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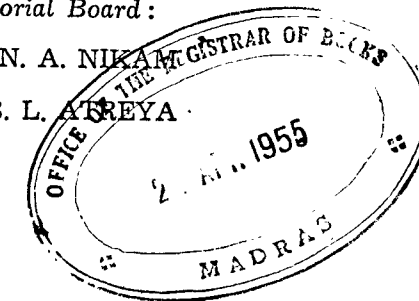
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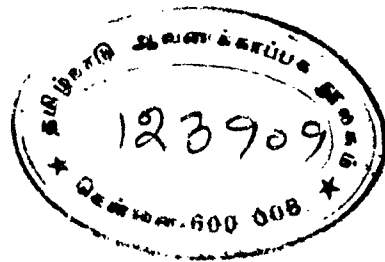
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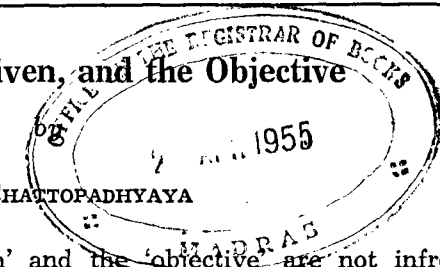
THE PHILOSOPHICAL QUARTERLY

Vol. XXVIII, No. 1]

[April, 1955

The Real, the Given, and the Objective

S. K. CHATTOPADHYAYA



1. The 'real', the 'given' and the 'objective' are not infrequently confused. 'To be real' means to some 'not to be constructed', that is, 'to be given'. In fact, to be given or 'given-ness' becomes the empiricist criterion of the real. Thus the real is the 'given'; that which is not 'given', but is a construction on the 'given' is subjective. The nature of the subjective has been variously estimated but the 'given', that which is not a construction but the ultimate foundation of such construction, has always been acclaimed as the real. On this, the old, the new and radical empiricism all concur. They differ only in their characterisation of the ungiven or constructed. To some adherents of old empiricism, and its counterpart in Indian Buddhism, the constructed is the merely subjective, some sort of a conceptual device of the understanding — a *buddhinirmāṇa*. To radical empiricism it is a functional development of the 'given', and thus not merely subjective. To new empiricism, again, it is not a free subjective construction, but a subjective discovery of that which somehow figures in the 'given' but is only implicit in it. Thus difference of opinion there is respecting the nature of the so-called ungiven, but the given is the real, and the real is the 'given'.

2. In some other quarters, there is a confusion between the real and the 'objective'. The real is the 'objective', that which does not owe a penny to the subjective, but is independent of, and indifferent to, the subject. What about the subject? Here of

course opinions differ. The subject may be there as a substantive entity, or we may suffer its presence as an epi-phenomenon; or it may be a cross-section of objective facts defined by a specific response of the nervous system—some sort of a sign-post at cross-roads seeming to guide and witness the traffic moving along the different roads. Against this move to progressively de-subjectify the subject and to reduce it to a shadow of the object, we shall not utter any word of protest here. Our interest is limited to what they acclaim, and we are not concerned with what they denounce. They all agree that to be real means to be objective and to be independent of the subject. Objectivity thus becomes the criterion of reality with them, as givenness is the criterion for the empiricist. And since the 'objective' is frequently the 'given' and the 'given' frequently the 'objective', we find the lamb of empiricism and the wolf of realism drinking at the same pool forgetful of their ancestral disputes, real or fancied. I mean self-consistent realism is likely to be rationalistic as self-consistent empiricism is likely to be idealistic; in older schools traces of their incongruity are present; but that discussion is outside the scope of this paper.

3. But is the real definable as the 'given' or as the 'objective'? That the 'given' or the 'objective' is, in some sense, real we do not feel tempted to question. But the point to be understood is whether the real is the *same* as the 'given', the *same* as the 'objective'. We do not attach any importance to the fallacy of simple conversion which is so very clear. We are concerned with the criterion of reality, and the question is: Can 'given-ness' or objectivity be that criterion? Evidently not. We do not look for an *apriori* reason. We appeal to our experience just as empiricism or realism would like to do. The 'given' is the *presented*. It may be, for all that we know, 'forced upon' us, and it may be free from any subjective construction. It need not again depend on Kant's forms of sensibility. It need not be atomic, chaotic and fragmentary as the datum according to old empiricism is. It may be that 'whole', definite or indefinite (or definite with an indefinite fringe) suiting the convenience of a new empiricist, a radical empiricist, a Hobhouse or anybody else. As it is, it is, in some sense, real. As we have it, know it or assert it, we believe in it and take it to be real. Thus, so long as we have it and believe in it, we cannot take it otherwise than as real. But is a presentation always real? Is not the false also presented, given and experienced? Or, do we always experience the real and never the false so that all our experiences are reality-experiences?

4. Here, evidently, the question becomes ambiguous. It is a fact that all our experiences, initially at least, are reality-experiences, as all are true experiences. The concepts of truth and reality are very peculiar. They haunt you always and shadow all your experiences. They are in a very true sense inescapable. When you experience the snake in the rope but do not experience the rope, the snake becomes not only the presented but even the presented reality. When your illusion is corrected and you see the rope, reality passes over to the rope and characterises it. If you remember then the rejected snake, the latter turns out to be a 'really' rejected content once truly experienced, and not as an appearance which is not even a *real* illusory appearance. Experience what you may, if you experience as a matter of fact, you take your experience as true and the content experienced as real in relation to that experience. Without reality thus figuring in the content and truth characterising for the time being your experience or knowledge, you have no knowledge and no known content. You may change from one knowledge to another, so you can pass from rejected truth and disavowed reality to new truth and reality, but you cannot shut yourself from them.

5. But it is one thing to say that all our experiences are reality-experiences and quite another to announce that whatever we experience as real is so experienced always. In fact, what we experience as real may later be felt or experienced otherwise, and it is on the exigency of such cases that we come to distinguish between truth and error. Thus, although reality characterises the believed content and the belief itself is characterised by truth, the halo of reality and truth shifts. When this happens, the 'given', the experienced or the presented fails to establish its claim to be real. Reality thus seems to be an *adventitious* character, not intrinsic to the given. The 'given' becomes real, but is not the real, nor is the real the same as the given. The real is an officiating post for any particular 'given' to hold indefinitely, but it cannot claim to have it as a matter of right or simply by virtue of its character as the 'given'.

6. Or should we say that the illusory or false is not *given*? It is true that some regard it as a conceptual construction that is projected outside as the object, others take it as partly given and partly a representation but confusedly taken as a simple whole. Some again regard it as a presentation but dislocated from its proper context, some others as a presentation *here and now* but a complete distortion of reality due to defective media. But all

agree that the illusory is given as presented reality whatever may be the conditions, psychological, logical or metaphysical that may explain its origin. To an empiricist, moreover, a thing is as it is 'known-as'. So the presentedness or givenness of an illusory content cannot be doubted or disputed. Thus the mere fact that something is 'given' or 'forced upon us' (James) does not warrant our talking of it as real for all time. We take it as real for the time being no doubt, but that is not due to its mere given-ness. The presentation of a double moon is not believed to be real, even though it may continue or repeat itself after it was once known to be false. Reality does not belong as an intrinsic property to the given or to a presentation. It seems to be granted to it by an authority outside of itself, or it emanates from some source outside the given, whereupon the given *assumes the form* of reality.

7. Some of the arguments which have force against the theory of reality as the 'given' will hold *mutatis mutandis* against the doctrine that the real is the objective. The objective is felt to be *out there*, and so given as that. But it is in its insistence on absolute independence of the content and its utter indifference to the knowing subject, or simply the act of cognition, that the theory claims a certain speciality. The 'given' is an empirical datum and it also claims independence by virtue of its character as given. In James, the 'given' no doubt becomes the neutral, but still it remains an experience. If Russell goes beyond that position, it is because Russell incorporates into new or radical empiricism categories peculiar to radical realism or new realism. So in Russell's *Analysis of Mind*, the given ceases to be the neutral experience or empirical datum, and takes the form of logical entities—the atomic neutral particulars—very different from the neutral experience of James in form and content. These may be then both independent of, and indifferent to, the subject, and may work as material in the construction of the subject as also of the external world.

8. From their frenzied insistence on independence of the content and its indifference to the subjective principle—which they support by their theory of external relations,—it seems clear that according to our objectivists the real must by all means fight against the contagion of the subject and stand poles apart from it. Absolute distinction as different from a logical distinction (such as we have in Hegel and Neo-Hegelianism) from the subjective principle is necessary for its very being as real. Some of them do not feel completely assured even by that device and so eliminate the subjective principle altogether to have a world of neutral

objective entities, enjoying themselves leisurely as contents of some consciousness when they artificially assume a phantom of subjectivity by undergoing some arrangements or grouping among themselves, by themselves (pure naturalism), or with the help of a kin, the nervous mechanism (new realism). With the subjective principle thus blown out, the criterion of reality turns out to be pure objective being or neutral being. The objectivists use the word 'objective' not in its relational epistemological sense (as that which is the other of the subject), but in a new meaning. Thus relation (positive or negative) with the subject is not relevant to the being of the object *as object*. The object is object or *vastu* though there is no subject. It is not the *visaya* which implies relation to a *visayi* (subject). In this way, they escape the folly of an ego-centric predicament and free their metaphysics from the thralldom of epistemology.

