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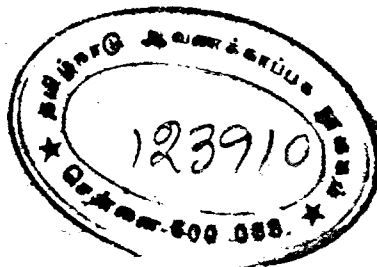
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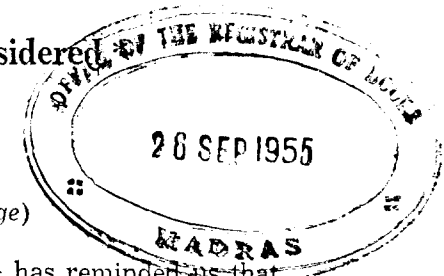
[October, 1955

Zeno's Paradoxes Reconsidered

by

C. T. K. CHARI

(Madras Christian College)



Professor P. T. Raju, in a recent paper,¹ has reminded us that the ghosts of Achilles and the tortoise he cannot overtake have not been laid; they continue to haunt the precincts of philosophy. He has discussed, with a commendable reserve and hesitation, the attempted mathematical resolutions of Zeno's paradoxes, confining himself to a few brief comments on Russell and Whitehead. I should like to point out that the modern topological treatment of the problems marks a significant advance over the earlier *metrical* formulations. I hope that this paper will supplement Professor Raju's valuable philosophical reflections by providing a not very technical account of the recent mathematical handling of the issues.

(1)

It is well to remember that the earlier orthodox mathematical attempts to resolve Zeno's paradoxes differ, in important respects, from Whitehead's attempted solution based on his "Method of Extensive Abstraction". On the orthodox mathematical view,

*I have to thank the Syndicate of the Madras University for permission to use, in this paper, some of the materials in my Doctoral Dissertation on "Some Spatial Representations of Time." I am much indebted to Dr. Adolf Grünbaum, Associate Professor of Philosophy, Lehigh University, Bethlehem, Pennsylvania, U.S.A., for the illuminating correspondence he carried on with me and for the many offprints of his papers he sent me.

1. This Journal, Vol. XXVIII, No. 1 (April, 1955). pp. 49-72.

points are included in a line not as *parts* of it but as *members*. Points are particulars having spatial relations but no spatial parts. Any group which consists of an infinite number of simple particulars will also necessarily be a group which is endlessly divisible into sets of particulars in which each set is not a simple particular but a group.² Whitehead rejected, or at least professed to be agnostic about, the "reality" of "points" of space and "instants" of time. Propositions containing these terms can be unambiguously translated into propositions involving certain complicated relations between suitably chosen *perceived* finite volumes and finite durations.³

S. Luria⁴ has furnished a clear statement of the mathematical issues involved in Zeno's statement of his well-known paradoxes. Distinguishing positive magnitudes from "dimensionless" magnitudes, Zeno in effect challenges us to demonstrate, on the one hand, that the sum of an infinite number of equal positive magnitudes of arbitrary smallness can be other than *infinite* and, on the other hand, that the sum of any finite or infinite number of "dimensionless" magnitudes can be other than *zero*. Now modern topology has exposed the dangers of using the term "dimension" in a vague and supposedly intuitive sense. The intuitive feeling that a plane must be somehow richer in points than a line has been dissipated by Cantor's demonstration that a 1:1 correspondence can be set up between the points of a line and those in a plane. The intuitive belief that the number of dimensions of space can be regarded as the least number of continuous real parameters required to describe that space has been challenged by Peano's discovery of a curve that "fills a square" (i.e. the continuous topological mapping of an interval on a square). Dimension can be raised by a one-valued transformation. The purely metrical approach to these problems which identifies a one-dimensional object as a line, a two-dimensional object as an area, and a three-dimensional object as a solid, is unsatisfactory today. Dimension is basically a topological concept. If we profess to be able to treat it in some other fashion, we do so at our own risk.

2. See, for instance, C. D. Broad, *Examination of McTaggart's Philosophy*, (Cambridge University Press), Vol. I, Ch. XIX.

3. C. D. Broad, *op. cit.*; A. N. Whitehead, *The Concept of Nature* (Cambridge University Press, 1920), Ch. IV.

4. See the citation in A. Grünbaum, "A Consistent Conception of the Extended Linear Continuum as an Aggregate of Unextended Elements", *Philosophy of Science*, Vol. 19, No. 4 (October, 1952), p. 289.

Poincaré first drew the attention of mathematicians to the need for a deeper enquiry into the notion of "dimensionality". He pointed out that whereas the line is one-dimensional because we may separate any two points on it by cutting it at a single point (of dimension zero), the plane is two-dimensional because, in order to separate a pair of points in it, we must cut out a whole closed curve (of dimension 1). This suggests that a space is n -dimensional if any two points in it may be separated by removing $(n-1)$ -dimensional subsets and if a lower dimensional subset will not always suffice. L. E. J. Brouwer, availing himself of the fundamental conception put forward by Poincaré, constructed a topologically invariant definition of dimension which for a very wide class of spaces (locally-connected and separable metric), does not differ appreciably from the concept in use today which we owe to Karl Menger and Paul Urysohn.⁵

Adolf Grünbaum, in an important paper, has shown how the modern topological "dimension" is independent of "length" and cardinality. A striking example of this independence is afforded by Cantor's "ternary set" or "discontinuum" which is 0-dimensional while having the cardinality of one-dimensional "intervals" on the number-axis. Hurewicz and Wallman have remarked that, in topological treatment, "the sum of zero-dimensional sets need not be zero-dimensional, as we see from the decomposition of the [one-dimensional] line into the [zero-dimensional] rational numbers and the [zero-dimensional] irrational numbers". The question how certain point-sets can be "one-dimensional", while the subsets are each "zero-dimensional", is not quite the riddle it seems to the non-mathematician.⁶ Many recent popular discussions⁷ of Zeno's paradoxes reflect merely the inability to grasp the

5. See R. Vaidyanathaswamy, *Treatise on Set Topology* (published by the Indian Mathematical Society, 1947), Part I; L. Pontrjagin, *Topological Groups* (Princeton University Press, Princeton, 1939); W. Hurewicz and H. Wallman, *Dimension Theory* (revised edition, Princeton University Press, Princeton, 1948), especially Ch. I and Appendix.

6. A topological characterization of the affine transformations, carrying straight lines into straight lines, seems possible. We can say, for instance, that through each pair of points A and B, there is one, and only one, L-line, $L(A, B)$, an open line which, by definition, may be regarded as the topological image of a straight line transformed by a group of homeomorphisms into one, and only one, L-line. See H. Terasaka, "A Topological Characterization of Affine Transformations in E^2 ", *Osaka Mathematical Journal*, Vol. 2, No. 1 (March, 1950).

7. For example, Samuel Reiss, *The Universe of Meaning* (Philosophical Library, New York, 1953), pp. 102-103.

technical issues. Grünbaum has indicated how "lengths" can be topologically defined, by using the purely ordinal symbols $<$ and $=$, for class-intervals which are closed ($a \leq x \leq b$), open ($a < x < b$), and half-open ($a \leq x < b$). In the limiting case when $a = b$, the "interval" is "degenerate" and the closed interval reduces to a set containing the single point $x = a$. A general, if intricate, theory of measure can be developed for topologically defined sets; for instance, a Lebesgue measure $L(s)$ can be associated with the class of sets. A "non-degenerate" interval on the Cantorean number-axis is always a non-enumerable set.⁸ The sum of a sequence of enumerable sets is itself enumerable.

Grünbaum has made three valuable points. In the first place, Zeno was unaware of the modern distinction between enumerably and non-enumerably infinite sets and, therefore, could not at all have anticipated the techniques for "compounding" the "degenerate" intervals of topology.⁹ In the second place, some of Russell's earlier resolutions of Zeno's paradoxes (for instance, in his *Our Knowledge of the External World*) were vitiated by his failure to recognize the contribution made by Cantor's super-denumerable infinities to a consistent metrical theory of the continuum. Russell remarked that, for philosophical purposes, the lowest degree of mathematical continuity, namely compactness or denseness, would quite suffice. Compactness would yield only a denumerably infinite point-set; and the set of rational real numbers (or points) in

8. The notion of "distance" or "metric", obtained by a natural generalization of the theorem of Pythagoras, can be extended to "function spaces" whose domain is not a set of points in a finite dimensional Euclidean space. Thus the set of all continuous functions $x(t)$ in the closed interval $a \leq t \leq b$ can be made into a function space by defining the distance, $d(x, y)$, as the least upper bound of $|x(t) - y(t)|$ as t varies in the interval.

It can be shown that the set of all polynomials is a dense subset of the metrical space, say C . This is just a form of Weierstrass's theorem that any continuous function in $(0, 1)$ can be uniformly approximated by polynomials. Since a continuous function of a real variable t in the closed interval $0 \leq t \leq 1$ is uniformly continuous, its graph can be represented to any given approximation by a broken polygon. The function whose graph is the broken polygon can be represented as the sum of a linear function and functions of the form $|m(t-c)|$; $0 < c < 1$. A function of this given form can be uniformly approximated by polynomials, since the binomial expansion of

$$m\alpha[1 - (1 - t^2/\alpha^2)]^{\frac{1}{2}}$$

is a series of polynomials converging uniformly in $(-\alpha, \alpha)$ to $m \cdot |t|$.

If the set $[P(t)]$ of all polynomials is dense in the function space C , then the set $[R(t)]$ of all polynomials with rational coefficients is dense in $[P(t)]$. We have a separable metrical space.

9. Grünbaum, *Philosophy of Science*, op. cit., p. 296.

modern topology, is zero-dimensional. Mathematically and philosophically, a much higher order of continuity than compactness is needed for resolving Zeno's paradoxes.¹⁰ In the third place, Grünbaum has argued that Whitehead achieves at best a very ambiguous convergence of the "abstractive classes", since perceived finite volumes and finite durations, however adroitly we choose them, do not entail compactness, let alone the Cantorean super-denumerable infinities.¹¹

Altogether, then, Grünbaum has made a notable attempt to expose the mathematical fallacies underlying the four assumptions which, as the researches of H. D. P. Lee¹² and P. Tannery¹³ have shown, are tied up with Zeno's paradoxes: (1) Infinite divisibility brings with it the possibility of a completable process of "infinite division", i.e. of an infinite yet completable set of division operations; (2) The completion of the process of "infinite division" would "terminate" in a last product of division, a mathematical point of zero dimension; (3) An actual infinity of distinct elements is generated by the supposed completable process of "infinite division"; (4) Since the "division" begins with a first operation, there are "immediate successors" and "immediate predecessors" in the progression of steps. Grünbaum's comment on the muddles is succinct: "division" signifies an operation while "infinite divisibility", in the mathematical sense, is a technical property of certain point-sets.¹⁴

(2)

Zeno's temporal paradoxes, as distinguished from his metrical paradox of infinite plurality, call for further discussion. Even those who have reconciled themselves to the Cantorean resolution of the metrical paradox sometimes feel that, in the case of time, the solution lacks a semantical justification. William James, Whitehead and Paul Weiss argued that the notion of an "immediate predecessor" is somehow bound up with our experience of "passage" or "becoming" and that the mathematical continuum in which there are no immediate "predecessors" or "successors" ill

10. Grünbaum, op. cit., p. 303.

11. Grünbaum, "Whitehead's Method of Extensive Abstraction", *The British Journal for the Philosophy of Science*, Vol. IV, No. 15, 1953, pp. 215-226.

12. Zeno of Elea (Cambridge, 1936), p. 23.

13. "Le Concept Scientifique du Continu: Zénon d'Élée et Georg Cantor", *Revue Philosophique*, 20, No. 2, 1885.

14. Grünbaum, *Philosophy of Science*, op. cit., p. 299.

accords with the fact. "Becoming", they have insisted, is "pulsational", "epochal", or "atomic". How can any time-interval "lapse", they ask, when an infinity of "sub-intervals" must first "lapse"? The difficulty is not so serious in the case of space which displays no "transitory" characteristics. Whitehead declared in his *Process and Reality* (p. 53): "There is a becoming of continuity but no continuity of becoming.... In other words, extensiveness becomes, but 'becoming' is not extensive". The compromise will hardly do. As Grünbaum¹⁵ has rightly asked, how can extensiveness, with the sort of continuity attributed to it by mathematics (and Whitehead, in principle, accepted this continuity), ever "become" unless there is an ordinal isomorphism between the "events" and the real numbers or the unextended points on the line ordered by the Archimedean and the Cantor-Dedekind axioms?

Max Black¹⁶ has attempted to extricate himself from the temporal paradox of Achilles and the tortoise by denying the physical relevance of the infinities encountered in the domain of mathematics and offering a completely finitist account of actual temporal processes. He accepts the finitist character of all that Achilles does physically in his race with the tortoise. The non-finitary mathematical theory, according to him, is just "one way in which we find it useful to describe the physical reality". J. N. Findlay¹⁷ believes that the happenings, an infinite number of which must be completed, have to be given a new, perhaps arbitrary, meaning. "Once we strip them of their pictorial vividness, we also strip them of their puzzling character." I agree with Grünbaum¹⁸ that these are mere evasions of the problem. To accept the linear Cantorean continuum as a useful basis for describing motion is implicitly to commit oneself to the view that the infinity of points, which are cardinally and ordinally a continuum, is relevant to the physical problem. How otherwise could the description serve any purpose at all?

15. "Relativity and the Atomicity of Becoming", *The Review of Metaphysics*, Vol. IV, No. 2 (December, 1950).

16. "Achilles and the Tortoise", *Analysis*, XI, (April, 1951), pp. 92-101.

17. "Time: A Treatment of some Puzzles" in *Essays in Logic and Language*, first series, edited by A. G. N. Flew (Basil Blackwell, Oxford, 1951), pp. 49-50.

18. *Analysis*, XII, No. 6 (June, 1952); also "Some Recent Writings in the Philosophy of Mathematics", *The Review of Metaphysics*, Vol. V, No. 2, (December, 1951).

