, rather than in terms of which they were avowedly undertaken. Merton's approach demonstrates the "reasonableness" of non-logical practices. Social institutions are not created by reason; they crystallize as "unanticipated consequences of purposive social action"; they are "social windfalls."[35] The history of Art, Mannheim tells us, has evidently shown that art forms may be definitely dated according to their style, since each form is possible only under "given historical conditions and reveals the characteristics of that epoch."[36] It follows therefore that what is good or true for art, holds also for the sciences so that in the sciences, we can detect with increasing exactness the perspective due to a particular historical setting. With a pure analysis of thought structure we can determine when and where the world presented itself in such, and in such a light to the subject that made the assertion. Kuhn's evolutionary metaphor (Edison, p. 16) should be understood in this context. Perspectivism, thus, signifies the manner in which one views an object, what one perceives in it and how one construes it in one's thinking. It refers also to the qualitative elements in the structure of thought, elements which must necessarily be overlooked by a purely formal logic. Kuhn refers to these as "values" (a component of Disciplinary Matrix).[37] These factors are responsible for the fact that two persons, even if they apply the same formal-logical rules, for example the new law of contradiction, or the formula of syllogism, in an identical manner, may judge the same object differently. What it shows is that even in the formulation of concepts, theories, etc., the angle of vision of the scientist is guided by the scientist's

interests. This is because, thought is directed in accordance with what a particular social group expects. Thus, out of the possible data of experience, every concept combines within itself only that which, in that light of the investigator's interests, it is essential to grasp and incorporate.[38] The same argument can therefore, be extended to Kuhn in the intra-theoretic application of truth.

In conclusion, our attempt so far is firstly, to try to make a distinction between relationism (perspectivism) and relativism; secondly, our position conduces to the view that intra-theoretic application of truth does not necessarily mean (relativizing truth) epistemological relativism; thirdly, it depends, however, on how one looks at it but if we agree with Mannheim that certain "existential factors" or with Kuhn that socio-historical determinants influence the origin and development of scientific theories, we do not see how such an appraisal leads to relativism of knowledge. Contrary to what Popper seems to suggest, there is no need to think that if relationism (perspectivism) is correct, we must appeal to violence to resolve our disputes.[39] Finally, one must recognize that truth, the cognition of which is the business of philosophy, in the hands of Kuhn is no longer an aggregate of finished dogmatic theories, which once discovered, had merely to be learned by heart. Truth is now in the process of cognition itself, in the long historical development of science, which evolves from the lower to ever higher levels of knowledge without ever reaching, by discovery the so-called absolute truth, a point at which it cannot proceed any further.

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NOTES

1. Edison, J., "Popperian and Kuhnian Theories of Truth and The Imputation of Relativism" in *Indian Philosophical Quarterly*, Vol. XII, No. 1, January-March 1985, p. 9.
2. *Ibid.*, p. 9.
3. Ibid., p. 16.
4. *Ibid.*, p. 17.
5. *Ibid.*, p. 18.
6. *Ibid.*, p. 19.
7. Kuhn, T. S., "Reflections on My Critics" in *Criticism and The Growth of Knowledge*, Edited by Imre Lakatos and Alan Musgrave, Cambridge University Press, 1974, p. 265.
8. *Ibid.*, p. 265.
9. *Ibid.*, p. 265.
10. Kuhn, T. S., *The Structure of Scientific Revolutions (SSR) with Postscript*, University of Chicago Press, 1974 edition, p. 206; See also Kuhn (1974). Reffections on My Critics, p. 265.
11. Kuhn, T. S. (1970), *SSR*, p. 206.
12. Kuhn, T. S. (1974), "Reflections on My Critics", p. 266.
13. For a detailed insightful discussion on the role of ontology in theory appraisal, see: Quine, W. V., *Ontological Relativity and Other Essays*: New York: Cambridge University Press, 1969.
14. Edison J. (1985), p. 16.
15. Kuhn, T. S. (1974), "Reflections on My Critics", p. 264.
16. Edison, J. (1985), p. 13.
17. The importance of this point is canvassed by Kaufmann, W. W. in *Faith of a Heretic*, New York, Anchor Books, Doubleday 1963; see also Keortge. N., "Theory Change in Science", in *Conceptual Change*, edited by G. Pearce and P. Maynard. Boston, D. Reidel 1973, p. 167-198, particularly p. 167.
18. Edison, J. (1985), p. 17.
19. Cf. Stegmuller, W., "Accidental (Non-Substantial) Theory Change and Theory Dislodgement: in Erkenntnis 10, 1976, D. Reidel Publishing Co., Dordrecht — Holland, p. 169.
20. Kuhn, T. S. (1970), *SSR*, p. 160.
21. Edison, J. 1985), p. 19.
22. Phillips (1974), in *Theory and Society*, Vol. I, pp. 58-88.
23. *Ibid.*, p. 61.
24. Mannheim (1936), Published by Routledge and Paul Kegan, London.

25. *Ibid.*, p. 239.
26. *Ibid.*, p. 70.
27. *Ibid.*, p. 70.
28. *Ibid.*, p. 270.
29. *Ibid.*, p. 264.
30. Kuhn, T. S., *The Essential Tension: Selected Studies in Scientific rTadition and Change*, University of Chicago Press, 1977, pp. xi and xii.
31. *Ibid.*, p. xiii.
32. This remark of Bertrand Russell is quoted twice by Kuhn in "The Essential Tension", p. 108 and on p. 149.
33. *Ibid.*, p. xii.
34. Butterfield, H., *The Origins of Modern Science*, New York: The Free Press, 1965, pp.. 1 & 7.
35. Merton, R. K., "The Unanticipated Consequences of Purposive Social Action", in *American Sociological Review*, 1939, pp. 894-904.
36. Mannheim (1936), *op. cit.*, p. 243.
37. *Cf.* Kuhn, T. S. (1970), *SSR*, p. 185.
38. Mannheim (1936), *op. cit.*, p. 244.
39. *Cf.* The motto to chapter 23 of Popper (1966), *The Open Societies and Its Enemies*, Vol. II, *5th Edition.*