9. Cannot this neutral objective be the real? Our reply is that it may be so, but the real is not necessarily the neutral or the objective. What we conceive as absolutely independent of knowing and indifferent to it must be designated as real, for we believe it to be so. Similarly we may conceive or imagine an order of existents absolutely neutral—an order of virgin objects before the advent of a human mind, and unwedded to it. Such objects must also be taken as real for we cannot think them otherwise. But it is one thing to claim reality for objects, and quite another to define reality in term of objectivity.

10. In fact, an over-straining of our imagination as is involved in our search for the neutral and indifferent being is not necessary to get at the real. The real is revealed in every experience, and there is no experience without it. Even when we have the experience of the rejected content, the so-called unreal or false, we have the real on account of which the erstwhile real is repudiated. There is no escaping the real, although the halo of reality is not steady in respect of a particular content but shifts from given to given, from object to object. In this shift from content to content, it not only characterises, that is, not only becomes the characteristic of, the 'given' of the empiricist and the objective (neutral or otherwise) of the realist, but even the so-called subjective. We have the subjectively real or subjective real as we have the 'given' real or 'objective' real. But there is one peculiarity noticeable in this shift of the real that it invariably visits upon that which *appears as given*, that which *appears as objective* in some

way. Even the so-called subjective must have an *apparent* objectivity or given-ness in order to be *felt* as real. This is the root of the confusion, the psychological ground, why the real is taken to be the given or the objective and nothing else. This is why our empiricists identify it with the 'given' and our realists with the 'objective'—absolutely independent of the subject, or only relatively so.

11. Thus far the destructive or critical part! The constructive part will, however, be short. To be real, something must be believed in, must be *asserted*. When asserted, it comes to distinguish itself from that which asserts. In this way, it assumes the form of the given, of the objective. The halo of reality continues to characterise the asserted, the given or the objective, only so long as the assertion or belief does not cease. This is the *manifesting* (in the absence of a better expression), the *revealing*, the *prakāś*. It is the self-manifest or *swaprakāś*, the phenomenal reading of which is an assertion asserting a content. This phenomenal form underlies all experiences and their contents, the general form that underlies the specific and the particular judgments, beliefs or assertions. The distinction of the asserted, real or fancied, from the assertiveness of the assertion comes to be phenomenally noted. And empirically the content is independent of, nay even indifferent to, the particular experience that reveals it. But this its independence or indifference does not make it real. *It is in being believed or being asserted, in this way or that, that it acquires that characteristic.* The characteristic of being real is adjectival to it, because it derives it by figuring or floating in the self-manifest, the self-revealing. With the self-revealing it is a *substantive character*; or since we cannot take the substantive as a character, i.e., as adjectival, reality is the self-revealing consciousness, the substratum of all phenomenal experience and phenomenal content. The self-revealing consciousness is the Reality, and in its self-expression it becomes a consciousness expressing or asserting itself, which, *as expressed or asserted*, is the real or the generic form of it. But this its division into a consciousness asserting and a content asserted is ideal. It is the simple unity, or pure unity of both. The phenomenal realities or the adjectivally real can be found, on ultimate analysis, as not necessitated by the being of Reality but as merely seeming, the *as-if* existing. The *as-if* is eternally an "*is-not*", in a transcendental sense; but it is eternally the *as-if* in the same transcendental sense. *Reality is everywhere and always, substantively or adjectivally. This is the riddle of the Universe.*

Augustinian Platonism

(A Study on Medieval Philosophy)

by

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Among the many exterior circumstances which brought about St. Augustine's liberation from the hold of the sceptics, in whose hands he had fallen during his stay in Italy, the most important was his reading of the books of the Neoplatonist philosophers.¹

This reading generated in Augustine such an admiration for Plato and the Platonists that it is recorded that even at his death-bed, a few moments before he expired, the great African remembered Plotinus and murmured a few words from the 'Eneades' concerning 'Eternal Beatitude'. Indeed, "What in Plato was a mere thought, in Augustine is life" was the common saying of the Middle Ages with regard to Augustine's philosophy. In his 'Confessions', Augustine has given a detailed account of the Platonic experience² which induced him to write his book 'Contra Academicos',³ in which he refutes and rejects the philosophy of the sceptics as it was exposed by the great Roman orator Cicero in his 'Academica'.

The sceptics contended that a true philosopher should neither affirm nor deny anything as certain; for, according to them, nothing could be absolutely known; hence, truth was unattainable, and certitude impossible. Consequently, doubt was to be the normal state of the human mind.⁴

The mysterious change which took place in Augustine while reading the works of the Neoplatonist authors revealed to him the exact possibilities of the human mind. "Certitude is possible, nay more, it is a fact", he declares triumphantly in his book.⁵ His

1. Conf: VII, 9, 13; 32/740-741.

2. Conf: VII, 10, 16; 32/742.

3. Retract: I, 1, 1; 32/23.

4. Contra Acad: II, 5, 11; 32/925. Conf: V, 10, 19; 32/715.

5. Contra Acad: II, 9, 23; 32/930.

aim, now, will be to explain this fact.⁶ The following considerations will bring forward the nature of the problem which occupied Augustine's attention.

Certitude, according to Augustine, is the conscious state of the mind in possession of truth. It is the experience of truth.⁷ Hence, if we want to know in what conditions certitude is possible, we must start with a definition of truth. What then is truth?⁸ As soon as this question is asked, the philosopher is, at once, forced to admit that truth as such cannot be defined. Indeed, materially, truth is the object of intellectual knowledge, but we cannot say what truth formally is; we can only say what is the truth of a being—as when we speak of a true friend or a genuine diamond—or the truth of a judgment—as when I judge that the sun is round. The first is the conformity of a thing to our idea of it. It is called the "ontological truth"; its opposite is 'falsity', i.e., the deformity of a thing with our idea of it. A true friend agrees with what we understand by friendship; a false friend disagrees with it. Therefore what determines the 'ontological truth' is the mind. Medieval philosophers give to the term 'ontological truth' a second, though closely related meaning, viz. 'intelligibility'. Its opposite is unintelligibility or nonsense.

The second kind of truth, the logical truth, or the truth of a judgment is the conformity of the mind to its object. Its opposite is 'error', i.e., the positive deformity of the mind with its object. When I judge that the sun is round, my judgment is true because it agrees with the object I want to judge. When I judge that the sun is square, my judgment is erroneous because it does not agree with the object of my mind. The question how I know that my mind agrees or disagrees with the object is one of those questions which are extremely controverted in Epistemology and does not interest us here. For us it is enough to know that what determines the 'logical truth' is the object. Consequently, in the 'ontological truth', the mind is the measure and standard for things; whereas in the 'logical truth' things are the measure and standard for the mind. From this it is clear that certitude, which is the conscious state of the mind in possession of truth, is founded upon 'logical truth'. If this is so, all 'certitude' will be based upon two

6. Epist I, ad Hermog: 1, 3; 33/60.

7. Tract. in Joan: XXXV, 4; 53/1659.

8. Contra Acad: II, 4, 10; 32/924.

terms, one of being and one of knowledge. When one of these terms is wanting, there is no possibility of 'logical truth' and consequently of 'certitude'; for, if there is no object there is nothing to know, and if there is no conception and representation of this object engendered in thought, there is nothing known. Further, the very nature of all 'logical truth' demands by definition that the two necessary terms shall be present wholly and absolutely; for, if the object is unstable and changing, the being which is required for truth is wanting to the precise extent to which its 'intelligibility' is not completely realized; but if the conception of the object is not adequate to its 'intelligibility' itself, there remains being which is not represented in thought, and to this extent a fragment of truth is lacking. Thus we reach the classical definition of 'logical truth'—the 'adequation of the intellect and its object'—irrespective of the meaning we give to the word 'adequation'. 113

Although this definition is well-known, the consequences which it implies are not always drawn with precision. In order that truth in this sense may exist, conditions are required on the part of both subject and object. 'Logical truth' as such disappears to the precise extent to which either the being on which it is based or the conception which expresses it is wanting; in other words, truth necessarily implies two conditions, the 'immutability' of the known object and the 'infallibility' of the knowledge which apprehends it. It goes without saying that the truth which we seek is not a relatively unchanging truth; for, we cannot satisfy ourselves by saying that our mind and its objects are temporarily unchanging. Indeed, nothing in the definition which we have made of it authorizes us to introduce so important a restriction, and everything, on the contrary, forbids us to do so. Unchangeableness in itself must necessarily be absolute, and if in our thought or in its object, we reach unchangeableness which lasts only for a time, their perfect agreement will not be possible and, consequently, 'absolute immutability' which, according to Augustine, is a mark of truth, will not be found there.⁹

In order to be convinced of the security of this conclusion, it is enough to examine the state of uncertainty in which the scientific knowledge is in fact placed, and we shall see that this results first of all from the instability of its object. "There is nothing more elusive than the scientific object", writes A. S. Eddington, the

9. De Fide et Sym: 4, 10; 32/924.

English philosopher of Science, "hence, the system which tries to comprehend it, can never attain the state of completion that it promises; for, the present is still becoming and the future may break forth with data that might oblige us to reshuffle the whole".