Taylor¹⁹ and Blake²⁰ attempted to resolve Zeno's temporal paradoxes by maintaining that, if there were no physical limitations to thought, speech, and action, the infinite series,

$$1 \text{ minute} + \frac{1}{2} + \frac{1}{4} + \dots \dots \dots \frac{1}{2^{n-1}} \text{ minutes,}$$

would not go on for ever; for each successive act will occupy only half of the duration of its preceding act. The sum of the infinite series will not be more than 2 minutes. Grünbaum²¹ has made it plain that considerations drawn from abstract arithmetic theory alone are here insufficient. In the example considered, ordinary arithmetic considerations alone do not entail the conclusion that the sum of the infinite series must be 2 minutes. Only the super-denumerable infinities (transfinite cardinals of different orders) of Cantor can furnish a rigorous proof.

A. P. Ushenko²² remarked that the inseparable union of metrical space and time in the space-time of relativity robbed Zeno's paradoxes about motion of their force. In the space-time "map", with time as the fourth coordinate, the "world-lines" of Achilles and the tortoise are bound to intersect, for the "slopes" of the "world-lines", as determined by any arbitrarily chosen "stationary observer", will depend on the relative velocities of the moving particles; and these are demonstrably different for Achilles and the tortoise. According to Ushenko, the theoretic mathematical solution, based on the convergence of infinite series, tells us that Achilles will catch up with the tortoise under such and such conditions, provided he does catch up. The space-time of relativity supplies the fulfilment of the conditions. In a recent attempt at a construction of "points" and "instants", however, Ushenko²³ has relied on Whitehead's "Method of Extensive Abstraction" and has exposed himself to Grünbaum's charge of an "ambiguous convergence". Ushenko grants that "...the infinite number (of regions) is allowed not because it is observable, but because it is a legitimate concept of formal mathematics". In that case, as Grünbaum²⁴ retorts, a postulational justification of the

19. *Analysis*, XII, 1952, pp. 38-44.

20. "The Paradox of the Temporal Process", *The Journal of Philosophy*, Vol. XXIII, No. 24 (1926).

21. *Analysis*, XII, op. cit.

22. *The Philosophy of Relativity* (George Allen & Unwin, London, 1937), Appendix II.

23. "Einstein's Influence on Philosophy" in *Albert Einstein: Philosopher-Scientist*, edited by P. A. Schilpp, Evanston, 1949, pp. 632-645.

24. Grünbaum, *The British Journal for the Philosophy of Science*, op. cit., pp. 224-226.

mathematical infinities is needed, not a quasi-empirical justification.

(3)

It may be said that Grünbaum's attempted resolutions of Zeno's paradoxes presuppose modern set-theory and analysis and that large parts of these will lose their prestige if Brouwer's intuitionistic approach to mathematics is adopted. Elsewhere²⁵ I have suggested that the intuitionistic and the multi-valued departures from classical two-valued logic provide significant analogies to the dialectic of Oriental and Occidental mysticism; at any rate, analogies far more significant than those drawn from the Hegelian dialectic for which there has been a misplaced reverence. I must point out, nevertheless, that attempts to revive Zeno's paradoxes, especially in their earlier metrical form, with the aid of the intuitionistic calculus, would be premature. Kurt Gödel, availing himself of certain results stated by Heyting and Glivenko, showed that, if the logistic symbols for "and", "or", "not", and "implies", are replaced by suitable combinations of intuitionistic symbols, every valid formula in the logistic is valid also in the Brouwerian calculus. Again, Gödel has argued that, although intuitionistic logic cannot be treated on a "truth-table" basis (*vide* my paper, *Proc. Ind. Phil. Congress*, 1952) for any finite n , a table of aleph-zero values will suffice.

I submit, therefore, that there is no inherent implausibility about the modern mathematical resolution of Zeno's paradoxes. Implausibility cannot be established by relying on our unsophisticated and supposedly self-evident notions of "part", "whole", "divisibility", and "infinity". On a *postulational* basis, we can correlate spatial and temporal relations with the ordering relation of "greater or lesser than" holding between the real numbers. Manifestly, the relational structure so constructed is not an empirical order. Professor Raju has raised the wider philosophical problem whether the order is at all relevant to the facts of experience. He does not categorically deny that the order has a certain "regulative" value. I think it can be claimed that, in mathematical physics at least, the order has empirical applications within given ranges. We could hardly make these applications

25. This Journal, Vol. XXIV, No. 2 (July, 1951), pp. 59-73; *Proc. Ind. Phil. Congress*, 1952, pp. 173-182; *Philosophy East and West*, Vol. III, No. 4 (January, 1954), pp. 321-324; 335-336.

within the narrower ranges without assuming the consistency and validity of the entire system of postulates. There remains the question whether the postulational system, even admitting its heuristic value in physics, is not just one among several possible systems. Can we construct other systems which, although they may admit of no empirical applications in physics, are yet appropriate to certain puzzling "abnormal" or "paranormal" experiences of time? In an earlier paper,²⁶ I have hinted at the possible introduction of non-Archimedean quantities with their queer repercussions on classical mathematical analysis. To go no further, if we speculate on these lines, even Cauchy's mean-value theorem may not be derivable from the axioms.²⁷ The crucial problem is one of the relevancy of such unorthodox mathematical representations to psychological problems with which physics has no direct concern. The fact that quantum physics today is anxious to explore "atomicity", within certain cautious limits,²⁸ should make us willing, in dealing with wider problems, to test alternative mathematical constructions before we pronounce on their adequacy or inadequacy. Bergson never seems to have appreciated sufficiently that mathematics is the science of *order*, and not merely the science of *quantity*, and that it is competent to deal with purely ordinal ("first", "second", etc.) properties as well as cardinal ("one", "two", etc.) ones. There is no *a priori* reason why the order-types postulated in mathematics should not be exemplified in different kinds of empirical materials, in intervals of time as well as in regions of space. The logical structure of mathematical spaces may provide convenient tools for portraying realities which are not directly or wholly spatial. Whether it will do so can be found out only by further research. Indian philosophers cannot keep aloof from the new developments in the

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26. "Is Time Metrizable?" *Proc. Ind. Phil. Congress*, 1951, pp. 138-139.

27. The mean-value theorem may be stated thus: If a continuous function $f(x)$ possesses a differential coefficient $f'(x)$ everywhere in a given interval, there must be a point $x + vh$ between x and $x + h$ such that

$$f(x+h) = f(x) + h \cdot f'(x+vh), \quad (0 < v < 1).$$

Geometrically, the theorem may be interpreted as saying that, between the points x and $x+h$ on the curve, there is a point $x + vh$ on the curve at which the tangent is parallel to the secant joining the points x and $x+h$.

Whether a non-Archimedean system can unambiguously yield the mean-value theorem may be disputed.

28. See my paper "Quantum Mechanical Perplexities" in this Journal, Vol. XXVI, No. 3 (October, 1953), pp. 177-185.

philosophy of science. Hegel is known to have said that the function $y=f(x)$ represents the "being" and the differential coefficient dy/dx the "becoming" of things. Felix Klein's comment²⁹ on the *obiter dictum* is worth reproducing: "There is assuredly something impressive in this, but one must recognize clearly that such words do not promote further mathematical development, because this must be based upon precise concepts".

29. *Elementary Mathematics from an Advanced Standpoint: Arithmetic-Algebra-Analysis*, translated from the 3rd German edition by E. R. Hedrick and C. A. Noble (Macmillan, London, 1932), pp. 217-218.

Validity and Invalidity in Knowledge

by

PROF. G. R. MALKANI

1. The question of validity and invalidity in knowledge is the question of truth and falsehood. We have in European philosophy different theories of truth. But the question is not raised in this particular form, namely whether validity and invalidity are internal to knowledge or external to it. This way of putting the question, as we shall see, goes to the heart of the matter. We get to know the essential nature of truth.

2. The pragmatic theory of truth would appear to answer to the view that truth is determined by fruitful activity (*artha-kiriyā-kāritva*). Here the validity of knowledge is external to it. The correspondence theory of truth would appear to answer to the view that validity is internal to knowledge. Knowledge, *by its nature*, reveals the real. This is the same thing as to say that knowledge corresponds to the nature of the real. The coherence theory of knowledge would appear to answer to the view that truth is external to knowledge; for a piece of knowledge cannot be known to be true unless it is confirmed by another piece of knowledge or unless it coheres with the rest of our experience.

3. The thesis which we want to uphold is that validity is internal to knowledge, while invalidity is external to it. For the present discussion we must not understand knowledge in an in-different sense. Knowledge is that which reveals reality to us. Knowledge is therefore always true knowledge. False knowledge, since it does not reveal reality to us as it is in itself, would not be knowledge in an unconditional sense. It would be knowledge only in so far as it reveals the truth,—and it certainly does reveal some truth, which is however mixed with error. There is no such thing as purely erroneous knowledge. There is an element of truth in all erroneous knowledge.

4. It is now evident that there are always certain conditions which give rise to a piece of knowledge. When the conditions that give rise to a piece of knowledge also determine the validity of that knowledge, the validity is said to be internal to knowledge.

Since all knowledge is by definition true knowledge, the validity of knowledge can only be dependent upon the same set of conditions that give rise to the knowledge itself. But falsity evidently is not so dependent. In false knowledge, two sets of conditions are necessary. One set gives rise to knowledge (which is always true), and the other set which is external to knowledge gives rise to the falsity. In other words, falsity is determined by a set of conditions that is external to knowledge in the form of imagination or defective machinery called *doṣa*.

5. Validity may be internal to knowledge. But should we not be able to know it directly and at the time that the knowledge arises? If we do not, how can validity be internal to knowledge? In other words, knowledge having once arisen, its own evidence must be sufficient to prove its own validity. Or what is the same thing, knowledge must be self-evidently true. If it is not, and if we have to rely upon some other piece of knowledge in order to prove its validity, then validity would be external to it; and this validity could *never* be known. For, every validating piece of knowledge would require in its turn to be validated. As a matter of fact, one piece of knowledge cannot validate another. The evidence provided by each piece of knowledge is quite distinct, and it has no logical relevance to the evidence provided by another. If we can doubt one witness, we can doubt every other witness whether he corroborates the first or not. It is therefore only a self-validating piece of knowledge or a piece of knowledge that is self-evidently true that can really be true and known to be such. It is in this sense that validity is internal to knowledge.

6. What about false knowledge? It is evident that falsity cannot be internal to knowledge in the sense mentioned above. If it were, we should never fall into error. From the internal evidence of knowledge itself, we could decide its falsity. It is because we cannot decide the falsity in this way that we have to fall back upon the cancelling knowledge in order to know its falsity. The cancelling knowledge, however, must be true, although for practical purposes it is sufficient that it is *taken to be true*. The cancelling knowledge shows up two kinds of conditions,—the conditions that gave rise to the knowledge as such, and the defects (*doṣa*) that interfered with it. Knowledge as such is never cancelled; only the falsity in it that is due to external defects is cancelled. Thus invalidity is external to knowledge, while validity is internal to it. Knowledge is by nature valid. Invalidity is due to outside interference or to defects.

7. This argument may be all-right as far as it goes. But it does not appear to decide for us the practical question of what knowledge is true. If knowledge by its very nature is always true knowledge, we must at least have some knowledge which is known to be true by its own internal evidence. But if we could have some such knowledge, the whole problem of knowledge would be resolved for us. We could never fall into error. Any piece of knowledge that was not self-evidently true would be knowledge that was interfered with by outside factors, and would be known to be false. It would not be knowledge in our sense of the term. But the truth is that we have no piece of knowledge that is self-evidently true. Every piece of knowledge can be doubted. The self-evident can never be doubted. All this goes to show that the knowledge that we actually have is overlaid with subjective factors that make for error. All our knowledge is erroneous, determined by certain defects which are external to knowledge. Indeed, no piece of knowledge can be *wholly* erroneous. The error in it is always mixed with the truth in it. Doubt and error relate to what is subjective. We can thus negate what we can doubt. But we cannot negate everything. We cannot negate the ground. That constitutes the truth in all our knowledge, and it alone is self-evidently true. It takes the form of being as such. This being in its turn cannot be understood in the objective attitude, since it is characterless and contentless. It can only be understood as the Self itself that is never an object, and that alone is self-evidently true.

8. The Self alone is the self-evident truth in all our knowledge. But still we do not *know* the Self. We are ignorant of it. This then is the principal *doṣa* in all other knowledge. Out of ignorance arises error. We misinterpret the self-evident reality of the Self, through ignorance, as a world of things and relations. We need then to negate this world, and to realize the ground of it as the self-evident truth. The Self is the truth; and the ignorance of the Self is the cause of the erroneous perception of a world.

9. When the truth is known, correspondence theory will cease to hold good. Correspondence theory, as generally understood, implies a dualism of the object known and the subject knowing. If now the dualism is *within knowledge itself* and there is no gulf between the object and the subject, correspondence has no meaning. There are not two things between which any correspondence can be established. The object is *as known* or *as part of the knowing*. But if the dualism is real, and knowledge is only one term in it, any attempt on the part of the subject to reach out to the object is doomed to failure. What we know is an idea within

knowledge; and nothing can bridge the gulf between the so-called independent object and the subject. The truth is that a self-existing reality cannot be known either as an *object-in-itself*, which is a self-contradiction, or through a representation of itself in knowledge; for how shall we establish a correspondence between this representation within knowledge and a reality which is outside and independent of knowledge? Truth accordingly can neither be an object-in-itself nor a representation of such an object. It is no object at all; or it is a pure object that has transcended all relativity, and become the very Self. The Self is never to me. It is never an object of thought. Rather it imposes its own form upon thought, takes away its limitations, and makes it conform to its own infinite form. There is no dualism here; for thought itself is assimilated to reality, made after the image of reality, and in the end becomes the reality. The distinction of reality and truth disappears.

10. The defects of the correspondence theory are sought to be made good through the coherence theory, according to which reality is *not external to knowledge* but internal to it. But then can reality be self-existing? Can it be anything *in-itself*? It is part of the meaning of a self-existing reality that it should exist independently of all knowledge. It is only ideas, fancies and illusions that cannot so exist; and we certainly distinguish reality from all these. Anything that cannot exist except in knowledge or through knowledge has only an apparent or illusory existence. And then can corroboration or coherence give us truth? If every piece of knowledge requires to be corroborated, where will the process end? We no doubt think that a body of truths is true in so far as they cohere. But this body is always changing shape and content with every advancement in knowledge. There is no static body of truths that is eternal. The facts of today may turn out to be fancies of tomorrow. There can be no limit to this process of transformation and transmutation. We can call nothing as *the truth*, but only as the truth *in the making*. But can the truth be *made*? Does it depend upon us and our fancies? Where truth grows, it grows only through the limitations of our imagination. But imagination is not a valid instrument of knowledge. It ought to be replaced by direct awareness or intuition. In any case, a system of empirical knowledge can still be a system of falsehoods; for falsehoods too can cohere and fall into a system. If they did not, the cumulative evidence of false witnesses could not condemn an innocent man. In dreams too falsehoods have sufficient coherence to bring

about an impression of objective reality or truth. The coherence theory of truth is thus no improvement upon the correspondence theory.

11. As against these, we offer the Vedantic theory of self-evidence. Truth must be self-evidently true, so that when we know the truth we are certain of the truth. The conditions that give rise to knowledge also determine the truth of it, so that we need not go outside the knowledge in question to determine its truth. In the end, there is only one such knowledge, and that is the knowledge of the Self as the Absolute or as Brahman.

Meaning and Truth: Logical Positivism and Reality

by

DR. P. S. SASTRI, M.A., M.LITT., PH.D.
University of Saugor, Saugor (M.P.)

In ascertaining the truth of a proposition logical positivism advances a theory which needs a critical examination. We are told that sentences express propositions. Some sentences genuinely express propositions. There are *a priori* propositions and empirical propositions, corresponding respectively to Hume's relations of ideas and matters of fact. Whether a sentence is genuine or not can be determined by the principle of verifiability. "A sentence is factually significant to any given person, if, and only if, he knows how to verify the proposition which it purports to express—that is, if he knows what observations would lead him, under certain conditions, to accept the proposition as being true, or to reject it as being false."¹ One should know the relevant observations that would decide its genuineness, and this is verifiability in principle. If one can place oneself in the required situation, then we have practical verifiability. When the truth of the proposition can be conclusively established in sense-experience, then we have the 'strong' sense of the term verifiability. But "If it is possible for experience to render it probable," then we have the 'weak' sense of the term. Ayer does not insist on conclusive verifiability as the criterion of significance. If he were to insist on the strong sense, no-one can say whether arsenic is poisonous, and none can attribute any meaning to the general propositions of law. To be factually significant a sentence need not be confutable by experience; for, an "hypothesis cannot be conclusively confuted any more than it can be conclusively verified."² Hence the criterion of significance is the weak form of the principle. If any observations would be relevant in determining the truth or falsity of a sentence, then the statement has significance. In other words, "we can know nothing but what could be experienced."³ Till we experience the required sense-content, the factual

1. Language, Truth and Logic, p. 20.

2. *Ibid.*, p. 25.

3. G. E. Moore in Arist. Soc., 1903, p. 3.

statement is only an empirical hypothesis which offers a principle for the anticipation of experience. To be an empirical hypothesis and to have factual content, a statement must be relevant to some experience or other.⁴

According to Prof. Schlick a statement can have a specific meaning even when there are practical difficulties for verifying it. That is, meaning is not dependent on verification, but on a knowledge of the nature of the test which is intended to be sufficient. Since we cannot conclusively verify all statements, it is enough if we know that there is a method according to which verification is possible. We have only to know the nature of the test. But whether a suggested test is true or not will in its turn have to be verified. This must rest on some other knowledge of the nature of the test. In this wise the weak sense of verification involves an infinite regress because of which we can never have the knowledge of the nature of the test.

Every sentence expresses some meaning or other. Since truth and falsehood primarily refer to meaning, a sentence is capable of being true or false. If the truth or falsity of a statement does not make any difference to my experience, then the statement is said to be idle and meaningless. On this basis it is held that only statements of fact and scientific statements have meaning and are therefore verifiable.⁵ The individual's experience is thus raised to the status of an absolute; and Wittgenstein treated 'experience' as the ultimate reality. Such an elevation of the individual's experience leads us to solipsism. Schlick's principle of verification offers an absolute experience; and his method of the clarification of the propositions leads to 'mystical feeling'.⁶ The linguistic analysis undertaken by the right wing of the Vienna circle leads to subjective idealism. Such an interpretation of language denies universality to the import of words and sentences.

The left wing of the Vienna circle led by Rudolf Carnap attempted to discover the nature of significant philosophical propositions and to liberate positivism from subjectivism and solipsism. Holding fast to the principle of verification, Carnap argued that "a logical investigation must be an analysis of language." It is no longer the metaphysical nature of the world, but the logical nature of

4. See *Mind*, 1936, pp. 199 ff.

5. See Wittgenstein: *Tractatus Logico-Philosophicus*, 6. 53.

6. *Ibid.*, 5. 62, 64; 6. 45.

language which should be the subject-matter of philosophy. This reveals (i) statements of fact and of natural science, and (ii) statements of the analysis of language. The former are 'object statements'; and the latter are 'logical statements' which alone are philosophical. It is contended that a logical statement cannot make any reference to 'objects'; for, it is a statement about language, not about what language is about. The logical analysis of language can tell us nothing about the relationship between the symbols or words and the objects symbolised; that is, it cannot refer to 'meanings'. It deals with the relation of one symbol to another in a given logical structure or syntax of language. As Carnap observes: "No reference is made to meaning of the symbols or to the sense of expressions, but simply and solely to the kinds and order of the symbols with which expressions are constructed".⁷ This logical analysis of language becomes a mere analysis of syntax which excludes all reference to meaning.

A logic which deals with mere syntax without any reference to meaning cannot account for the truth or falsity of a statement. Divorcing meaning from the word, and the word from its object, it plays in a chaos without a rudder. A word that refers to nothing is no word at all. Carnap refuses to consider the relation of thoughts to things. This refusal would condemn any analysis to be not even empirical.

In Carnap's theory, science is a 'system of sentences' which needs to be 'brought into agreement'. 'Agreement' here refers to the syntactical relations of each scientific sentence to the others of the system. How a sentence fits into the existing system of such sentences—it is this which determines the correctness of any scientific theory. But how it fits is necessarily determined by the meanings of the sentences; and Carnap refuses to consider the meanings. Thus Neurath writes: "Sentences are to be compared with sentences, not with 'experiences', not with a 'world', nor with anything else. All these senseless duplications belong to a more or less refined metaphysics, and are therefore to be rejected. Every new sentence is confronted with the totality of sentences which are present and which have been brought into agreement. Then a sentence is called correct if it can be brought into the system. Whatever we cannot systematise is rejected as incorrect. Instead of rejecting the new sentences we can also, wherever we find it generally difficult to make a decision, alter the whole system of sentences until the

7. *Logical Syntax*, p. 1.

new sentence can be included".⁸ Sentences are not to be compared with experiences or with a world, but with sentences; and the comparison of one sentence with another would only reduce all sentences to the level of a formal and monotonous syntactic harmony. Since there is to be no reference to meaning, a statement in Physics can be made to agree syntactically with another in Zoology. This can by no stretch of imagination be called agreement. The positivistic method completely disregards the content of science. How can we have a system of sentences where one sentence is to be related to another apart from its meaning? A sentence can be related to another only with reference to its meaning. And when meaning is rejected, we have only the forms of the sentence left behind. How can the form exist apart from the meaning of a sentence?

• The modern formalism demands that scientific theories should contain formulae and also rules for employing these formulae. These are to be in agreement with the so-called protocol or observational statements. Carnap admits that the principles of logic are arbitrary and conventional; and he enunciates this under the principle of Tolerance. These principles then are symbolic constructs which arise from an arbitrary choice of the rules of syntax.⁹ And in the very act of describing some statements as protocol statements, we are referring to their meaning and to their relation to facts. When we introduce the question of meaning, we have to compare sentences with experiences or with the world. The protocol statements thus repudiate the claims advanced for the syntax of language. It is from these statements that we derive our principles or rules. If these rules are called arbitrary, then the protocol statements too must be arbitrary; and then there is no need to accept the protocol statements recognised by the modern empiricist. Moreover, how can a deduction be arbitrary? Every deduction is from a universal and as such it is bound to be a necessary deduction. It is the false insistence on the arbitrary nature of the principle that compels the positivist to seek for a verification of his statements. A consideration of this search will reveal its hollowness.

This principle states that a sentence has meaning only when some experience can 'conclusively' verify it. But consider the statement, "All men are mortal". It has a meaning though it cannot conclusively be verified. To cover such cases, Ayer adopts the

8. *Sociology in Physicalism*, Erkenntnis, bd. II. p. 403.

9. See *Logical Syntax*, p. x.

principle in a weakened form; and this form allows that verification need not always be conclusive.¹⁰ When we insist on conclusive verification, we are demanding an infinite repetition of the same predicate with every different subject. This implies that the subject in every case is a particular which is a member of a class symbolised by the predicate. And wherever we have judgements that refer to concrete individual wholes, the verification principle proves abortive.

The phenomenalist theory of the positivist makes out that all propositions about physical objects should be capable of being translated into equivalent propositions about sense-contents which are immediately experienced. Then alone can the propositions be true. The physical object is presumed to have a certain intrinsic probability which makes the verification by other perceptual experiences possible. Thus when a proposition about an object is translated into a proposition about immediate sense-experience, it means that under certain specified conditions an individual can have certain sensations. The conditions as well as the object are physical; and both must be real. Further, what is perceived as an object consists of some actual sensations, and of some possible sensations. These possibilities are cognised as dependent on the apprehension of some conditions; and the conditions consist in actual sensation.

Even this analysis clearly points out that the actual sensations of the perceiving individual are different from what he perceives as a physical object. The possibilities of sensation refer to the object sensed. And what I am cognisant of does not consist simply in such possibilities. The sensed appearance contained in the actual sensation is the appearance of a physical object; and the appearance is distinct from the object whose appearance it is. Moreover, I am not cognisant of my own sensations alone. I apprehend a meaning which cannot be resolved into sensations since meaning is not an object to be sensed. Mere sensation can never provide us with the knowledge of the world. The experience which gives us a knowledge of the object is an experience that cannot be abstracted from thought. But phenomenism thrives on such an abstractionism since it ignores perceptual seeming.

The verification argument resolves every statement into a series of hypothetical propositions. Mr. Braithwaite's version makes out that a proposition about a material object is to be infinitely

10. Loc. Cit. 135.

analysed into an infinite conjunction of hypothetical propositions. "If certain conditions are fulfilled, sense-data belonging to a certain 'family of sense-data' will be sensed!"¹¹ A proposition like, 'there is a clock on the mantle-piece now' is to be analysed thus: If there is enough light, if I am physiologically a normal being, if I look in the direction required, if I stretch out my hand properly, and if I do so many other things and receive so many sensations, then I shall sense a brown patch or a smooth surface. What have we gained by this phenomenal reduction? We have a series of conditions coming one after another. Each condition involves a reference to reality and a reference to its expression in language. If the condition directly refers to reality, we need not try to reduce a proposition about a material object into an infinite number of hypothetical propositions; for, a proposition that can directly refer to reality does not stand in need of a roundabout method of verification. If it does not refer to reality, it cannot help us in verifying a statement about a real object. If the condition refers to its linguistic expression, then it becomes a statement. And prior to the attempt to verify the original proposition, we shall have to find out whether this statement is true. This in turn demands verification. And the first statement that it gives rise to again needs verification. Thus to verify the linguistic expression of the condition, we need another set of an infinite conjunction of hypothetical propositions; and each such proposition again involves these difficulties, thus resulting in an infinite regress. There is no way out of this situation as long as the phenomenalist insists on the translation of a given statement into a set of propositions about sense-contents. This translation is an impossibility since it can never be adequate, and since the nature and functions of the sense-contents and words are not identical.

The meaning of a statement, we are told, consists of a set of observations which would verify it, and which are no more than mere sensations. Then an empirical proposition would be "a forecast of our sensation".¹² Even non-sensuous experience, we are assured, is not an impossibility.¹³ Though we can have this sort of experience, Ayer thinks that no-one has such experiences. But when it is not an impossibility, he has to explain how a sensuous experience can translate it adequately. If the meaning consists of

11. *Proc. Arist. Soc.* 1937-38, p. 275.

12. Ayer: *Language, Truth and Logic*, p. 144.

13. See Ayer in *Mind*, 1936, p. 201.

a set of sensations, Ayer must conclude that meaning or thought is present in the sensation. This is objective idealism.

If the meaning of a statement is only its mode of verification in sense-experience, we land in solipsism. However, Carnap writes: "We reject the thesis of the reality of the physical world: but we do not reject it as false, but as having no sense, and its idealistic antithesis is subject to exactly the same rejection. We neither assert nor deny these theses; we reject the whole question."¹⁴ But a proposition is meaningless if it does not have a touch with actuality. In the absence of this touch with actuality, all relations and entities would lose their significance. Does sense-experience presuppose factual reality as its ground? If it does not, there can be no such experience. Even the most elementary theory like that of the reflex arc admits of a stimulus coming from outside; this outside is the objective reality whose validity and existence is necessary for the meaning and truth of sense-experience. This sense-experience, however, is exclusive to the individual who has it; it cannot be shared by another. The statement I make can be verified by me; and how I verify it cannot be known to others. What value my experience has is equally unknowable to others. In like manner I cannot verify the statements made by others. A verification which depends upon the private sense-experience of the individual gives rise to a solipsistic theory of knowledge. It is a theory about which a solipsist cannot say whether it is true or false. In a universe of solipsists everyone may take his theory to be the correct one.