What is true of the object known, is true equally of the human mind which knows it, and the slightest attempt on our part is enough to convince us of this. Our mind is subject to continual change, forever passing from one object to another without succeeding at any time in retaining the same thought. The conclusions which it reaches are as unstable as itself, liable to endless revision and substitution and never satisfying it completely; the very curiosity which urges it towards knowledge is, at the same time, the positive bar to its progress, since it is the very essence of curiosity to drive the mind loosely from one problem to another or to plunge it indefinitely into the endless examination of the lowest of objects: "Even if you remain alive for hundreds of years, you will not be able to understand fully a single fly," writes Kierkegaard. To seek for an immutable object in the representation which our thought forms of things is also to attempt the impossible.¹⁰ The root of the problem is that our knowledge can only be the knowledge of the beings that we are; and, since we do not contain in our essence the sufficient characteristics which make our knowledge true, our knowledge bears all the distinctive marks of this fact, for, it is mutable, uncertain and relative as we are.

Hence, when we reflect upon the nature of our mind, we find that it not only explains that we can know nothing with an integral certitude, but also makes it almost impossible to believe that we can acquire certitudes of any kind.¹¹ If we allow that all certitude implies absolute negation of any possibility of error as its essential characteristic, we are inevitably doomed to have no certitude at all, since nothing is stable in the data of our experience, and our intellect is contingent and continually shifting and thus liable to mistake. "Those which we call scientific truths, considered precisely in connection with the human intellect, inevitably participate in the vicissitudes of the particular subject which supports them; thus they are fallible and contingent as we are", writes Carrel.

10. De Beata Vita: II, 10-11; 32/964-965.

11. Contra Acad: III, 9, 18; 32/943.

On the other hand it is an indubitable fact that the human mind, inspite of its fluctuation and the mobility of its object, does possess certainties and knows that it does so.¹² How is this possible to a mind radically contingent as ours? This is the decisive, one might say crucial, question which determines the definite orientation of St. Augustine's doctrine.

In trying to answer this question, Augustine accepts the famous epistemological division of Plato. He distinguishes two kinds of knowledge: the sensible knowledge and the intelligible knowledge. He agrees with the sceptics about the absence of certitude with regard to the nature of the objects of our sense-knowledge. In his "Contra-Academicos", he writes: "The sceptics have spoken loudly against the knowledge imparted by the senses. It is fastidious to question the truth of things which we know through the senses.¹³ But, really, what does this truth consist in?—Merely in the existence of the sky and of the earth and of everything that it contains. Nothing can disturb my belief in the existence of these things. If anyone tells me that all these things are mere appearances and illusions, I answer that these appearances and illusions exist, for, there is no one who is not conscious of their existence. About the nature of these things, however, the reality is so different from our perception of it, that to believe in our perceptions as real is to commit an act of folly". By this remark, Augustine does not mean to suggest that our senses are deceptive, and, consequently, we must not trust in them; on the contrary, in his book 'De Vera Religione' he insists upon the fact that the senses produce what they can produce—namely, the 'sense-knowledge'—and that, in as far as they produce what they are supposed to produce, they are truthful and trustworthy.¹⁴ The only point he wants to stress is that the knowledge imparted by the senses does not correspond with the nature of the reality of the exterior world. The general reason he gives to confirm his view is this, namely, that the world is in a continual change whilst our sense-knowledge is static. "If our knowledge consisted only in what we received through our senses, if our mind had nothing but that", Augustine argues, "the sceptics would be right, and, consequently, scepticism would be invincible." But, fortunately, the 'sense-perception' is

12. Contra Acad: III, 11, 26, 32/947.

13. Contra Acad: III, 11, 24; 32/946.

De Diversis Quaest: LXXXIII, 9, 9; 40/13.

14. De Vera Relig: XXXVI, 67; 34/152.

not the only way of knowing. The truth of this assertion, which for Augustine was the outcome of a self-convincing interior experience, has been highly controverted. The difficulty is aggravated by the fact that Augustine, in his doctrine of the 'Illumination', seems to say that all 'matter-of-fact judgments' based upon 'sense-perception' are not subject to the action of the 'Illumination', and consequently, they are deprived of truth and certitude, as we shall see in the course of this paper. "If Plato had been alive", Augustine writes, "he would agree with me in saying that truth is not apprehended through the senses, but through the mind. There is a world which we see through our eyes and touch with our hands, and there is another world of 'intelligibles', capable of being apprehended only through the understanding. It is in this second world that truth is to be found. All the arguments proposed by the sceptics hold good against the former; against the latter, they are absolutely meaningless."¹⁵

But where shall we find this intelligible world? "If we examine carefully all our intellectual possessions, we come to the conclusion that we are sure about many things, e.g., about the existence of things, about our own existence, about one of the alternatives of a disjunctive proposition in which the members exhaust the whole extension of the subject and are mutually exclusive, about many mathematical and geometrical propositions which express relations absolutely independent from experience; finally, about principles concerning action with regard to the good and the beautiful."¹⁶ "It is striking", remarks Augustine, "that all these certitudes which we possess, are always with reference to some definite and invariable 'notions' ". Let us hear what he has to say on this subject.

"When I look into myself", he writes, "I perceive two worlds: one which is my own self—my thoughts, my memories, my desires, my tastes, my temperament—all that goes to make my personality. The other world is made up of some impersonal and universal 'notions' common to and independent of you and me. For instance, when I think of Carthage, I evoke impressions which belong only to me, which live only for me, and which will disappear with me. I can share them with you but I cannot make you know and feel them exactly as I do; they are exclusively mine. On the other hand,

15. *De Vera Relig.* III, 3; 34/123.

16. *Contra Acad.* III, 10-11, 22-26; 32/945-948.

when I think of being, of truth, of justice, of beauty, of unity, I feel that these concepts are in my mind, as if they did not belong to my mind. In fact, they do not belong to the exclusive possession of my mind, since my mind cannot entirely exhaust their connotation, rather they are superior to my mind, inasmuch as the mind has to bow before them and accept them. Besides, they have no need of my mind for their existence, for, their presence is felt in the same manner by all minds, by yours as well as by mine. If our minds were capable of engendering these 'notions', they would be different, according to the quality and the capacity of each mind; this, however, is not the case. Again, if they were inferior to the mind, our mind would also be able to change or amend them; but we know that, in face of experience, this is an impossibility; for, these 'notions' exist independently from our knowledge of them; indeed, our reasoning does not constitute them but merely discovers them; while if they were equal to the mind, or of the same character, they would themselves be changeable as the mind is. In fact, the mind varies in its apprehension of them, apprehending them now more clearly, now less clearly, but the 'notions' themselves remain ever the same in their intelligibility. We may misunderstand them but we have no power to alter them. Nor are they tied up to space and time as our personal experiences are. This is the reason why I see and we all see that truth, goodness and beauty are forever lovable."

Following the Platonic tradition, Augustine designates these 'notions' by the name of 'Ideas'.¹⁷ "The first characteristic of these 'Ideas' ", Augustine continues, "is that they 'are', and that they 'are' in the highest degree; for, as soon as they reveal themselves to our mind, at once we become aware that we are in possession of truth. Any subject in which we discover the most obscure sign of the 'Ideas', elicits our assent, for, they create in us such a deep feeling of security, such an overpowering sense of evidence, that all our fears of falling into error are thereby excluded; in other words, they put our mind in possession of certitude, for, what is to possess certitude than to be aware that one sees the object without any possibility of error?"¹⁸ Every thought, every statement, ac-

17. *De Diversis Quaest.* XLVI; 40/29.

18. *De Imm.-Animae*: X, 17; 32/1029-1030.

De Libero Arb. II, 8, 20; 32/1251-1252.

De Genesi ad litt. XII, 25, 52; 34/475-476.

Tract. in Joan. XXXV, 8, 4; 35/1659.

quires certitude and value in the measure in which it approaches the 'Ideas'. In other words, we assent in the context of the 'Ideas'; it is with reference to them that we judge whatever we judge, and it is under their influence that we formulate all true judgments. Since the subject of our judgment is always susceptible to progress and development, to obscurity and clearness, we may conclude that we never apprehend the 'Ideas' themselves, but it is in their 'light' that we realize the truth of every judgment.

Consequently, according to Augustine, the mind of man is controlled by a system of invariable and universal 'notions', which he designates by the name of 'Ideas', having the property of deepening our vision with an evidence, the necessity of which is altogether bewildering to an understanding as radically contingent and mutable as ours is. The 'Ideas', therefore, constitute the foundation on which we base the certitude of what we know. It is the subjection of our thought to the influence of the 'Ideas', that Augustine specifies by the name of Intellection, Understanding or the Perception of Truth. Hence, for the African Doctor, intellection is always a perception of truth. "Either we understand or we do not", he writes; "if we understand, we understand truth and our mind is in the state of certitude. Error as such can never be understood. If we understand an error it is because we understand the truth of that error."¹⁹

Accordingly, the position of the sceptics implies a contradiction; for, when they say that 'we must doubt', either they understand what they say or they do not. If they do not understand what they say, then their assertion is merely verbal. But if they do understand, then they formulate a judgment which for them is perfectly true, and consequently, their mind is in possession of certitude with regard to that truth. The truth which is realised, however, is not a production of the mind of the doubter. The doubter himself has done nothing to set it aright. He has taken no part in its constitution, rather he is urged to acknowledge a fact of unknown origin. He feels helpless under the overwhelming sense of evidence which crushes him down, and defeats all his re-

De Trin: XII, 2, 2; 42/999.