The idea of verification necessarily presupposes the questions of truth and falsehood; and the problem of truth involves that of meaning. Once we bring meaning into consideration, we cannot run away from objective reality. All these problems are interdependent; and they do not allow us to treat the words as arbitrary and conventional symbols. If a word is a conventional symbol, how can we verify the alleged fact of its reference to a thing? If a proposition is conventional, any proposition that may be offered as its alternative is equally conventional; and every-one has the right to choose his own alternative propositions. Consequently, instead of introducing order, harmony and proportion, the new logic of phenomenalism introduces a chaos out of which it struggles to escape in vain.

14. *Philosophy and Logical Syntax*, p. 20.

All necessary propositions are said to be conventions of usage. Each has alternatives. Of these alternatives, we are not allowed to avail of an alternative that we need. This amounts to saying that there is no alternative; and in the absence of an alternative, it is no longer a convention. Take the proposition, "All necessary propositions are conventions". On positivist analysis, this can be an empirical possibility or a tautology. If it is the former, a necessary proposition can be non-tautologous. If it is the latter, the theory contradicts itself since it is a necessary proposition about propositions. A necessary proposition is held to say nothing about facts, and yet this proposition does say something about facts; for, a proposition is "a class of sentences,"¹⁵ and sentences are facts. This argument convicts the theory about conventions of being another such convention. Every necessary proposition asserts something of reality. If there is no such assertion, there can be no assertion at all. Even a hypothetical judgement is based on certain facts which are accepted as real. However Ayer argues that "none of them provide any information about any matter of fact. In other words, they are entirely devoid of factual content."¹⁶ Only the propositions referring to our own future sensations are said to have a factual content. Then many propositions would become meaningless. Our sensations, for instance, cannot verify the existence of another's consciousness; and our statement about that consciousness cannot be meaningful. We can only speak about the behaviour of others and about the consciousness of ourselves. That is, we are behaviourists when we have to speak of the experiences of others. Hence Dr. Weinberg observes that positivism is "a solipsism without a subject". The absence of the subject makes even the sense-experience an impossibility. A pure behaviourist explanation of experience cannot explain the emergence of significance from a sensation.

A statement expressing a sense-content or our reaction is an assertion. It asserts something of reality. My assertion that this is a table has the object as its content. When Ayer says that it has no factual content, it is difficult to understand him. If it does not assert my apprehension of the content of the object, it is no statement, since it does not then refer to the object. Where it has no transitive reference, we can have no assertion and therefore no statement.

15. Ayer, *Loc. cit.*, p. 121.

16. *An Examination of Logical Positivism*, p. 68.

Positivism is bound to miss a good number of statements. A statement about the past must be to the positivist unmeaning, since all meaning must refer to the "anticipation of future experience."¹⁷ We cannot anticipate our future experience of Julius Caesar crossing the Rubicon. The same criterion condemns the synthetic propositions too as meaningless. Ethical judgments also cannot have any validity,¹⁸ since they are either "pure expressions of feeling" or they are expressions of how some one feels.¹⁹ They are "expressions and excitants of feeling which do not involve any assertions."²⁰ Every feeling in reality gathers substance from ideas; and the ideas do not arise in or from a vacuum. The idea qualifies reality; and the feeling which has always a content is an assertion about something real. A pure feeling is a blank feeling, since all feeling is felt by an individual about something taken to be real by him. As such, an ethical judgment claims objective validity; and this cannot be substantiated by the phenomenalist who argues that the assertions of the moralist and the theist "cannot possibly be valid, but they cannot be invalid either."²¹ The ethical judgment primarily refers to the will and to the subsequent activity. The analysis of motivation clearly points to reality which controls and regulates our volitions; and no activity can be divorced from reality, the theatre of all ethical operations. The feeling which is said to be at the basis of the ethical, religious and aesthetic judgments is positive and affirmative. The affirmation here has a direct reference to, and a basis in, actual reality. Even a pragmatic test cannot reject the ethical judgment as being beyond any valuation. That which can be neither valid nor invalid is something beyond any possible experience; and an ethical judgment does not run away from experience.

The historical judgment cannot be repeated in a future sensation. The principle of verifiability rejects all statements about the past as unphilosophical, as untrue. It eliminates all problems regarding the experience of other minds. Any talk about the objectivity of value is repudiated as nonsense. It does not accept any great experience as significant. Thus one by one all the experiences are eliminated. What remains is only a linguistic experience. Even this, as we have seen, has a reference to objective reality. It

17. Ayer, *loc. cit.* p. 146.

18. *Ibid.*, p. 16.

19. See Carritt's criticism in *Philosophy*, 1938, pp. 131 ff.

20. Ayer, p. 163.

21. *Ibid.*, p. 175.

carries a meaning or significance which cannot be fully interpreted in terms of sensations.

Let us consider the question of personal identity which has a bearing on the problem of meaning. Ayer defines personal identity in terms of bodily identity, and the latter with reference to the resemblance and continuity of sense-contents. Even though the sense-content is private and exclusive, we believe that other persons exist and that their experiences resemble ours. This belief is based on "the similarity and dissimilarity of their reactions to empirical tests."²² But even this cannot be possible in positivism. When I observe A's reactions to an empirical test, I am really observing, on the positivist hypothesis, my own reactions. What I mean by A or by any other person is only a group of my possible and actual observations. To equate a set of these observations with a person is the grossest solipsism. The sense-datum language does not solve this difficulty, because I am not allowed to go beyond my own sense-content and because I must go beyond it. Insisting on these two mutually exclusive conditions, the phenomenalist fails to proceed beyond the windowless monad. Such a monad cannot observe even the similarities and dissimilarities of another's reaction to any empirical test. There cannot be an empirical test as such, since any test presupposes the objective reality of some datum or other for the subject.

Before we proceed further we have to examine Ayer's doctrine of verifiability with regard to propositions. A factual proposition is said to be a synthetic proposition, while a significant and non-factual proposition is taken to be an analytic one. The validity of an analytic proposition depends only on the definitions of the symbols it contains; and the validity of the other is dependent on the facts of experience.²³ To know whether a sentence is analytic or not, we must know the conventions of the language to which the sentence belongs. And analytic propositions "cannot be confuted by experience"; they are "necessary and certain", because they do "record our determination to use words in a certain fashion. We cannot deny them without infringing the conventions which are presupposed by our very denial, and so falling into contradiction."²⁴ But the phenomenalist cannot recognise the validity of a factual reality; and consequently he ought to reject the validity of the

22. Ayer, loc. cit. p. 206.

23. Ayer, p. 103.

24. *Ibid.*, 114.

synthetic proposition. The argument from the analytic proposition goes to show that questions of validity primarily refer to the linguistic statements which are unconnected with experience. Yet it is argued that a sentence is a fact, though this word is equally vague.

Ayer tells us: "As Wittgenstein puts it, our justification for holding that the world could not conceivably disobey the laws of logic is simply that we could not say of an unlogical world how it would look."²⁵ We *could not say* how it would look as long as we retain our conventions. But what happens when our conventions change? The change in the conventions presupposes a change in the objective world. When Ayer says that we could not say how it would look like, he is implicitly recognising a necessity which is not a mere linguistic convention. It is necessity forced on us by the facts. In other words, the laws of logic are the laws of things; and thought cannot therefore be divorced from things. "The principles of logic and mathematics", says Ayer, "are true universally simply because we never allow them to be anything else. And the reason for this is that we cannot abandon them without contradicting ourselves, without sinning against the rules which govern our usage of language, and so making our utterances self-stultifying."²⁶ If we do not allow these principles to be universally true, we contradict *ourselves*. It is not a contradiction of our sense-contents, but of our apprehension of objective reality. Any contradiction is from the first to the last grounded in fact. And if the principles of logic are entirely an affair of convention, they lack objective existence and validity. Every convention to a certain extent involves some element of deliberate adoption. When we say that "both A and not-A cannot be true", do we have this convention? Instead of having such a convention, we apply the law of non-contradiction, and on that basis adopt the principle imposed on us by the necessity of thought.

Are the principles of logic merely nothing but definitions? If they are simple definitions, they must exhibit a necessity operating in the things defined. By definition we always mean the definition of a thing; and incidentally this leads to the definition of a word, since the word is vitally connected with the thing. A word that has no objective status in reality is no word at all. Every word carries a meaning, and meaning is transitive. Without this transi-

25. *Ibid.*

26. *Ibid.*, 100.

tive reference, we cannot have any communication of ideas. In other words, words are not symbolic counters.

An empirical or synthetic proposition must satisfy some material criterion. This criterion is sought in the anticipation of future experience. Till the experience recorded by the statement is made actual, it must be a mere hypothesis. But if once we experience it, or if we have no room to doubt the validity of the proposition, then it cannot be a hypothesis. In such a case it becomes a definition, and therefore an analytic proposition.²⁷ This argument makes out that every synthetic proposition is an analytic proposition in the making. In such a case the distinction between the analytic and the synthetic can be only one of degree. Consequently the factual content of the synthetic proposition cannot vanish when it becomes analytic. This position has to be accepted by the phenomenalist.

Next we have to consider whether every empirical proposition is a hypothesis. It is absurd to say so with regard to the statement, 'this is red'. A hypothesis is based on a given set of facts; and it is taken to provide a clue for the interpretation of the facts. It therefore has a direct reference to facts whose validity it recognises as necessary to itself. Since it is based on facts which it claims to interpret satisfactorily, we cannot brush aside its existential import. Every hypothesis has to anticipate experience. But we cannot test the validity of a hypothesis absolutely. We can only increase the quantity of its probability. Yet Ayer holds that the validity of a position can be "logically guaranteed,"²⁸ and that we can have a rational belief. This rationality refers to our own actual practice.²⁹ To be rational implies the fact of "being guided in a particular fashion by past experience."³⁰ Thus the probability of a proposition is increased by observation, and this means that we can depend on it in practice as a forecast of our sensations if we behave rationally.³¹ But we are told that we should not maintain incompatible hypotheses, and that our hypotheses must be self-consistent. This self-consistency, however, cannot be merely formal. If it were formal, all questions regarding inconsistency would have to be settled by definitions alone. If this is no formal

27. Ayer, p. 135.

28. Ayer, p. 91.

29. *Ibid.*, p. 146.

30. *Ibid.*, p. 48.

31. *Ibid.*, pp. 144-5.

self-consistency, it cannot be other than that of the logical propositions; and since logical propositions are said to involve conventions of usage, here too we have to admit the conventions. On the other hand, two hypotheses become mutually incompatible with reference to the given set of facts. The incompatibility here is the result of the operation of non-contradiction in reality as such. A purely linguistic incompatibility would be only an affirmative proposition and its contradictory. Such an incompatibility results in bare negation which gives only a non-significant infinite judgment.

The analytic propositions, says Ayer, "enlighten us by illustrating the way we use certain symbols." They do not speak "anything about the properties of any actual things"; and in making those statements we are merely "calling attention to the implications of a certain linguistic usage."³² They only indicate "the convention which governs our usage" of words.³³ But in performing such a task they do report empirical facts.³⁴ And their "validity depends solely on the definitions of the symbols."³⁵ Yet Ayer assures us that definitions are arbitrary. We may define something in an infinite number of ways; but our assertion only illustrates that definition because our definition is after all optional. As such, Ayer proceeds to argue that necessary propositions express conventions of language; and these conventions are embodied in the logical constants like 'if', 'not', 'or', 'implies'. All these have arbitrary meanings. Their validity cannot be determined since there is always a possibility of choosing some other definition. But can a definition be arbitrary? When I define a thing, my interest is not in how a word is to be used, but in knowing what the object is. The first alone is arbitrary.³⁶ The second, which constitutes the real nature of definition, is necessary. The latter cannot illustrate the mere conventions of usage. On the other hand, it offers an interpretation of facts. The phenomenalist's refusal to recognise the relation of fact to a proposition thus lands him in a linguistic maze which is denied all possible objective significance.

The purpose of the mind is to understand; and all understanding succeeds in its task by apprehending necessity. The attempt to understand is the task of logic, and logic therefore cannot be disso-

32. *Ibid.*, p. 104.

33. *Ibid.*, p. 105.

34. Cf. Broad in the *Proc. Arist. Soc.*, Suppl. Vol. 15, p. 107.

35. Ayer, p. 103.

36. See A. J. D. Porteous in *Arist. Soc. Suppl.* Vol. 15, 1936.

ciated from actual thinking. The need for meaning may be satisfied by any word we like; but the need for necessity cannot be satisfied by any logic. Alternative logics arise when we misuse words. But what is more important is the meaning of the word, not the word itself.³⁷ Even if we have to recognise alternative logics, we can accept them only as supplements, not as substitutes, of the familiar logic.³⁸ The law of non-contradiction, for instance, is vital for a logical theory. No alternative logic can replace it. If this principle is substituted by something else, we have neither a system nor an assertion. The rejection of this principle would mean the rejection of the most fundamental condition of an intelligible statement. Such a principle cannot be a linguistic convention; nor can it be an arbitrary chosen principle. Since it is grounded in objective fact, since it compels us to accept it, and since it alone can offer a comprehensive and systematic interpretation of reality, we have no choice and no option. And the claim of a judgment to truth is determined only by this principle.

In Ayer's language "what makes a proposition true or false" means "how is a proposition validated". The criterion for the analytic proposition is that "its validity should follow simply from the definition of the terms contained in it."³⁹ It has nothing to do with any other proposition or set of propositions; and "every analytic proposition could be seen to be analytic in virtue of its form alone." It is a mere formal criterion that we get here. A true proposition must be such that it can be validated by every one. But in phenomenalism the very existence of other persons can be doubted by me; and then the question of their validating my proposition is an impossibility. Moreover, the truth of a proposition cannot be determined by my pure sensation. It can be arrived at only through the principle of coherence which is the same as that of non-contradiction. The proposition is true when it coheres with the whole system of facts which constitutes reality.

According to Ayer there are no propositions which can be valid when they directly record an immediate experience. There can be no purely incorrigible proposition. Suppose I see a patch of colour which cannot be mistaken for any colour other than red;

37. Cf. Prof. Nelson: *Deductive systems and the Absoluteness of Logic* (*Mind*, 42, 1933).

38. *Ibid.* Also see Paul Weiss: *On Alternate Logics* (*Philosophical Review*, 42 (1933), 520-5).

39. Ayer, p. 109.

and I say "this is red". I cannot doubt whether what I see is red; and it is meaningless to doubt it. In Ayer's language I am identifying my sensation with the proposition. But the sensation and the proposition belong to two different levels of experience; and they can only be related in terms of thought.

What do we mean by the terms 'true' and 'false'? Ayer says, "To say that a proposition is true is just to assert it, and to say that it is false is just to assert its contradictory. And this indicates that the terms 'true' and 'false' connote nothing, but function in the sentence simply as marks of assertion and denial."⁴⁰ But what is the meaning of assertion? And what is its relation to 'convention'? An assertion is not a pure sensation. It conveys a meaning and therefore a reference to reality. Its claim to be true depends on its agreement with reality. It is false when reality rejects the qualification conveyed by the ideal content of the proposition, as being inconsistent with itself. In other words, an assertion is false when it contradicts reality; and it is true when it agrees with reality. This principle is vital to any theory of knowledge, and to any theory of meaning.

40. *Ibid.*, p. 122.

The Humanism of Jean-Paul Sartre

by

DR. SREENIVASA SAHU, D.PHIL (BONN)

The title is likely to cause some surprise. Sartre himself acknowledges it,¹ and admits it to be rather difficult to convince people that existentialism is not opposed to humanism. (And one might add that it is particularly difficult in the case of the peculiar version of existentialism which he teaches). The difficulty arises on account of the complete reversal that it brings about in respect of the relation between essence and existence. In all previous theories from Plato to Kant, man was considered to have an essential nature, called "human nature", and this essence was posited as being prior to existence (or creation). There were different types of humanism that developed according to different notions of this fundamental human nature. We thus speak of the humanism of the Romans, Christian humanism, Marxian humanism and so on.² As Heidegger says "the first humanism, viz., the Roman, and all types of humanism which since then have developed upto the present day, set the universal essence (Wesen) to be something obvious (selbstverständlich). Man is defined as the rational animal.... This definition is not false. But it is conditioned by metaphysics."³ Agreeing with Heidegger in rejecting this standpoint of the older philosophies, Sartre says, "Atheistic existentialism, of which I am a representative, declared with greater consistency that if God does not exist there is at least one being whose existence comes before its essence, a being which exists before it can be defined by any conception of it. That being is man or, as Heidegger has it, the human reality. What do we mean by saying that existence precedes essence? ..."⁴ But Heidegger repudiates the statement.⁵ For him the question is more fundamental than that of the distinction between essence and existence and their relative priority. The distinction between essence and existence is only a metaphy-

1. Existentialism and Humanism, p. 24, London, 1952. (Tr. Philip Mairet).

2. Cf. Heidegger, Über den Humanismus, Frankfurt, 1946.

3. *Ibid.*, p. 12.

4. Existentialism and Humanism, p. 28.

5. Über den Humanismus, p. 18.

sical one as it was to Plato: there is only a reversal of the sentence. "But the reversal (umkehrung) of a metaphysical sentence remains a metaphysical sentence."⁶ The true aim of metaphysics should be not to engage itself with the objects of empirical or conceptual knowledge, but to go to the root of it. It is not concerned even with the concepts of 'Being' and 'Nothing' of Hegel.⁷

It is true that Heidegger too says in the same vein in his epoch-making book "Sein und Zeit"—"the essence of the human reality (Dasein) lies in his existence."⁸ But the word existence has a very special meaning. In the sense in which Heidegger uses it, only human beings can be said to exist. "Man alone exists. The stone is, but does not exist. The tree is, but it does not exist. The horse is, but does not exist . . . God is, but he does not exist."⁹ The statement also should not be interpreted to mean that "man alone is a real something (Seiendes), the being of everything else is unreal or only an appearance or the idea (Vorstellung) of men . . . the existentialistic (existenziale) essence of man is the ground for the fact that he can conceive of the being of particular things and can have consciousness of what is conceived." By this it is not meant that the humanistic explanations of man as a rational animal, or as Person, or as a spiritual-mental-bodily essence is declared to be false. What is meant is that the highest humanistic definitions of Essence have not yet experienced the true worth of man. This is the sense in which existentialism is against humanism.¹⁰ With much of what Heidegger says, Sartre would agree. Nevertheless he would say as against Heidegger, that existentialism is not opposed to humanism.

Sartre bases his humanism on two grounds—i. The freedom of the individual which thus makes him a responsible being. He says, "The first effect of existentialism is that it puts every man in possession of himself as he is and places the entire responsibility for his existence squarely on his own shoulders";¹¹ and ii. The freedom and responsibility as seen in other persons. The 'other' is revealed to me as freedom and responsibility. So far as the first point is concerned, it has been ably criticised by W. von Leyden in his review of Sartre's book cited above.¹² He says: "The constraint

6. *Ibid.* p. 17.

7. *Was ist Metaphysik*, p. 36, Frankfurt, 1951.

8. Heidegger, *Sein und Zeit*, p. 42, Tübingen, 1949.

9. *Was ist Metaphysik*, pp. 14-15.

10. *Humanismus*, p. 19.

11. *Existentialism and Humanism*, p. 19.

12. *Mind*, LVIII—1949, pp. 398-399.

of which M. Sartre here speaks is not of the same kind as that which curtails man's freedom in a position of responsibility." One is likely to agree with him when he imputes motives of popularisation to Sartre for the latter's attempt to somehow wed existentialism with humanism. On the other hand Sartre's assertion that "man is nothing else but that which he makes of himself"¹³ would put him on the same stand with Heidegger unless the term 'man' here were used in the sense of "the subjectivity of men in their totality",¹⁴ a danger or a false interpretation to which Heidegger draws our attention. It is clear from the philosophical writings of Sartre that he does not use it in that sense at all.

Sartre is insistent on the fact that this freedom and responsibility is universal, that is, common to all men. "I am thus responsible for myself and for all men and I am creating a certain image as I would have him to be. In fashioning myself I fashion man."¹⁵ "I cannot make liberty my aim unless I make that of others equally my aim."¹⁶ Elsewhere, writing on aesthetic pleasure, he says that aesthetic judgment involves a certain form of universal freedom and an "insistence that other men in the same circumstances should enjoy the same freedom." When I make the universal judgment, I am at once "asked to put myself on that universal plane."¹⁷

Now how far is this admission of a universality consistent with the existentialist insistence on the 'condition' or the 'situation'? Sartre gives the example of a young man who came to him for advice during the war because he found himself in a dilemma. The dilemma was whether he should stay with his mother who was alone and needed his assistance or whether he should join the liberation movement, as all young patriotic Frenchmen were expected to do, and proceed to England? Sartre says that when one finds himself in such a situation, no advice could be obtained from general principles. He makes a thrust at Kant. "Kant declared that freedom is a will both to itself and to the freedom of others. Agreed: but he thinks that the formal and the universal suffice for the constitution of a morality. We think on the contrary that principles that are too abstract break down when we come to defining action."¹⁸ Since therefore there are no principles to guide our

13. *Existentialism and Humanism*, p. 28.

14. *Humanismus*, p. 28.

15. *Existentialism and Humanism*, p. 30.

16. *Ibid.*, p. 52.

17. *Reflexions on our Age*, pp. 72-73.

18. *Existentialism and Humanism*, p. 52.

conduct, one has always to choose for himself. There are no signs, and even if there were he would have to interpret them for himself. Thus no-one can guide any other person's conduct nor can he judge another's conduct as wrong. What a man does is an expression of his freedom and as such, it is himself. There are no norms and so there is no question of this being good and that being better. Therefore "nothing remains but to trust in our instincts."¹⁹ Thus responsibility and freedom consists in acting up to our instincts. The conclusion is just as paradoxical as Oscar Wilde's statement that the best way of overcoming temptation is to succumb to it. Rightly has Mounier called attention to this—"the most obscure problem in Sartre's philosophy, especially as it is not stated with perfect coherence and clarity." He proceeds, "Although it is dramatic enough in its initial stages, Sartre's type of freedom ultimately eschews dramatic appeal, since in the end it never actually comes up against any restrictions."²⁰

When Sartre draws the conclusion that man is 'responsible' from the fact that he is 'free' (in the existential sense), he is using the word in a sense quite different from what we understand normally by it. When we say that a man is 'responsible', we mean that he is responsible for something. Without the position of a 'norm' or 'ideal', responsibility is meaningless. If on the other hand we mean by it as Sartre does that man is responsible for all that he knows and does, the word is cheapened and is distorted out of recognition. "Every purpose however individual it may be, is of universal value. Every purpose, even that of a Chinese, an Indian or a Negro, can be understood by a European. To say it can be understood, means that the European of 1945 may be striving out of a certain situation towards the same limitations in the same way, and that he may re-conceive in himself the purpose of the Chinese, of the Indian or the African. In every purpose there is universality, in this sense that every purpose is comprehensible to everyman."²¹ Thus the purpose of the homicide or the burglar has also universal value in so far as it is comprehensible to every man. This absurdity of Sartre's position has been commented upon by M. Foulquié. "For M. Sartre in fact, man's responsibility extends far beyond what from a common-sense point of view, he could have chosen freely. Nothing eludes it; it includes not only the inner

19. *Ibid.*, p. 36.

20. Emmanuel Mounier: *Existentialist Philosophies*, p. 103, London, 1947. (Tr. Eric Blow).

21. *Existentialism and Humanism*, p. 46.

personal activity, but also external events. I am responsible for everything, as deeply responsible for the war as if I had declared it myself... The responsibility that Sartre's existentialism imposes on man also differs essentially from what we ordinarily understand by the word. One is responsible to someone or before someone who pronounces a judgment and imposes a sanction; before God, before society or before an ideal self who judges the real or the empirical self. M. Sartre's philosophy retains nothing of all that. All the intellectual presuppositions which in essentialist philosophy were used to explain why we feel ourselves responsible, have been jettisoned. There remains only the crude datum of inner experience... 'We do not do as we like and yet we are responsible for what we are. This is the plain fact.' A fact, inexplicable, gratuitous, absurd—like everything else."²²

Heidegger on the other hand seems to be more consistent in his comments on humanism. He has nothing to say for or against humanism as such. He confesses that we can only understand the meaning of the word humanism, but that what humanism really is (provided of course that we decide to retain the word) requires first that we experience (*erfahren*) the true essence (*Wesen*) of man and secondly to show how this essence is destined (*geschicklich*).²³ An examination of the essence of man reveals that that essence (*Wesen*) of man is essential for the Truth of Being (*Sein*). It thus concerns man not in the least. That would be a peculiar kind of humanism but that is the only meaning that he could give to the word in case one would like to retain it. As he says in his mystic manner "man is the shepherd of Being" and that is why the essence of man is revealed in the form of Care (*Sorge*).²⁴ He has to care for and always be present by the side of Being. All definitions of the essence of man have been till now attempts at metaphysical projects. His fundamental standpoint is thus a complete denial of all that was handed down through the ages. It is as much different from Humanism as it is from Logic and Reason.

But this opposition to traditional humanism should not be taken to be therefore the defence of the inhuman: on the other hand it opens new visions and might make some clearer. It is perhaps not out of place to put down what Heidegger says in his

22. Paul Foulquié—*Existentialism*, pp. 70-71, London, 1950, (Tr. Kathleen Raine).

23. *Über den Humanismus*, p. 31.

24. *Sein und Zeit*, § 42.

own words. "The thinking (das Denken)²⁵ against the values does not mean that everything that one explains as 'values'—culture, art, science, human dignity, the world and God, are all without value. It is truer finally to perceive that it is through the pointing out of something as a 'value', that the object thus valued is robbed of its worth. That is, through the estimation of something as value, the object valued is admitted merely as the object of human estimation. But that which is (i.e., exists in English) in its own Being does not exhaust itself in mere objectivity: does not become perfect, if the objectivity has the nature of value. All value is, even where it is positive, a subjective value... When one announces God as the 'highest value', there is a degradation of the essential nature of God." The belief that the value of man is best preserved and the dignity of man is proclaimed in a humanistic philosophy is a wrong estimation of its value. There is no need to wed existentialism with humanism. There is no need to lose the authenticity of the human reality in the unauthenticity of the 'one', who is no one in particular. Of course the analysis of this authentic human reality leads Heidegger to conclusions where we need not follow him blindly. But that is another question.

25. Heidegger uses 'Denken' as opposed to metaphysical rationalisation. It is impossible to translate it into English. The following passage is a running translation and makes no pretensions to exactitude. See *über den Humanismus*, pp. 34-35.

Aspects of the Deity in Visistadvaita Philosophy

by

M. YAMUNACHARYA, M.A.

Department of Philosophy, Mysore University

Viśiṣṭādvaita, as is well known to students of Vedānta, is the term that characterizes the theistic philosophy of Ramanuja based on his interpretation of the Upanishads, the Gita and the Brahma Sutras. He follows in his interpretation a few of his predecessors whom he names as 'pūrvacaryas', consisting of Dramida, Guha Deva, Bhāruci, Bodhāyana, Yāmuna and so on. He arrayed himself on the side of these teachers of the ancient theistic tradition in India, and built up a powerful dialectic which Thibaut, the English translator of the Sri Bhashya of Ramanuja, describes as follows: "The intrinsic value of the Sri Bhashya moreover is—as every student acquainted with it will be ready to acknowledge—a very high one; it strikes one throughout as a very solid performance due to a writer of exclusive learning and power of argumentation, and in its polemic passages directed chiefly against the school of Sankara it not infrequently deserves to be called brilliant even.....and in addition to all this it shows evident traces of being not the mere outcome of Ramanuja's individual views but of resting on an old and weighty tradition."