De Imm. Animae: IV, 6; 32/1024.

De Vera Relig: XXXIX, 73; 34/154.

De Libero Arb: II, 12, 34; 32/1259.

De Trin: IX, 6; 42/965-967.

19. De Trin: XV, 10, 17; 42/1070.

actions to the contrary. Indeed, the greater is the violence of his scepticism, the higher is the certitude of his conviction. "Scepticism", writes Augustine, "is rooted upon a peculiar belief in a certain arbitrariness in the process of cognition. Once we realize that truth is not a despotic production of our mind but a humble acceptance in the light and context of the 'Ideas', scepticism is overthrown."²⁰

There is, therefore, a universe of the 'Ideas' besides the physical universe which we see. This intelligible universe, however, is not the Platonic ideal world interpreted by Aristotle. Augustine, commenting upon Plato, contrary to Aristotle, supposes the 'Ideas' not subsistent in themselves but subsisting in the Absolute Mind, in other words, the Ideas exist in the mind of God. How can this be explained?²¹

God, writes Augustine, in his book *'De Trinitate'*, is the Absolute Good. There is no one, he remarks, who does not understand what we mean by good. Good is self-explanatory, it is self-evident. It is its own reason; that is why Plato identified it with Reason, for, reason is what explains itself. Hence, good is what is evident, what is rational, what can be understood. We understand things in as far as they are good. Evil can only be understood in connection with good, as its privation, as its shadow. Evil in itself is irrational; it is unintelligible. Consequently, God, the Absolute Good, is the Absolute Intelligibility. Now, it is of the nature of the good to spread itself, to diffuse itself, to give itself to others. This necessary diffusion of the good is designated by Augustine by the name of Life. God, the Absolute Good, the Absolute Intelligibility, therefore, is, according to Augustine, Life itself. Hence, for God, to be is to live, that is, to give Himself to others; again, to live for God is to be intelligible, in other words, to be the self-evident object of His Own Intelligence. Accordingly, from the depth of God's goodness, the light of His Self-knowledge shines forth in an Infinite Thought, the Idea of the Absolute Good, the Logos of the Stoics, the living Word of the Christian philosophers. This first Idea of the Absolute Good is hailed by the mediaeval philosophers as God of God, Light of light, the splendour of the Absolute,

20. Contra Acad: II, 5, 11; 32/924.

De Trin: XII, 12, 21; 42/1075.

Conf: X, 12, 19; 32/787.

21. Retract: I, 3, 2; 32/588.

De Trin: VIII, 3, 4; 42/949.

the first begotten of the Almighty, the first fruit of God's Intelligence. God does not express His thought in order to know himself. Rather he produces it out of his overflowing Self-knowledge. God's Thought is eternal. As there never was a stage when God was not thinking, so there can never be a stage when He will cease to think. Yet, His Thought is not an event at some remote point beyond the horizon of time and that now merely exists in the mind of God. No. God's Idea is ever being expressed at this moment and will continue to be expressed without end. "Beginningless", yet "eternally beginning, always present, always now, always infinite". It is this eternally generated Idea of the Absolute Good that Plato puts at the top of the great pyramid of the compatible and incompatible Ideas which are Its participations. The Idea of the Absolute Good is the most exalted, the most spiritual and the most comprehensible in the hierarchy of the Ideas. It is that which gives being, life and intelligibility to all other Ideas. It is, as Plato says, the sun of the intelligible world. Its attraction is the necessary light to understand every thing that is true, noble and beautiful. Indeed, the Idea of the Absolute Good reigns supreme above all other Ideas, even above the Idea of Being and Intelligibility. It is the Universal Intelligibility; that is why the Idea of the Absolute Good can never be entirely understood. We may say that it is postulated rather than explained, for, it is the source of the idea of all reality, of all truth, of all beauty, of all virtue, of all happiness. Its knowledge is identical, as Socrates said, with perfect wisdom, which consists in being good and making others capable of being good.

For Plato the ascension of the human mind to the Idea of the Absolute Good within the hierarchy of the Ideas was made through Eros, the love of the Good, implanted in the human heart. There was a Dialectics of love which Plato describes in his Banquet. Augustine calls the love of the Good inserted in the human heart, the weight of the human heart. The human heart, he says, necessarily gravitates towards the Supreme Good. His beautiful saying, *Amor Meus Pondus Meus*, my love, my weight, explains another of his beautiful sayings, famous throughout the Middle Ages. Addressing to the Supreme Good, Augustine exclaims: "Thou hast made us for Thyself, and our hearts know no rest until they repose in Thee."

Here however a difficulty arises. If the 'Ideas' are the necessary measure of all understanding on the one hand, and they sub-

sist in the mind of God, on the other, how, one might ask, can the mind of man come into contact with them? In order to solve this difficulty three hypotheses have been suggested; namely, that the human mind comes into contact with the Ideas either in God, or in the exterior world, or within itself. St. Augustine has more than once made use of texts and words which taken in the literal sense may suggest that we apprehend the Ideas in God.²² Some writers have believed that Augustine actually meant this. Among philosophers, Malebranche claimed the support of Augustine for his theory that the mind in the act of formulating a true judgment, beholds the eternal ideas in God. The 'ontologists' too counted upon his authority for their theory of the human mind's immediate intuition of God. This however would mean that in every true judgment that we formulate, we necessarily come into contact with the Absolute, for, it is absurd to say that we see the 'Ideas' in God, as Malebranche maintained, without seeing the divine essence, for the divine mind with all that it contains is ontologically identical with the divine essence. In fact, in the Augustinian way of thinking, to attain a truth or certitude is to attain the absolute, the unchangeable, the necessary; but our thoughts are relative and contingent, hence, if they attain certitude, they attain something which transcends their nature. Now, according to Augustine, there is nothing above the human mind save God, therefore, it is in God that we see the truth of our judgments. If this inference is accepted, we have the right to conclude that our normal way of knowing is through the contemplation of the divine essence—a conclusion which St. Augustine indignantly rejects. For the African Doctor, as for Plato, the ascent of the human mind towards the knowledge of God is a painful struggle. "Human mind", writes Augustine, "in the beginning acquires a certain experience by means of corporeal senses, then it proceeds in its investigation of the various causes and finally it tries to reach the ultimate cause of all causes, namely God. "Is there any one", he asks, "who is not aware of the revolting sacrifices we have to make in order to succeed in this adventure?"²³ Now, if he thought that we realize the very essence of God in every true judgment we normally formulate, then the above-mentioned struggle becomes meaningless.

In a splendid passage of the 'Confessions' Augustine exclaims: "Too late am I come to love Thee, O Thou, Beauty, so ancient and

22. De Musica: VI, 1, 1; 32/1161.

De Utilitate Credendi: XV, 33; 42/88.

23. De Gen. ad litt: IV, 32, 49; 34/316.

withal so new; too late am I come to love Thee . . . In a deformed manner I cast myself upon the things of Thy creation, which yet Thou hadst made fair."²⁴ Hence, Augustine himself could discern degrees of Beauty before his conversion when he was intellectually and morally very far from God. Similarly, in his book *'De Quantitate Animae'* he clearly affirms that the contemplation of Beauty is the end of the soul's ascent. In view of this teaching, then, it is inconceivable that Augustine thought that the human mind, in apprehending eternal and necessary truths, actually apprehends the very content of the divine mind.

The second hypothesis is that we apprehend the Ideas in the physical world. Augustine rejects this hypothesis when he says that the notes which characterise the 'Ideas' are not found in the sensible objects.²⁵ There has been a great deal of discussion in order to prove or to disprove that St. Augustine makes use of the 'abstraction' in the formation of concepts. I have deliberately avoided to enter this discussion, for, we are not interested here in the formation of concepts, but in the formulation of true judgments; in other words, in the reasons why we attribute to contingent thoughts, absolute and necessary qualities. This does not mean that Augustine dispenses with sensible knowledge, as far as the external world is concerned, in the formulation of true judgments. By no means. However, in this paper, we are not concerned with that subject; our quest does not bear upon the 'content' of true knowledge, but upon its 'form', that is, upon the truth of such knowledge. The problem we are interested in may be reduced to the question of the source from which our intellect draws the certitude, unchangeableness and infallibility of its knowledge, that is, what makes its truths true, whatever the 'content' of these may be.

Finally, the last hypothesis is that the human mind attains the 'Ideas' in itself. In fact, the theory of 'Innatism' is presented by many as the true doctrine of Augustine about the knowledge of the 'Ideas'. There are passages in the books of Augustine which, taken isolatedly, seem to justify this opinion.²⁶ In point of fact, it is even believable that in his first writings Augustine held that the human

24. Conf: X, 27, 38; 32/795.

25. De Div. Quaest., IX; 40/13.

26. Sol: II, 20, 35; 32/902.

De Quaest. Animae: XX, 34; 32/1055.