On the philosophic front Ramanuja had to fight a tough battle against conceptions that weaned God away from man either by making Him too shadowy or too lofty for man's feeble reach, or too metaphysical to be grasped by the common man. The theological decimation of God or His evaporation in the name of philosophy was arrested by powerful dialectic of Ramanuja. There are many phases of his thought that need to be recovered for the modern man in India and elsewhere. A revaluation, in the present philosophic context, of the thought of this great master becomes therefore a necessity. One such effort is made here touching but a corner of the rich theistic philosophy of Ramanuja, the greatest exponent of Viśiṣṭādvaita Vedānta.

The notion of the Deity which constitutes the corner-stone of Ramanuja's philosophy must receive our attention here. We are particularly concerned here with the notion of Deity in rela-

tion to the cosmos and to the individual. The triune constitution of Reality, viz. the chit-achit-viśiṣṭa Isvara or the conception of Deity as inseparable from the world of matter and souls, is the very basic concept of this system. The whole philosophy of viśiṣṭādvaita rests on these three realities indissolubly linked with one another, but linked in such a way that none of them loses its distinctiveness from the others. *Chit*, *achit* and *Isvara* are the three *tattvas* of viśiṣṭādvaita. A clear knowledge of these, says Pillai Lokācārya, a theologian of the school, is the theoretical foundation for the life of an aspirant after Liberation (*mumukshu*).

Let us now take the nature of the Deity into consideration and clarify to ourselves the meaning of *Svarūpa*, *rūpa*, *guṇa* and *vibhūti*, which Rāmānuja regards as the chief features of the Deity revealed to man.

From the viśiṣṭādvaitic point of view the God-Idea reveals itself under four aspects. These are *Svarūpa*, essence; *rūpa*, form; *guṇa*, attribute; and *vibhūti*, manifestation. The essence is the pure spiritual substance, the basis of all existence. This may be conceived as the impersonal vastness of being. When we come to Form, we come to the conception of the impersonal becoming personal. It is the first materialization of the spirit, to express it in the language of spiritualism. Here we arrive at the idea of a personal God (*rūpa*) relative to God as the essence (*Svarūpa*). Viśiṣṭādvaita speaks of two aspects of the Deity, the *avyakta* and the *vyakta*, the former being the state of the unmanifest and the latter of the manifest. The *vyakta* or the manifest state would be like 'a crystallizing substance', as H. G. Wells imagines his *God, the Invisible King*. Etymologically the term 'Viṣṇu' by which Rāmānuja names the deity connotes the idea of pervasion of the universe. Pervasiveness of the Deity in the Cosmos in the form of its essence is what is expressed by the Upanishadic passage 'antarbahisca tat sarvam vyapya Nārāyaṇah sthithaha'. Nārāyaṇa stands pervading the inside and the outside of this visible universe. Nothing falls out of its orbit. God is the 'inner ruler, immortal' (*antaryami amṛtah*) of the universe. As the ruler of the cosmic order he is called Isvara which means the One who rules supreme. According to the Gīta, Isvara is the God in the machine of the universe, and operates through it as the impulse from within, on account of which the wheels of the universe keep moving.¹ God's Mills grind slowly but surely.

1. *Isvarah sarva bhūtānām hr̥dēserjuna tishthati
brhāmāyā sarva bhūtāni yantrārūdhāni māyayā.*

This aspect of the Deity is conveyed by Ramanuja by adopting the term *Isvara* by which he calls Brahman. The *Svarupa* of Isvara is characterised by a quality which is repellant to all that is evil (*akhila heya pratyānikatva*), which is the abode of all excellences (limitless knowledge and bliss) (*ananta jñānānandaika kalyāṇagunākaratva*). Such a characterization is a limited characterization for the reason that the excellences of the Deity are really incalculable (*asankhya kalyana guna gana mahodadih*) and inconceivable (*acintya*). Man's efforts in comprehending the attributes of God are compared to the arrows that a hunter shoots into the sky—a hunter who when all the arrows in his keeping are exhausted comes back with a sigh stating that there is no more space in the sky.

We next come to the *guṇa* aspect of the Deity. The deity has depths too deep for man to plumb. But this would not justify any one saying that God is unknowable. It does not remain wholly unknowable. Were it so, we would not be speaking of Him and speculating about Him. He is unknown to us in certain aspects, and from this we cannot leap to the conclusion that He is unknowable. From *ignoramus* we cannot leap to *ignorabimus*. Agnosticism therefore in the sense of acquiescence in helplessness and hopelessness in the quest of the Absolute has never appealed to Rāmānuja. God is known, though not perfectly, but can be known perfectly in ways other than those with which we are ordinarily familiar in our drab daily existence.

We know God then by the attributes (*Guṇas*) with which He manifests Himself in the same way as we know a flower by the subtle fragrance that it emits. We know Him through goodness and beauty by which He manifests Himself in the mind and heart of man. We find the energy of God manifesting itself in the attempts made by men to overcome evil of all kinds. Goodness consists in overcoming evil, and it is in this sense that we can say that evil is the fuel that feeds the flame of good. Rāmānuja sees the divine presence in youth (*yāuvana*), beauty (*saundarya*), grace (*lavanya*), *kārunya* (compassion), on which he lovingly dwells in his lyrical prose poems known as the *Gadya traya*. The real philosophical purport of it all may be stated thus. The presence of the Deity in the world of man is in the form of the eternal values of the true, the good and the beautiful, of which man is the bearer or the channel of expression. It is these values that rule over the mind and heart of man that make him a participator in Divine Life.

The *sat-chit-ānandatva* or existence, consciousness and bliss give us the three essential primary attributes (*guṇas*) with which Vedānta invests the Deity. From this primary root derive all other secondary attributes which Ramanuja's Vaisnavism expatiates upon as countless excellences of the Deity, *ananta kalyāṇa guṇa*.

In this *guṇa* aspect of the Deity it may be seen on reflection that in *sat* we find the physically or scientifically qualified Deity, in *chit*, the psychically or metaphysically qualified Deity, and in *ānandatva*, the aesthetically or ethically qualified Deity. We have here a conception of God, not empty, but filled with attributive contents, which, in all the infinite ramifications, proceeding from the primary triune character, constitute the *ananta kalyāṇa guṇatva* or the Being constituted by infinite graces or perfections.

So far, it is clear that in all these aspects, the Deity as it presents itself to the consciousness of man by its *svārūpa*, *rūpa* and *guṇa* makes itself as plain as any one can desire and as immediate and intimate as any one can wish. The Deity thus becomes *Sulabha*, easy and accessible to the mind and experience of man.

We have now to consider what the *vibhūti* aspect of God would imply. The meaning of the word is *vividham bhavati iti*, i.e., God is He who becomes manifest in manifold ways. The universe in which the Deity manifests itself is itself boundless (*ananta*). In its immensity it strikes one with a sense of awe, wonder and mystery (*vividha vicitra-ananta*). This variegated (*vividha*) and wonderful (*vicitra*) nature is the body, the dress, accoutrements and ornaments (*divya rūpa*, *divya bhūṣaṇa* and *divyāyudha*) of the Divine Being. But the Essential (*Svarūpa*) is never separate from the manifestations. The Cosmos *Qua* Cosmos never exists or can exist. The Cosmos is but a living garment of God. The relation between God and the Cosmos is a *śarīra sarīrī* relation or the body-soul relation. God is the soul and the Cosmos is the body or vesture of God. This idea constitutes the main feature of Viśiṣṭādvaita philosophy, finding in the hands of Ramanuja a systematic philosophical exposition based on a living aesthetic experience of the Deity. In one of his Gadyas Ramanuja says that this experience has been the clearest of the clear to him and an abiding experience (*viśadātmānubhavaṇa nirantaram anubhūya*).

The Cosmos is not hidden from us. It is there before us in all its beauty and sublimity; and inasmuch as the Cosmos is the habitation of an everdwelling presence, God in this *Vibhūti* aspect can never be said to be screened away from us. God in the

Cosmos stands before us as a beneficent evidence of Himself shining through sun and stars, blossoming through flowers and their fragrance, sporting in movements of kids and calves, running in streams and leaping in cataracts, lightly moving on the wings of butterflies and energetically manifesting itself in upheavals and cataclysms. All this Ramanuja would look upon as the Lila or the Divine play in the universe (*lokavat tu lila kaivalya*). According to Ramanuja, Nature is God revealed and God is Nature ensouled. God treated under the four-fold aspect by Ramanuja is the real of reals (*Satyasya Satyam*). It is not merely a metaphysical or logical necessity, but an indubitable fact of experience to Ramanuja. It is the experience of the Divine through its manifested attributes according to Ramanuja (*bhagavad guṇānubhava*).

Svarūpa, *rūpa*, *guṇa* and *vibhūti* are thus the four facets of the Divine Being, the contemplation of which constitutes the highest joy of existence for man. Contemplation leads to service. *Dhyāna* leads to *Kainkarya*. And it is only in the confluence of the two that a healthy and robust religion can become possible. *Dhyāna* without Karma is empty and Karma without *Dhyāna* is blind. Ramanuja aims at a fusion of the life of contemplation and the life of action. The only Bliss that one should aspire after, according to Ramanuja, is the Bliss of service to the Deity which is the source of all that is true, all that is good and all that is beautiful in the realm of human experience (*bhagavad Kainkaryāika ratih*) *Kainkarya prāpti* or obtaining the privilege to serve such a God is the highest privilege that any man could covet. Man must order his existence in such a way that his entire plan of life is directed by love for the highest (*bhagavadanurāga*) the knowledge of the highest (*tadupāya samyag jñāna*) and appropriate action (*tadupāya samīcīna kriya*) befitting one who is not in pursuit of the fleeting and evanescent pleasures of the senses. The loyalty to the best within us is the highest of loyalties to which all other loyalties have to be subordinated. Seek the service of the Divine and all else will be added unto you, says Ramanuja. The highest bliss known to man is knowledge of the divine ripening into love of the divine.

On a Proof that Pure Induction Approaches Certainty as its Limit

by

DR. RAMACHANDRA PAL, M.A., LL.B., D.PHIL.,
Professor of Philosophy, Surendranath College, Calcutta.

The history of this proof is connected with Keynes' theory of Pure Induction. By Pure Induction he means those inductive arguments which are based on the number of instances. In Ch. XX of his 'Treatise on Probability' he states how the probability of a generalisation in a Pure Induction approaches unity as its limit. If P_n means the probability of a generalisation after the examination of n verifying instances, and h , the general a priori data of the investigation,

$$P_n = \frac{P_0}{P_0 + x_1 x_2 \dots x_n / gh (1 - p_0)}$$

Here p_0 means the initial probability of the generalisation g , and x_1, x_2, x_3 , etc., are the instances of g .

From the formula we obtain two conditions for the probability of the generalisation to approach unity as its limit. First, p_0 must be a probability of finite value greater than zero. Secondly, on the supposition that the generalisation is untrue, it will be infinitely improbable for an infinite number of instances to verify the generalisation successively. If the first condition is not satisfied, p_n may assume the form of O/O , which is to say the least indeterminate.

If the second condition is not fulfilled, then $p_n = \frac{p_0}{p_0 + K}$ where K is a positive number less than 1. Here p_n must in all cases fall short of certainty.

The first condition is sought to be satisfied by Keynes in the following manner. Keynes takes it for granted that the number of generator properties is finite. As the number of such properties is limited, the number of groups also will be limited.

The conclusion can, however, be entertained if the possibility of a plurality of generators is ruled out from the beginning. With

respect to this conclusion it will suffice to observe that it is a direct corollary from Keynes' postulate of the Limitation of Independent Variety. It is necessary, however, to mention that if variety be confused with the marks of individuality which are infinite in number for each individual, no limitation in respect of variety can at all be conceived of. So the postulate of the limitation of Independent Variety requires a suitable definition of the term "variety", without which the postulate is unworkable. It is in view of this difficulty that we have elsewhere sought the help of the notion of Irrelevance. If every mark of the individual is important a generalisation in respect of two such marks cannot claim a priori finite probability for itself. And this points out the need of the notion of Irrelevance apart from which the postulate of the limitation of independent variety cannot function.

A further question that may be raised here is whether the postulate is certain. Keynes thinks that it is not necessary for our purpose. "What we require a priori, is not the certainty of the Inductive Hypothesis, but a finite probability in its favour." The proof is simple. If a generalisation is g and our empirical evidence is e , then for the a priori finite probability of g , the postulate p is necessary such that g/p has a finite value. If there is another postulate p^1 and we have another empirical evidence e^1 so that p/p^1 has a finite value, there is no defect in treating the postulate p as the a priori datum for e . It is not needed, therefore, that the postulate must first be proved before it can be applied in any case. It will suffice if the postulate has a finite a priori probability. But is there really any empirical proof for the postulate? To this query Broad replies in the following way.

Broad does not think that the postulate has 'the slightest trace of self-evidence.' It is necessary, therefore, to inquire whether it has a finite probability even. If l , f and e denote the postulate, certain facts in relation to which l is finitely probable, and certain empirical consequences from the truth of the postulate respectively, the following equations follow:—

$$(a) \quad e1/f = e/f \times 1/fe$$

$$(b) \quad e1/f = 1/f \times e/1f$$

From (a) and (b) we have

$$1/fe \times e/f = 1/f \times e/1f$$

$$\therefore 1/fe = \frac{(1/f) \times (e/1f)}{e/f}$$

Since e ex hypothesi follows from the postulate 1, $e/1f$ is equal to one.

$$\text{So } 1/fe = \frac{1/f}{e/f}. \text{ As } e/f \text{ can in no case be greater than unity,}$$

$1/fe$ is greater than $1/f$. Here two conditions for the successive strengthening of the probability of 1 must have to be satisfied. First, $1/f$ is greater than zero and secondly, f and e are actual facts.