Epist: VII, 1, 2; 33/68.

soul brought with her all her knowledge (Innatism), and, consequently, the act of 'learning' was nothing but an act of 'recollection' (Reminiscence). It is, however, doubtful whether Augustine ever defended 'Innatism' in its strict sense, namely, in that which implies the Platonic doctrine of the pre-existence of the souls as a condition of 'Reminiscence'. It is not our purpose to enter into this subject which has only a historical value; for, even if we believed that Augustine professed 'Innatism' in its strict sense, this doctrine soon disappears from his books to give place to a very different theory—that of the 'Illumination'. Indeed, Augustine still uses the Platonic words 'Reminiscence' and 'Memory', but with a quite different connotation. For instance, in his interesting book *'De Magistro'*, the acquisition of knowledge is not explained as an act of pure 'Reminiscence', but as 'Reminiscence' supported by the 'Illumination'.²⁸

What, then, is this 'Illumination' mentioned by Augustine? It is an intellectual process through which Augustine explains the phenomena of intellection, understanding, perception of truth and certitude, without referring to our actual vision of the 'Ideas' in God or to our vision of them previous to bodily existence, or, in fine, to their infusion in the soul at the moment of our birth, but, solely on account of their influence upon our mind in virtue of a peculiar 'light'. Let us hear the great Doctor: "Just as our eyes need the help of a physical light without which they cannot see, so our mind needs the help of a spiritual light to understand. A man may hear the words of another man and, without understanding them, he may blindly believe in them; but if he wants to know whether what is said is true, his mind needs the inward 'illumination' of that 'light' that abides forever. The incorporeal soul is in suchwise illumined by the incorporeal 'light', as the body of the air is illumined by the corporeal light of the sun." It must be noted here that Augustine does not identify the 'light' through which our mind is subject to the influence of the 'Ideas', with the intellectual aptitude itself, as T. Aquinas maintained, nor does that 'light'

27. *Retract*: I, 4, 4; 32/590.

Ibid. I, 8, 2; 32/594.

Sol: II, 20, 35; 32/902.

28. De Magist: XI, 36; 32/1215.

29. De Trin: XIV, 15; 42/1052.

30. De Pecc. Merit: I, 25, 37; 44/130.

De Civi. Dei: XI, 10; 41/326.

suppress the activity of the mind. On the contrary, the Augustinian mind is extremely active with regard to the images which it engenders, associates, compares, distinguishes and separates. In all this process, however, no 'Illumination' is found necessary. The phenomenon of the 'Illumination' takes place only when a true judgment is being formulated. "I can imagine the towers of Alexandria which I have never seen", writes Augustine, "I can remember the towers of Carthage which I have seen and admired. No need of any 'illumination' for this. But when I inquire within myself whether my imagination or my memory conform to truth; or when I judge whether I should prefer the towers which I imagine to the towers I remember, an act of the 'Illumination' is necessary for me to come to a decision."³¹ Let us suppose that some one tells me something which happened to a particular man; I do not understand it, I simply accept it or believe in it. No need of any 'Illumination' for this. But let us suppose that the same man tells me something which is common to every man; I understand it and I assent to it. An act of the 'Illumination' has taken place.³²

In order to know the exterior things in their phenomenal flow, the light of the senses and of reason is enough. But if we want to understand and judge according to truth, i.e., if we want to realise what things are in their absolute 'intelligibility', our mind needs to be subject to the action of the 'Illumination'. Senses and reason can give us an *opinion*. 'Illumination' gives us *certitude*.

Since the 'Illumination' is the criterion of infallibility and certitude, we may conclude that for the African Doctor, the existential or 'matter-of-fact' judgments based upon experience and observation, be they singular, particular or universal, are deprived of absolute truth and certitude, as the 'Illumination' has no place in their constitution. The only judgments which he accepts as infallible and consequently imparting absolute certitude are those which today we designate by the name of 'judgments of value' in all its form—hedonic, utilitarian, economic, aesthetic, ethical and social. These judgments imply not only the existence of absolute and objective standards but also my knowledge of these standards. For example, I see some work of art and I judge it to be more or less beautiful—a judgment which implies not only the existence of a standard of beauty but also my knowledge of that standard;

31. De Trin: IX, 6, 10; 42/964.

32. De Trin: IX, 6, 9; 42/964.

for, how could my supposedly objective judgment that this arch or that picture is imperfect, deficient in beauty, be justified unless there were an objective standard, not mutable and imperfect like beautiful things, but immutable, constant, perfect and eternal? And how could I judge unless I had some knowledge of the standard of beauty itself by which I could infallibly discern the greater or less approximation of the object to that standard?³³

The mere question of the 'Illumination' presents no difficulty. Indeed, for Augustine, as for all the philosophers of the Middle Ages, human intelligence was a light. This light, writes Augustine, comes from God, the Supreme Good who is the Sun of the intelligible world; in whom, by whom and through whom all those things which are luminous to the intellect become luminous; for, the Good is the sole foundation of being and knowledge, and no creature, howsoever rational or intellectual, is lighted of itself, but is lighted by participation of the eternal light. If man's mind is rational, it is because it is sensitive to the light of the Supreme Good.

Moreover, the favourite doctrine of Augustine is that man can do nothing without God, and, in consequence, God's action must be present everywhere in man, in his body as well as in his mind. In his book *De Trinitate*, Augustine writes: "The nature of the mind is such that, when directed to intelligible things in the natural order, according to the disposition of the Creator, it sees them in a certain incorporeal light which is 'sui generis', just as the corporeal eye sees adjacent objects in the corporeal light".³⁴ These words show that the 'Illumination' in question is a 'spiritual illumination', which performs the same function for the objects of the mind as the sun's light performs for the objects of the eye: in other words, as the sunlight makes corporeal things visible to the eye, so the intellectual 'Illumination' makes the eternal truths visible to the mind; hence, divine light is the sole and total cause of every knowledge. Indeed, we cannot explore the content of our knowledge without discovering in it a gift which comes from elsewhere, from above.

All this is perfectly evident in the context of Augustine's philosophy based upon the recognition of a profound truth, namely, 'man without God is painfully superficial, gross and brutal and totally miserable'. In point of fact, no one has ever had such a

33. De Trin: IX, 6, 9-11; 42/964-1965.

34. De Trin: XII, 15, 25; 42/1011.

vivid experience of that dreadful affliction which overwhelms a man when he separates himself from God, as Augustine had, in that period of his life which he bitterly deplores as the 'disorders of his youth;' and no one has ever described that terrible misfortune with such lucidity, as the great African in his 'Confessions'. The essence and meaning of that experience has been expressed by him in his famous saying just quoted: "Thou hast made us for Thyself, and our hearts know no rest until they repose in Thee".³⁵ The difficulty begins when we try to define the content of the intellectual 'Illumination' viz., the nature and the effect of the 'light' which illumines the mind; for, the light-metaphor does not by itself tell us very clearly what Augustine meant. However, the intricate process, by which the prime meaning of this metaphor is determined, cannot be included within the limits of this short paper. The following quotation taken from one of St. Augustine's books will give us the clue for its solution: "I have discussed my doctrine of the Illumination," writes Augustine, "with the greatest philosophers of my time. Many have not understood me. But, I say, give me a man who loves, who has loved, who has been crushed by love, who has passed through all the tribulations which love can inflict, and, he will understand me".

35. Conf: I, i, i; 32/661

'Sensus Communis' and its Functions in Aristotle's Psychology of Cognition

by

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I

Although Aristotle uses the word 'aisthesis' to cover both sensation and perception, his recognition of the need of an unspecialised sense to account even for a simple perception suggests that he was implicitly aware of the distinction. The special senses, he admits, do not explain the act of perception, for this cannot consist merely in the unrelated functions. These functions alone could at most yield sensory awareness, (i.e., so-called 'pure' sensation); they could not enable us to impute even a simple quality to an object (to say e.g., that is a red rose). Far less could the common qualities of things such as their motion, size, unity, etc., be apprehended by the special senses.¹ But, he argues, as we have knowledge of such common qualities there must be a sense which apprehends them.² If we grant that there must be a sense, the question arises whether or not this is a sixth sense (i.e., whether its objects are a further set of sensible qualities of the same kind as the special sensibles or whether they are qualities of a different kind). Aristotle decides that the sense which is said to apprehend common qualities is not a sense over and above the five. He does not make an attempt to define what he understands by *sensus communis*.³ But

1. *De Anima* II 6 418a 11.

2. Aristotle also notes the importance of the unifying function of a sense or mind. To him also a pure sensation is a psychological myth. A perception is always charged with meaning, i.e. it is related to or discriminated from other perceptions. And perception proper is the function of the *sensus communis*.

3. The term '*sensus communis*' is not very common in Aristotle, mentioned only in *De Anima* 425a 27; *De Memo* 450a 10; 455a 15 and *Parts of Animals*, 686a 31. The term is made familiar to us by the Latin Commentators. Hicks translates it as a 'Common sensibility' which serves as a common basis for all the special modes of sense-perception, i.e. the five senses; and thinks that Aristotle uses the term in a technical sense. cp. P. 431 notes. *De Anima*.

from the account of the common sensibles which he gives⁴ we may hope to find his meaning. As we cannot perceive anything without the function of one of the five senses, Hicks says "sensus communis is that in which the five special senses merge and coalesce."⁵ Dr. Ross has tried to define it in greater detail. He says,⁶ "It is a single faculty which discharges certain functions in virtue of its generic nature but for certain purposes specifies itself into the five senses and creates organs adapted to their special functions."

The roots of the doctrine of sensus communis can be traced to Plato's *Theaetetus* 185c, D⁷ where it is pointed out that the bodily organs of sense are not themselves percipient but instruments by means of which the soul perceives. But over and above the deliverances of the special senses we undoubtedly are aware of common qualities, e.g., we speak of two sounds being similar and of two colours being similar. Hence there must be something other than seeing or hearing by means of which we grasp these common qualities of the objects of special senses.

The common qualities of the objects which Plato mentions are: Existence and non-Existence; likeness and unlikeness; sameness and difference; unity and numbers; even and odd; and also motion and rest (cf. *Sophist*).

The conception of the 'common objects of apprehension' is the same as we find in Aristotle, though number and unity are the only examples common to the two lists. But it is worth noting that Plato refuses in the sequel to attribute the apprehension of the common objects to any sense at all, making them directly apprehended by the soul itself.⁸

As each one of the five senses has its own kind of determinable object, i.e., sound, colour etc., similarly the sensus communis has its objects, i.e., the common sensibles whose nature we are now to discuss. The common sensibles which Aristotle enumerated⁹

4. *De Anima* II 6, 418a 18.

5. *De Anima*, notes on 425a 13, p. 426—Perhaps taken from *De Juvent* 467b 28—"The special sense-organs have one common-organ in which the senses when actually functioning must meet."

6. Ross, *Aristotle*, p. 139.

7. F. M. Cornford *Theaetetus* p. 105. Cf. also Beare, *Greek Theories of perception*, part III, sections 9-10.

8. Hicks, *De Anima*, notes p. 362.

9. *De Anima* II 6, 418a 17 and also *ibid.* III i, 425a 15.

are motion and rest, size and figure, unity and number¹⁰ and time.¹¹ All these are apprehended by the *sensus communis*.

The Perception of the Common Sensibles

Aristotle regards perception as a kind of 'motion' or change. When, therefore, he tells us that the common sensibles are perceived by motion,¹² the statement does not sound very helpful. Although he uses in this particular passage the same word 'kinesis' as he elsewhere employs for motion in the generic sense,¹³ his meaning cannot be the same; for what he does mean is far from clear, and his 'explanation' as it stands is completely circular. If he means by motion a "kind of movement set up by the sensible object in one or other of the sense-organs,"¹⁴ then motion occurs in all kinds of perception—both of special sensibles and of common sensibles; but we are here concerned to discover what differentiates these two sets of conditions. It seems impossible to explain this in terms of motion. (The discussion is made yet more complicated by the fact that one of the common sensibles is itself motion).

The kind of motion or movement giving rise to the perception of common sensibles is said to be proportionate to the object; i.e., there is correlation between the kind and degree of motion set up and the kind and degree of the sensory stimulus. This interpretation of Aristotle's meaning is borne out by two statements he makes in regard to our awareness of another common sensible—time. He says, "When the state of our own minds does not change at all or we have not noticed its changing, we do not realise that time has elapsed"¹⁵ and in *De Memoria* (452 B 9ff). "It may be taken for granted that there is something by which we distinguish a greater and a smaller time, and presumably we distinguish them

10. According to Greek mathematicians number implies plurality and hence the recognition of unity as a separate common sensible. Unity is not a number but rather the principle of number. Cf. Hicks *De Anima* p. 427.

11. Time is also regarded as a common sensible—magnitude, motion and time—the instances of common sensible of *physics* IV 219a 12 also *De Memoria* 450a 9, where he says "we can think of nothing apart from continuity and time". These common sensibles include what Democritus considered and Locke called the primary qualities of things. Cf. Hicks *Introduction* p. 52.

12. *De Anima* 425a 16-19.

13. Hicks *De Anima*, Chapter I, footnote 3, p. 2.

14. This is the view of the Greek commentators, cf. Hicks, p. 428.

15. *Physics* 218b 21.

as we distinguish magnitudes i.e., by a proportionate (mental) alteration. For, there are in the mind figures and changes analogous to the external objects."¹⁶ So the common sensibles, like the special sensibles, are perceived through a modification in the percipient, only we never perceive magnitude, figure, etc., as such, apart from special sensibles.¹⁷ Though the common sensibles affect our sense organs, they are not perceived by any of the special senses. For none of the common sensibles is the direct object of the special senses,¹⁸ for example, we ascribe the notion of, say, number to colours, sounds, etc., yet assuredly number is not the object of any of the five special senses. So he concludes that these common sensibles are perceived by a common sense.

Elsewhere it might appear that Aristotle contradicts this statement, for he maintains in *De Sensu*¹⁹ that "It is through the sense of sight or seeing that we perceive the common sensibles—figure, magnitude, motion and number." Again, "Magnitude, figure, roughness and smoothness; sharpness and bluntness found in solid bodies are percepts common to all the senses or if not to all, at least, to sight and touch." But the contradiction is removed if we understand that the common sensibles are perceived by the special senses not *qua* sight or touch but, *qua* perception.^{19a} We perceive the common sensibles by sight not *qua* sight, but in virtue of the general perceptive faculty (i.e., *sensus communis*)²⁰; i.e., the common sense apprehends the common sensibles.

To show that the common sensibles are apprehended *directly* by the common sense and only incidentally by the special senses, Aristotle considers two kinds of perception.²¹ If the perception of the common sensibles be by any of the five special senses, it would (a) be on a par with the indirect arousal of an image through association with an impression directly produced (as when the sight of a meringue makes us sense its sweetness), and (b)

16. "It is thus a psychical miniature which enables us to gauge an external magnitude or duration and the implication is that we compare the two terms and infer the outer from the inner." G. R. G. Mure, *Aristotle*, p. 111.

17. Hicks, *De Anima*, p. 428.

18. *De Anima*, 425a 21.

19. *De Sensu* 437a 8 and 442b 4-8 trans. by Beare.

19a. Hicks p. 432. cp. 425a 31.

20. Ross *Aristotle* cp. p. 140.

21. *De Anima* 425a 22-27.

be purely incidental like the recognition of Cleon's son in the white object that we see.

(a) In the instance of the meringue the sense of sight is not affected by sweetness because flavour is not its special sensible. But the common sensibles affect *all* our senses. The apprehension of sweetness by sight is due to the act of *sensus communis* whereby the cognizance of their simultaneous presentment becomes possible. But this experience involves the acts of memory and association, and these do not play any part in the perception of the common sensibles.

(b) The perception of the common sensibles appears to be like the perception of Cleon's son in the white object. The former, however, is common to *all* the senses, while the latter is confined only to the sense of sight. Moreover the common sensibles are not merely the incidental characters of a body. So in the act of perception what the eye perceives is colour, but this inheres in a substratum which is only incidentally perceived by the special senses. When we are aware of Cleon's son, we are aware of motion, magnitude, number, shape, all of which are his attributes. They "go with" him or "accompany" him. Thus the common sensibles are perceived indirectly by the special senses. "The content of sensation by any special sense is a confused whole, out of which that special sense itself cannot separate and abstract the 'common sensibles'. To do so is the task of *sensus communis*."²² Hence, though the *sensus communis* is at work in the recognition of Cleon's son (as it is in all acts of perception above the level of awareness), the interpretation of the white object as Cleon's son once more entails memory and association-processes irrelevant to the perception of common sensibles. So the common sensibles are perceived directly by the common sense (to which all the special senses contribute) and only incidentally by the special senses.²³

It may be worth noticing that even if there were only one special sense, a *sensus communis* would still be necessary to interpret its deliverances. To call a sense 'special' in Aristotle's usage of the word is to deny it all power of interpretation. Thus,

22. Hicks: *De Anima* 425a 15 and notes p. 427.

23. *De Anima* 425a 13-16; 418a 10-20; 428b 22-30; *De Sensu* 442b 4-10; *De Memoria* 450a 9-12, 452b 7. 13. This is the view which is held by most of the Aristotelian scholars—Hicks, G. R. G. Mure, Zeller, W. D. Ross and Beare—*Greek Theories*, p. 285.

if sight were the only sense, it would not be easy to detect magnitude, figure, etc., as these are never found apart from colour, sound etc.²⁴ The plurality of special senses better secures the apprehension of common sensibles.