Now where there is repetition, there is the possibility of a limitation in respect of constituents. On the other hand, where there is a limited number of constituents, repetition must follow from this as a matter of course. This repetition may be denoted by e while f in physical phenomena is illustrated by such artificial structures as watches, motor-cars, gramophones, etc. In the physical plane at least, therefore, the postulate has a finite probability.

By analogy 1 attains a faint probability.

The procedure appears to us a little circuitous. First, it is sufficient for proving that the postulate is at least finitely probable, if we can find out e . It is admitted that e follows from 1. Now if it is admitted, there is some relation at least between the nature of e and that of l . We shall try to establish that e is by itself sufficient for the purpose. The fact of repetition is sufficient for making the postulate finitely probable. Repetition signifies that the same type of constituents is operating in two or more cases. This shows that the number of variety is not as great as the number of possible instances. It remains doubtful whether the same is true in the psychical plane. The doubt is natural for Broad and others who are to find out if there is any thing like f here. They find that f cannot be found out here. But is f necessary here? To this our answer is in the negative. For e is sufficient for our purpose. Nay, we have still better reasons for the position we have taken.

The best proof of repetition is, we submit, the fact of assimilation. Were there no repetition in the psychical plane, assimilation could not take place. But since people have actually been able to build up psychological theories, they must have assimilated various psychological data. The mystery of assimilation supplies us, we submit, with the key to the a priori finite probability of the postulate. But what explains this mystery? When two distinct instances are found to be similar to each other, an identical

element is not certainly traceable here. In respect of multifarious marks of individuality, the similar aspect must surely harbour differences within it. It is only a sense of irrelevance in respect of such marks that makes assimilation possible. So for certifying that the postulate of limited variety is at least finitely probable the notion of irrelevance is felt to be indispensable. But since the notion of invalidation operates here, it will be advisable for us to find out a more positive basis for our theory of pure induction. We have observed elsewhere that x and y must somehow be relevant to each other for satisfying the first condition of Keynes' theory of Induction. Even if causal or functional relevance is not to be expected in the case of Induction per simple enumeration, at least contextual relevance must not be ruled out of consideration. Hence the primacy of the notion of relevance in the theory of Pure Induction.

Let us now attend to the second condition of Pure Induction. Here arises the question whether pure induction can be regarded as an inductive method in its own right. Nicod answers the query in the affirmative. The affirmative answer to the query is significant because Keynes is alleged to have relied "for his proof, of pure Induction on the decrease in the positive analogy of the instances." The charge against Keynes may not be, however, as strong as it appears to be. For the proof of Pure Induction may be considered, in all fairness to Keynes, as distinct from the process of Pure Induction. So Keynes' reliance on the decrease in the positive analogy of the instances does in no way challenge the right of pure induction to be called an inductive method in its own right. However if Pure Induction could be justified without any such reference to the expected decrease in analogy, it would certainly more clearly establish that Pure Induction is to be called an inductive method in its own right.

Now Nicod regrets that all efforts to raise the probability of a law by the multiplication of instances above any limit have failed. The reason for this failure is not far to seek. The finiteness in number of generators or of species does not indicate that Induction per simple enumeration will succeed. For while species or types of generators are finite, "we do not", says Nicod, "by any manner or means actually draw a species, but always an individual". Thus the finitude of the number of species is by no means a sufficient postulate for the validation of Pure Induction. It is in this context, therefore, that Philip T. Maker's paper on the proof that Pure Induction approaches certainty as its limit appears to be important. The paper claims to have made no in-

ductive hypothesis other than the postulate of the Limitation of Independent variety.

If the number of instances capable of being referred to by a generalisation be infinite, if the generalisation has a finite initial probability and if the instances be represented as x_1, x_2, x_3 , etc., the following results would follow.

$$P(x_1, x_2, \dots, x_n, \dots) = \frac{h}{x_1} \times \frac{x_2}{h, x_1} \times \dots \times \frac{X_n}{h, x_1, x_2, \dots, x_{n-1}}$$

Maker relies upon the truth that the product of an infinite number of probabilities is zero, when each of such probabilities is less than certainty. But

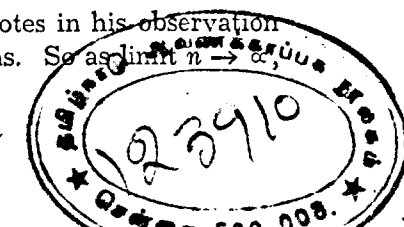
$$\frac{p(x_1, x_2, \dots, x_n, \dots)}{h} \neq 0. \text{ It follows, therefore that}$$

only a finite number of probabilities in the series on the right hand side is less than unity. This means that after a finite number of instances the next probabilities will be as high as unity. In other words, "As the number of instances examined (n) increases indefinitely, the probability of the unexamined instances will increase toward certainty as a limit.

$$\lim_{n \rightarrow \infty} \frac{x_{n+1}}{h, x_1, x_2, \dots, x_n} = 1"$$

Here we offer the following observation. If an infinite number of probabilities on the R.H.S. ought not to be less than unity, it does not follow that such probabilities should be finite in number. For the product of a finite number of probabilities being greater than zero, there is room for another finite probability on the R.H.S. without reducing the product to zero. This shows that the first finite number of finite probabilities is not the total number of finite probabilities. Now the first finite number being any finite number, it demolishes the hope that after a finite number of finite probabilities we shall approach certainty. Thus the number of finite probabilities is at best an indefinite number which is distinguishable from both finiteness and infinity.

Secondly, a 'given infinity' is, as Kant notes in his observation on the first antinomy, a contradiction in terms. So as $\lim_{n \rightarrow \infty}$,
P. 7



the probability referred to is never in the stage of actual attainment.

Thirdly, the theorem of Keynes, of which Maker's thesis is an extension, assumes 'that there is no reason a priori for expecting the occurrence of any one instance with greater reliance than any other.' This assumption implies further that the selection of x_1 , x_2 , etc. is completely unbiased. But this means that the indefinite number of instances referred to in Maker's paper must have the chance to belong to all the different species of x . If the assumption be wrong, x_1 , x_2 , etc., which are the indefinite number of instances of x , may belong to a single species for which the generalisation is true, while it may not be true for other species. So unless you can rule out the possibility of contrary marks in different species under the same genus, a generalisation in respect of the genus must be very insecure. Maker's paper does not guard us against this pitfall.

Lastly, each succeeding probability may be assumed to increase only when the observed instances are relevant as data to the unobserved instance. But this means that the real foundation of probability is not number, but relevance—a point we have already established in an unpublished work of ours.

So it has not been possible for Maker to establish that a mere number of instances is sufficient for justifying pure Induction.

Yet we must not, on that account, discredit pure Induction as a method in its own right. For the charge that pure Induction rests on certain assumptions does not go much beyond the proposition that pure induction suffers from the inadequacy of its postulates. But this is as it should be. So there is little to show that pure induction is not a method in its own right.

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3. Philip T. Maker — A Proof that Pure Induction approaches Certainty as its limit (Mind — 1933).
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Value as the Pre-metaphysical

by

RAM MURTI LOOMBA,
Lucknow University.

The purpose of the present paper is to bring out certain implications of a way of thinking about the relation between metaphysics and ethics which I suggested in a discussion on one of the symposia at the Mysore session of the Indian Philosophical Congress in 1952. I defended the position that the respective spheres of ethics and metaphysics are reciprocally autonomous, but may both be held to be dependent on what I called the 'pre-metaphysical.' I was asked how the 'premetaphysical' was to be conceived. I had no ready answer to this question then. But it now seems to me that the premetaphysical is essentially of the nature of value. I will try to explain here how I arrive at this conclusion and the implications I see in it.

As I think of it, the roots of the matter go down to the nature of philosophy. I entirely disagree with what I call the residual view of philosophy,—the view that the sphere of philosophy is that of the so far unsolved problems of science. I maintain that philosophy has its own autonomous sphere,—the sphere of problems that are not soluble by verified or verifiable observation. It is a sphere inherently beyond science. Its problems are those that by their very character require a supersensory approach. The method of this approach may be by way of thought, imagination, or intuition of some kind or other, or some other sort of experience, process or effort. But, though it may deal with problems raised by or involved in sensory experience, it must necessarily be super-sensory or non-sensory if you please. This is what qualitatively distinguishes philosophy from science and gives it an independent sphere of its own.

I would also distinguish between philosophy and logic. Logic is the discipline which deals with the principles of valid inference or reasoning. Inferential thought is characterized by deduction whether in the way of traditional formal logic, or in the way of inductive generalization, or in some more modern way. Now philosophy may at any stage employ such inferential processes.

But there is a new insight that seems to be characteristic of all philosophy,—some new 'vision', a flight from sensory or other empirical data to some new principle, incalculable and unforeseeable by any amount of mere analysis of facts, and irreducible to any kind of empirical fact itself. That may be called the essentially creative character of philosophy. Logic deals with merely inferential thinking, whether in connection with the facts of everyday experience, or with the data of scientific observation, or with mathematical, philosophical or some other kinds of symbols or concepts.

Within philosophy, metaphysics has a place of its own. Its concern is with 'reality' as against appearances, with first principles or with ultimates rather than with empirical facts, although the search for the former may be inspired by, or may have to start from and even deal largely with, the latter. The sphere of metaphysics is the sphere of the 'is', though positive natural science too is said to deal with an 'is', particularly in contrast with ethics which deals with an 'ought.' The 'is' of science is the empirical fact. It is essentially observational. Metaphysics, on the contrary, deals with what 'is' in the sense of 'what is real.' This 'is' has a different status, different from that of appearance or positive empirical fact. It may be said to have a metaphysical status.

Ethics too has its own autonomous sphere, independent of that of metaphysics. It is the sphere of the 'ought,' of norms or standards. As such it is not a fact or a datum in metaphysics. It cannot have a metaphysical status. Ought is value. Therefore value is not metaphysical. It has some other status.

Closer attention, further, shows that all 'ought' is not ethical. It is generally accepted that ethics is not the only normative discipline. At least logic and aesthetics are also recognized as normative, and axiology is supposed to deal with ought or value in general. But apart from this, the 'ought' can easily be seen to have at least two distinguishable forms. What 'ought to be' may be distinguished as such from what 'ought to be done.' Just as the 'ought to be done' indicates a standard of conduct, the 'ought to be' indicates a standard of reality. We are, for example, familiar in the history of philosophy with non-contradiction serving as one standard of reality. Now, the status of such a standard must philosophically be different from the status of the reality of which it is a standard. The reality 'is' in the sense explained above. But the standard of reality neither 'is', for it is the criterion which the 'is' must satisfy, nor it 'is not', for it insists on being recognized. More-

over, if it had a metaphysical status, if, that is, it had a metaphysical reality, it would require another criterion for its own reality. The 'ought to be', therefore, is not a real. It does not have a metaphysical status. It is an 'ought', a norm or a standard. But it is not ethical. For it is the standard not of doing but of 'being' or 'reality'. Since it is essentially required for metaphysical reality, I call it, for want of a better name, a 'pre-metaphysical.'

At least Kant and many after him have realized that metaphysics for its possibility requires an epistemology or theory of knowledge. The 'pre-metaphysical', however, of which I speak, consisting as it does, in standards of metaphysical reality, may appear to be as much in need of modes of knowing as metaphysical reality itself. Pre-metaphysics, true, would require a theory of knowledge as much as metaphysics requires a theory of knowledge of the metaphysical or the ultimately real. But then the theory of knowledge would require its own criteriology. And, therefore, though premetaphysics, that is, search or knowledge of the pre-metaphysical, would require a theory of knowledge of criteria of reality, the premetaphysical standards or values themselves which reality must satisfy need not be necessarily held to be dependent on a theory of knowledge of the real. More so, because, as said above, they 'are' not, and therefore in no way can be said to 'be'. In this way they are elusive and thus would not even admit of a theory of knowledge.

Let us now consider the status of the 'ought to be done', the standard of conduct, the ethical. It seems to me that very largely what ought to be done depends on what ought to be. I ought to pay the price of what I have bought and help a person in distress, because a certain state of things called justice or described as some kind of a balance ought to exist, because, in other words, certain values ought to be preserved or realized. These values, then, have a status which is pre-ethical. It shares in the status of the pre-metaphysical in so far as these values, like justice, also 'ought to be'.

From this point of view, then, from the empirical 'is' we may move, or rise or ascend if you please in two directions. This is possible because the empirical 'is' consists of experience as well as of conduct, of things as well as of actions. One remove from things, above them one may rise to their 'reality', their metaphysical basis, nature or essence, the metaphysical 'is'. Likewise, one remove from actions, above them one may rise to the level of the ought to be done, of the standards of conduct, of the ethical. The meta-

physical 'is' and the ethical 'ought to be done' both are at one remove from the empirical 'is' and so far are somewhat similarly placed, inspite of the fact that the one is an 'is' and the other is an 'ought'. This difference indicates that we may perhaps speak of two different directions or dimensions along which we may proceed beyond empirical data—in the direction of metaphysical and ultimate reality, or in the direction of ethical standards.

Then we may proceed another step in each of these two divergent directions—to the standard of reality beyond the metaphysical, and to the values like justice mentioned above which ought to be preserved, conserved or realized. Both of these, we have seen, are of the nature of 'ought to be', of the nature of values. It seems, then, that in whatever direction we seek to go beyond empirical data, if we go sufficiently far, we reach in each direction a realm of values, of the 'ought to be'. What we have called the premetaphysical, thus, provides not only standards for metaphysical reality, but also values for what ought to be done, for the ethics of conduct. Value, therefore, has a status of its own different from and higher than the status of the metaphysical and the status of the ethical. It may also be called pre-ethical, but, perhaps, since inquiries as to status refer usually to metaphysics, it may still be more significant to call it the pre-metaphysical.

The Function of Avachchedakatā in Indian Logic

by

PROF. HARI MOHAN JHA

The concept of Avachchedakatā plays an important part in Indian Logic. It is an instrument for precision in thought and language. The aim of the present paper is to illustrate the main applications of Avachchedakatā.