The Perception that we Perceive

In discussing the functions of *sensus communis* Aristotle raises an interesting question as to how we perceive that we see or hear. In answering this he considers what would now be termed consciousness of a sensation, as being merely "the subjective view of the sensation, distinguished by abstraction from the objective".²⁵

The question amounts to this: Is it by the sense of sight that we perceive that we see or by some other sense?²⁶ He answers, (a) if it is by some other sense, then (I) since that which perceives sight must perceive colour which is the object of sight, there will then be two senses perceiving colour; and (II) this being so, we must either suppose a third sense by which we perceive that we perceive that we see and so on ad infinitum, or stop at a sense which perceives itself. The first alternative is obviously absurd, and there is no more reason to accept the second than to do what is far more natural, viz, to ascribe self-consciousness to the original sense of sight. (b) If it is by sight, then to perceive by sight is to see, and what is seen is colour; so that which originally sees will have to be coloured; because in the act of perception the sense and the object are qualitatively identical.²⁷

To mitigate the difficulty of the notion that our perception, that we see, is a perception of colour, Aristotle argues (i) that perception by sight is a term carrying a wider reference than seeing; thus we perceive darkness though we do not see it; and that (ii) that which sees is in a sense coloured, since the sense organ receives the sensible object without the matter, i.e., does become qualitatively identical with the object.

24. Aristotle's teleological reasons, *De Anima*, 425b 4-11.

25. Grote *Aristotle*, Vol. II, p. 206.

26. *De Anima* 425b 12-15; and 429b 26-430a 9.

27. "This is one of the earliest passages of any author in which the difficulties involved in self-consciousness are discussed". Ross *Aristotle*, p. 141; also Plato, *Charmides* 168 D, e. The conception of a science of science is examined and in the end shown to be impossible, and useless if possible, Cf. Hicks p. 434

In the partial solution of the above difficulty Aristotle's answer seems to be that it is by means of the sense of sight that we perceive that we see, i.e., in virtue of the general perceptive faculty which resides in the sense-organ of sight as in all other special sense-organs. Hicks says that the question is never completely answered in *De Anima*, but in *De Somno* the matter is again discussed and a definite answer given. Here Aristotle says²⁸ "In each particular sense, besides something special to it, there is a common element as well. The special element is in sight, seeing, in hearing, the act of hearing, and so with the other senses severally. But there is also a common faculty accompanying them all, whereby we perceive that we see and hear". It is in virtue of this common faculty accompanying all the special senses that we know that we see or hear.

Rodier²⁹ holds that the two answers in *De Anima* and *De Somno* are complementary to each other; while Wallace on the other hand maintains³⁰ that Aristotle uses 'sight' in a different way in those two passages. In *De Somno* he means the particular organ, and in *De Anima* sight is identified with "that original faculty of sense which serves as basis to the whole system of senses". Taking into account both the statements of Aristotle, Ross holds that "it is by sight we perceive that we see, but by sight *not qua* sight but *qua* perception".³¹

Hicks would appear to be right in maintaining that a definite answer is given in *De Somno* where the common faculty is explicitly mentioned. "Such a consciousness is regarded by Aristotle as in itself a sense-perception, attendant on the original perception of colour seen or sound heard."

But it should be remembered that Aristotle does not assign all self-consciousness to a single central faculty. For he says³² "Scientific knowledge, perception, opinion and discursive thought have always something else as their object and themselves only by the way", i.e., while primarily engaged with objects other than themselves, each *in passing* apprehends itself.³³

28. *De Somno* 455a 12-14; also Hicks, p. 434.

29. cf. Spicer 'Aristotle's Conception of soul', p. 84.

30. Wallace, 'Aristotle's Psychology', Introd. p. 81.

31. Ross *Aristotle*, p. 141.

32. *Metaphysics* 1046b 35.

33. Aristotle regards intelligence in its highest form as essentially self-conscious. So the reflective activity is said to make life valuable (cf. E. N.

The Perception of the Incidental Sensibles

It has been said that perception of the object as "being Cleon's son" is incidental.³⁴ In this act what is directly perceived is a white object, and the fact that this white object is Cleon's son is perceived incidentally ('per accidens'); "being Cleon's son" is regarded as a concomitant of the quality white.

Aristotle is careful to point out a distinction between the perception of Cleon's son and that of sweetness by sight. In the latter instance the two qualities (colour and flavour) occur together in an object which we have previously seen and tasted, but are now *only* seeing.³⁵ In the case of Cleon's son, the perception is confined to a special sense, i.e., sight. In the other case, as the apprehension of the object (sweet) of one special sense is through a second (sight), the perception is in a manner incidental. The perception of the latter is not due to any special sense but to a common sense. For the special senses cannot perceive more than one object in one single act of sensation; nor can two special senses produce sensations simultaneously.³⁶ So when an image of, say, sweetness is aroused indirectly through a visual stimulus, the special senses do not operate separately. It is thus the common sense which recognizes the coexistence of different qualities in the same object.

In the above two cases, according to modern psychology, the functions of memory and association are involved. However, the two cases differ in regard to the complexity of what is called up by association on the application of the present stimulus. "In ascribing the apprehension of the incidentals and of the common sensibles to perception without definitely recognizing the part played by association, Aristotle leaves unexplained (though he notes its existence) the fallibility of such perception as compared with that of the special sensibles".³⁷

1170a 25b-10). In *Metaphysics* 1070b 34 the Divine Life is depicted as pure self-knowledge—"Knowing of knowing". So self-consciousness plays gradually a more essential role as the scale is ascended from the life of sense perception to the life of pure thought.

34. *De Anima* 418a 21; 425a 25.

35. *Ibid.* 425a 22b; 9.

36. *De Sensu* C. 7; such a view is found in our traditional psychology in the 'theory of attention' Cf. Ward 'Psychological Principles'. "To attend to one thing means to be in-attentive to other".

37. Ross *Aristotle*, p. 141.

II

*Discrimination between the objects of two senses*¹

Here we shall proceed to consider another important function of the *sensus communis*,—the discrimination of special sensibles, e.g. that red is not sweet. The problem with which we are concerned in this section is what would now be called 'judgments of identity and difference'; or, it may be expressed in the question, how can unity know diversity?²

It is a fact of experience that we pass such judgments of identity and difference: "Sweet is not red", or in general "x is identical with, or different from y". When x and y are special sensibles, Aristotle refers the judgment to a common sense. The discrimination of red and sweet, he says, is outside the function of any special sense. Sight cannot perceive sweet, nor taste, red. Nor can they be discriminated by sight and taste together; for, in that case, the judgment would be like that of two distinct persons.³ Thus, if you and I each have a perception, your perception is private and so is mine; neither of us can directly discriminate between the two experiences; but I can and do discriminate between my own perceptions and so do you, I believe, between yours. The judgment that 'sweet is not red' is single, and it implies a single umpire to judge, i.e. the sense faculty which judges must be single. Secondly, discrimination implies a simultaneous and not a successive perception of the qualities discriminated, i.e. the unity of judgment presupposes the unity of perception. So Aristotle concludes that discrimination must be the work of a single faculty operating in a single moment.⁴

From the last point, it follows that simultaneous perception is necessary for discrimination. But Aristotle finds great difficulty in explaining the possibility of simultaneous perception. We are told that simultaneous perception of two qualities is possible only if they are related as contraries, e.g. sweet and bitter, and form a mixture or blending.⁵ But the perception of such a mixture cannot

1. *De Anima* 426b 12-427a 14.

2. Hicks *De Anima*, p. 444.

3. Cf. also *De Sensu* 448b 20-449a 2.

4. This function of the sense is similar to that of the synthetic unity of apperception in Kant. Cf. Ross, *Aristotle* p. 141.

5. *De Sensu* 7, 447a 29-447b 4.

be called a simultaneous perception of the two qualities mixed. For, the individuality of the component elements is lost in the mixture. Here our question is how red and sweet are perceived simultaneously and discriminated. They belong to different genera and so cannot blend.

Let us explain the difficulty in greater detail. Perception is a sort of qualitative change. So the sense faculty undergoes a certain 'motion or alteration' when sweet is perceived, the *opposite* motion when the sensible is bitter, and a different motion when it is red. But simultaneous opposite motions are impossible in the same faculty in the same instant of time, unless that faculty be capable of division. But we have assumed that the judging faculty is single and indivisible. Then how is the perception of diverse qualities—red and sweet—possible?

Aristotle notes that the above difficulty cannot be answered simply by considering the unity of the object, though he discusses it at great length. He says: "In the case of soul it is the same as with things".⁶ The faculty like the sensible object is numerically and spatially one. The analogy holds good if we mean only the potential faculty. The faculty may be potentially a pair of opposites—white and black—but it cannot be both in actuality at the same time.⁷ But the sensible object being corporeal may be actually black in one part, and actually white in another. It can be actually both as it is capable of division. So what is true of the sensible object is not true of the sense faculty which is incorporeal and assumed to be an indivisible unity.

Aristotle seeks to solve the above difficulty by analogy with the mathematical point which is one and indivisible.⁸ If C is a point on the line AB, C is the beginning of the line CB and also the end of the line AC. This point has diversity in the sense that it can be considered as one or as two; so far as it has a single position in space it has unity. Similarly the judging faculty *qua* indivisible is single and judges its objects simultaneously, but it may also be regarded as divisible and then it is no longer one.⁹ Thus the *sensus communis* though single and indivisible can per-

6. *De Sensu* 449a 14. This illustrates what Grote means 'the physical aspect of mental phenomena' in Aristotle's psychology.