The term 'Avachchedaka' literally means that which specifies or delimits: With the help of such specifications, we gain exactitude in expression and clarification of sense.

We shall see how avachchedakas help us in analysing the meaning of a proposition. 1. Let us take a proposition:

The mountain is with fire (on it).

If we try to understand the exact meaning of the above proposition, a number of questions arise: (I) Is the *whole* mountain with fire (on it) or *only a part* of it?

(II) Is the mountain *always* with fire or *only at the present moment*?

(III) Is fire *inherent* in the mountain or *externally conjoined* to it?

Now there is nothing in the form of the proposition as such which can point to the one or the other alternatives mentioned above.

Let us take a second proposition:

The mountain is solid. It is in the same subject-predicate form. But it differs in significance from the first proposition in respect of all the three points raised above, for while in the case of the former, it is the first set of alternatives that applies, in the case of the latter, it is the second set.

The meaning of the first proposition then can be set forth in the following way.

(1) The mountain is with fire *with regard to some part only* (*Ekdeshāvachcheden*). Here the *Avachchedaka* specifies the quantity or measure of the subject that is related to the predicate.

(2) The Avachchedaka pointed out above gives spatial determination. But it says nothing about the temporal quality. Hence another Avachchedaka or specifying clause is required:

The mountain is with fire at the present moment of time (*Etat-kālāvachchedena*). Here the Avachchedaka specifies the duration of the predicate in the subject.

(3) But though the two Avachchedakas go a great length to clarify the meaning of the proposition by delimiting the spatio-temporal denominations, they leave one point undecided. Is the relation between the mountain and fire one of inherence or of external conjunction? In order to clarify this issue, a third Avachchedaka is required. The fire is related to the mountain by way of external conjunction (*Sanyoga Sambandhāvachchedena*). Here the Avachchedaka determines the nature of the relation that subsists between the subject and the predicate.

2. Now let us analyse the import of the said proposition from another angle of vision: (1) If we make a bare statement by merely affirming the relation between the mountain and fire, then the term 'fire' is characterised by the quality of predicateness (*Vidheyatā-vachchedaka Dharma*).

(2) But let us suppose, we want to establish the existence of fire on the mountain on the ground of smoke arising there. In that case, the above proposition will assume the character of a probandum and the same 'fire' will be characterised by the quality of a major term (*Sadhyatāvachchedaka Dharma*).

(3) Let us suppose again that the above proposition is stated as a ground for making an inference; viz.: 'The mountain is hot'. In that case, the same term 'fire' will be characterised by the quality of a middle term. (*Hetutvāvachchedaka Dharma*).

Thus we find that the same term possesses different avachchedakas or specific characteristics in different contexts. Just as the same woman is a wife in relation to her husband, a daughter in relation to her father, and a mother in relation to her son, similarly the same term 'fire' is a predicate in relation to the subject 'mountain', a major term in relation to the middle term 'smoke', and a middle term in relation to the major term 'hot'.

3. The concept of Avachchedakatā is also useful in specifying the nature of substantive-adjective relation (*Viśeṣana-Viśeṣya Bhāva*). The adjectival function (*Viśeṣanatā* or *Prakāratā*) is of

two kinds; viz.: (i) Determinative (*Niroopya-Niroopaka Bhāva*); e.g., The pot is blue.

(ii) Locative (*Ādhārādheya Bhāva*); e.g., The pot is on the ground.

Again, it is twofold: (i) Positive; (*Bhāvātmaka*); e.g.:

The pot is blue. (ii) Negative; (*Abhāvātmaka*); e.g.:

The pot is not blue.

Let us analyse the nature of substantive-adjective relation with reference to a particular proposition: This is a pot.

Here 'This' is the substantive (*Viśeṣya*). 'Pot' is the adjective (*Viśeṣana*) of a positive type. The adjectival function is determinative (*Niroopya-Niroopaka Bhāva*). The relation between the subject and the predicate is one of inherence (*Samavāya*).

Now let us take another proposition: There is no pot on the ground.

Or

The ground is the locus of the non-existence of pot.

Here the substantive is 'the ground'; the adjective is Non-existence of Pot, which is of negative type. The adjectival function is locative (*Ādhārādheya Bhāva*). The relation is one of conjunction (*Samayoga*).

The function of Avachchedaka is to bring forth clearly the nature of the adjective (*Viśeṣanatā*) and its relation (*Samsargatā*) to the substantive.

The mere position of terms in a proposition is not sufficient to indicate their logical character; for example, in the proposition,

This is a pot.

The term 'Pot' may be characterised either as a substantive or as an adjective according as *Prakāratā* or *Viśeṣyatā* is attached to 'This'. That is to say, it may mean either

(i) A 'this' that is qualified by the attribute of 'potness' (*Ghataniṣṭha prakāratā niroopita idamarthaniṣṭha viśeṣyatā*).

Or

(ii) A 'pot' that is qualified by the demonstrative epithet 'this' (*Idamarthaniṣṭha prakāratā niroopita Ghataniṣṭha Viśeṣyatā*).

With the help of Avachchedakatā, we can specify the logical character of the terms; i.e., whether in the above case, 'Potness' possesses the substantive character (Viśeṣyata-vachchedaka Dharma) or the adjectival character (Prakaratā-Vachchedaka Dharma).

4. The concept of Avachchedakata also applies to the relation between the locus (Ādhāra) and the object located (Ādheya). eg.,

There is fire on the mountain.

Here the mountain is the locus and the fire is the object located. This relation, i.e., Ādhārādheya Sambandha is of two kinds:

(i) Vyāpyavritti—where the Ādheya (thing contained) pervades the whole of the Ādhāra (locus). eg.:

There is oil in sesamum seeds.

Here the oil pervades all parts of the seed.

(ii) Avyāpyavritti—where the Ādheya pervades only a part of Ādhāra. eg.

The monkey is on the tree.

Here the monkey occupies only a part of the tree. Thus the monkey will be said to be on the tree *with regard to a branch only* (Shākhāvachchedena) and not with regard to its root (na moolāvachchedena).

The same thing may thus be regarded as both existent and non-existent in a locus with regard to different points of space and time. The apparent anomaly in positing contradictory attributes is removed by the application of Avachchedakatā. Suppose there is a pot on the ground but that is not the pot of Devadatta. Here there is existence of the pot in a generic sense and non-existence of it in a specific sense.

With the help of avachchedakatā we can distinguish between general non-existence (sāmānya abhāva) and special non-existence (Viśiṣṭa abhāva). In the former case the avachchedaka of the pot that is non-existent is 'potness' (Ghatatva); in the latter case it is 'the individual character' (Tad-Vyaktitva).

5. The concept of Avachchedakatā is most frequently used in connection with non-existence (Abhāva). Let us take an example.

There is no pot on the ground.

Here the non-existence is located on the ground. The substratum of non-existence is called *Anuyogi*. The non-existence is

of a pot. The counter-part of non-existence is called *pratiyogi*. In the present example, the pot and the ground are Pratiyogi and Anuyogi respectively.

The Pratiyogitā in the case of the non-existence of a pot lies in the pot. The Avachchedaka or differentiating feature of that is 'Potness'.

One may raise a question here. The pot possesses not only 'potness' but also 'substanceness' (Dravyatva). Cannot the substance be then regarded as the counter-part of the non-existence of pot (Ghatābhava)? In other words, can Dravyatva be called Ghatābhava pratiyogitāvachchedaka or not?

The answer to the question is in the negative. Substanceness cannot be regarded as the differentiating characteristic of the counter-part of the non-existence of the pot, for substanceness resides in other things like cloth, etc., which are not counterparts of Ghatābhava. But the avachchedaka should be neither too wide nor too narrow (Anyoonānativritti); it should be just equal to the thing defined (avachchedya).

To put the whole thing syllogistically, if one were to argue:

The pot is not on the ground.

The pot is a substance.

∴ No substance is on the ground,

The fallacy of illicit minor here would be detected by the Naiyayika by saying that the non-existence here is 'in the capacity of being a pot' (Ghatatvāvachchedena) and not in the capacity of being a substance (Dravyatvāvachchedena).

6. The concept of Avachchedakata is highly useful in detecting fallacies due to ambiguity of some sort: e.g.:

Water is liquid

Ice is water

∴ Ice is liquid.

Here the fallacy of accident will be seized by the Naiyayika with the help of avachchedakata. He will point out that wateriness is related to iciness by way of causality (kāraṇatvāvachchedena) and not by way of identity (Swaroopāvachchedena), and hence the attribute of liquidness that applies to water as such need not apply to its changed form. Judging the fact that the Indian syllogism does not recognise different figures and moods and lays down no mechanical devices of detecting formal fallacies, the importance of Avachchedakatā in examining the validity of arguments cannot be over-estimated.

Review

THE TOWERING WAVE by B. K. Mallik, Vincent Stuart,
London, 1953, 15s. net, pp. 226.

The world to-day is passing through the thick of a very serious and all-encompassing crisis. One of its most sinister symptoms is the prospect of a global war, which is ever hanging on our heads like a Damocles' sword. With the invention of the atomic weapons, the question of a world-war has assumed paramount importance, since a little recklessness on our part is bound to spell ruin to our entire human civilization. Mr. Mallik's present book has quite a topical interest since in it he has tried to show how the different nations of the world can best resolve their differences and achieve everlasting peace, which is the crying need of the day.

The book is appropriately called—'The Towering Wave'—signifying the dreadful wave of war, which is constantly striking terror into our hearts. It is divided into three parts called respectively the Dream, the Vision and the Search.

The last part of the book, viz., the Search, describes the rational pursuit of Truth by a select group of people. The author, Mr. Mallik, examines here various alternatives for world-peace and shows how they are ultimately unsatisfactory. In this connection he observes that the parliamentary form of government has practically failed to deliver the goods, since its main object, that is, the welfare state, is seldom realised in practice. In effect, the ideal of the welfare state has become a complete misnomer, since in actual practice it signifies anything but the welfare of the people. Accordingly, it is no wonder that Mr. Mallik condemns the welfare-state root and branch. He says—"One wonders if even the horrors of the modern warfare would compare unfavourably with the 'welfare-state', since the latter, it seems, stands naked like the king of cobras erect on its victim in the forests." (p. 48.) Likewise, communism also cannot solve the problem of world-war and usher in an era of eternal peace on this earth. In fact, Mr. Mallik rightly points out that the inveterate split between East and West is at the root of all trouble. And so long as this split is not resolved, no permanent peace can be established in the world. Accordingly, he proposes the ethics of 'mutual abstention' as a sovereign remedy for the dangers of the world-war. This view suggests that the rival objectives of a conflict are equally

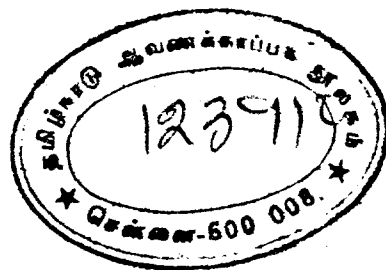
'illusory', and hence they do not admit of realisation. Accordingly, every nation should abstain from violence or aggression with regard to others; and when this is accomplished, the world would be safe for peace and prosperity. This appears to be Mr. Mallik's contribution to the cause of the world-peace.

The idea of 'mutual abstention' is nothing new; it is really the old Gandhian concept of non-violence (*ahimsā*) put in a new form. As it stands, it can hardly solve the problem of war. On this view, the different nations should abstain from fighting since the rival interests in a conflict are equally 'illusory'. The term 'illusory' is somewhat ambiguous. Perhaps, it merely implies falsity and not non-being. But if this is so, it is difficult to conceive how the rival objectives of war can both be regarded as false. For instance, in the second world-war, the rival objectives were fascism and democracy, both of which were certainly not false. Claims of democracy were undoubtedly real and true. Thus, the rival objectives of war cannot both be regarded as false; and if this is admitted, there is no reason why the different nations should abstain from realising their objects, if these appear to them as true. There would thus always remain a danger of war. Far from trying to harmonise the rival claims of the different nations, Mr. Mallik merely regards them as 'illusory'. This is evidently nothing more than an 'illusory' device to avert the menace of war.

L. R. JOSHI

Books Received

1. *The Nature of Philosophy* by Daya Krishna, published by Prachi Prakashan, Calcutta, price Rs. 10.
2. *The Philosophy of Science* by Dr. P. J. Chaudhury, published by Progressive Publishers, Calcutta, price Rs. 7.
3. *Religion and Rational Outlook* by S. N. Dasgupta, published by Allahabad Law Journal Co., Ltd., price Rs. 15.
4. *Sovereign Reason* by Ernest Nagel, published by The Free Press, Glencoe, Illinois, price 5 dollars.
5. *The Gnosis or Ancient Wisdom in the Christian Scriptures* by William Kingsland, published by George Allen & Unwin Ltd., price 16s. net.
6. *Science and Man's Behaviour* by Trigant Burrow, M.D., Ph.D., published by Philosophical Library, New York, price 6 dollars.
7. *Outlines of Jaina Philosophy* by Mohan Lal Mehta, published by Jain Mission Society, Bangalore, price Rs. 5.
8. *Monism (A Critical Survey)* by Kalyan Chandra Gupta, published by the author, price Rs. 10.
9. *Idealistic Thought of India* by P. T. Raju, published by George Allen & Unwin, Ltd., price 42s. net.
10. *Udayanācārya's Nyāyakuṣumāñjali*, Part I, with the commentaries of Saṅkara, Misra and Guṇānanda Vidyāvāgīsa, published by University of Calcutta, price Rs. 3.
11. *Ecce Homo—The Metaphysical and Philosophical Reflections, with special reference to J. Krishnamurti*, by Jag Mohan Lawl, to be had from Messrs. Probsthain & Co., London, price 10s. 6d.
12. *Groundwork in Dialectics* by M. V. V. K. Rangachari, Kakinada, price Rs. 3.
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