7. *De Anima* 427a 9.

8. *Ibid.* 427a 10-15.

9. Hicks *De Anima*, pp. 550-51, and G. R. T. Ross, *De Sensu*, pp. 230-34.

ceive red and sweet simultaneously and discriminate them. So he says, "the soul is self-identical and numerically single, though in apprehending objects now generically now in species different, it has a corresponding diversity in the aspect of its existence. Hence the mind may perceive things simultaneously by means of something self-same and unitary though not notionally the same."¹⁰ The discrimination of two different qualities is thus one and the same mental act with two distinguishable aspects.¹¹

Simultaneous perception or presentation?

How far do the foregoing arguments solve our difficulties? From the empirical fact that we do make distinctions between qualities (e.g. red and sweet) it would seem that we have to account for two stages in the process of discrimination, viz., a presentational stage (i.e. the conditions necessary for discrimination) and a judging stage (i.e. the act of discrimination itself). Hence we have both to reconcile this need for a presentational stage with Aristotle's theoretical explanation of apprehension and also to explain how 'unity can judge diversity'. In the analogy of the point, Aristotle, though he seems to think he has settled the whole problem, in reality deals exclusively with the second difficulty (i.e. the judging stage). While accepting his explanation of this second stage, we cannot overlook a confusion in his treatment of the first.

In *De Sensu*¹² Aristotle argues that simultaneous perception is impossible, whereas in *De Anima*¹³ he takes it for granted. Let us take the argument from the *De Sensu* first. We have seen that it is improper to talk of the simultaneous perception of contrary qualities (e.g. sweet and bitter) since these cannot be experienced individually in the same instant of time; when presented together they give rise to a sensation different from the one produced by either alone (i.e. the blend). He further argues

10. *De Sensu* 449a 19-22, trans. G. R. T. Ross.

11. Grote *Aristotle* II, p. 210.

12. *De Sensu* 7, 447a 29-447b 4.

13. *De Anima* III, 426b 27-28—"That which judges, judges, then, instantaneously and hence as an inseparable unit in an inseparable time", i.e. "Whatever judges two or more sensible objects must *ipso facto* co-instantaneously perceive them". Cp. Hicks, *De Anima*, notes p. 445.

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that simultaneous perception of qualities which will not blend (sweet and red) is even more difficult to account for, and concludes that simultaneous perception is impossible.

The conclusion is in flat contradiction with the assumption of *De Anima*, and it is not at first easy to square it with the empirical fact of discrimination. However, it appears to be consistent with Aristotle's fundamental doctrine of the special senses. Our business now is to show that what Aristotle takes for granted in the *De Anima* is not (despite his choice of words) simultaneous perception at all, but simultaneous presentation, and that this is sufficient to account for the facts of experience.

What is the difference between simultaneous perception and simultaneous presentation? Suppose, I mix two drinks—say soda and ginger. If I take this mixture, I do not simultaneously perceive soda and ginger, but a quality different from either; this is the line of argument of the *De Sensu*. But my inability to taste them together certainly does not prevent me from saying, "The taste of soda is different from the taste of ginger". What, then, is the pre-condition of my discrimination? It would appear to be that on the perception of a single quality, I am enabled to compare it immediately with one previously sensed; this is not simultaneous perception as Aristotle uses that term in the *De Sensu*,—the proper name would seem to be not perception but presentation.

Discrimination: the Function of Sensus-Communis and not of the Special Senses.

Aristotle sometimes speaks as if the function of discrimination and judgment belongs to the special senses. Thus in *De Anima* we read: "Each single sense judges its proper objects and is not deceived as to the fact that there is a colour or a sound" (cp. 418 a 14). He further maintains that the sense being a means "passes judgment on the things of sense" (cp. 425 a 5). Once again he emphasizes the same fact: "Now each sense is concerned with its own sensible object and judges the specific differences of its own sensible object" (cp. 426 a 10). From these scattered remarks, it seems that the special senses are endowed with the function of discrimination.

But in our preceding section we tried to show that discrimination is a judgment following upon simultaneous presentation and

that such presentation entails the operation of *sensus communis*.¹⁴ How then can a special sense be said to discriminate? The answer seems to be that though Aristotle often speaks of simple perceptions as the work of a special sense, the operation of *sensus communis* is always understood. This is borne out by his argument that in sleep the special senses are inactive because of the inactivity of *sensus communis*.¹⁵ If then the activity of the special senses always presupposes that of *sensus communis*, it is obvious that no special sense can be strictly held capable of discrimination. It is, however, natural to speak loosely on this point because our comparison of two qualities of the same kind (say, white and black) does appear to consciousness to be spontaneous and unmediated.

14. cp. *De Sensu* 447b 17-448a 19; 448b 17-449a 20.

15. *De Somno* 454b 25-27; 455a 20-b 13.

Meaning and Verification of Knowledge

by

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The problem we propose to discuss here is this. We usually mean by knowledge a piece of veridical apprehension which cannot be doubted. For knowledge, in a strict sense, must be implicitly true; false or doubtful knowledge is self-contradictory. But can we point to any apprehension which we can justly claim to be true and, so, knowledge? If we doubt every apprehension till it is proved by some external criterion to be true, then we have to search for this criterion.

Now the criterion one thinks of at the first instance is correspondence: the content of a true apprehension must correspond to the object. But this object cannot be got in itself, not forming the content of an apprehension. And if the first apprehension is doubted why not all the succeeding ones? All perceptions stand on the same footing so far as the truth of their contents is concerned. The method of average, adopted by science is only a heuristic principle, and it is based on the assumption that apprehensions are more often true than not. And it assumes further that the object judged is the same for different persons viewing it from different angles, and that it remains the same throughout the time one apprehends it and records his various observations. All these assumptions are questionable. So that the idea of correspondence does not offer us any criterion of knowledge. Let us see if the idea of coherence does. The criterion of knowledge now is the coherence of the content of the apprehension in question with the contents of other apprehensions. On the face of it the criterion appears unsatisfactory, for we do not understand how a system of contents, each doubtful in itself, can constitute knowledge, that is, how coherence can dissolve doubt. We can have a coherent dream. Then there is the question of extent and degree of coherence. We have to specify the number of items with which a given content of apprehension should be related and also the density of the inter-relation of the system, for this number and density have infinity for their upper limit. The idea of a systematic whole is only an ideal or a regulative principle. Again, the relation between the contents of two apprehensions is factual and,

so, contingent, and not necessary. Necessity can be asserted of the realms of definitions and obligations while a content of one's apprehension belongs to neither of these realms. It belongs to nature.

So if we start with doubt and therefore, with collecting and collating evidence regarding something we can never go beyond summing up of the evidence to a verdict about it, that is, from the appearance to the fact. The idea of coherence does not offer us a real criterion of knowledge. There is another idea: success in practice and satisfactoriness. An apprehension is said to be true if the content helps us in practice and so satisfies us. But this also will not do. For we know that a content helps and satisfies because it is true, and that a false content may help and satisfy for a while before it gets exposed. Then, we have to apprehend truly if a content, an idea, is helping us in practice or not; how to be sure of that? By an appeal to our feelings? But then we have an irrational criterion of knowledge and we know how often feelings mislead us.

So far we have seen that if we start with doubt and search for a criterion of truth we can never get out of the doubt. Let us now see if this initial doubt might not be an error on our part engendered by some false principles and verbal analogies. Doubt regarding a content of apprehension implies the belief in an object of apprehension which is independent of its content and which the content represents. Is this a false belief? Let us examine.

This belief in an independent real object existing in itself and being the original of the contents of apprehensions which are copies of it arises partly out of the analogy of the phenomena of reflection in mirrors and representation in art. But that it is a false analogy is plain enough, for while the original object mirrored or represented on canvas is also given in apprehension, their analogue in knowledge is not so given. So it is misleading to speak of the contents of our apprehensions as representations of some objects beyond them outside the mind. The belief in the real object apart from our apprehension of it is also generated by the belief that the appearance of a content of our apprehension is an event like any other natural event and, therefore, must be caused by an object behind it which is itself not a content. That is to say, the appearing of a content is regarded as an event, but since the background of the content does not appear, one imagines a transcendental cause of the appearances. But all this is unwarranted. The content of an apprehension is an event in relation to other

contents, its appearing is never known as an event, it is only a way of speaking. A sound may be an effect of a gun firing but the appearance of it to us is no effect of any sort. The sound is heard but its appearance is not heard nor perceived in any other way. To imagine a transcendental cause of our apprehensions is to be misled by a false analogy, and to correct this error we have to see that there are no transcendental objects beyond our apprehension which might be the causes and originals of the contents of our apprehensions and which, therefore, might serve as standards while judging the truth of the latter.

A third source of belief in such an objective standard is the fact of our dreams and illusions. It is argued that since they prove false though taken as true for a while, every other apprehension might also prove false. Therefore, they should be initially doubted. And doubt implies the belief in the existence of true objects which might settle doubt. But as every apprehension is doubtful this true object must be beyond apprehension, a thing in itself. Now the original argument, that since dreams and illusions prove false other apprehensions might also so prove, rests on a false analogy. For a dream or an illusion is not attended with a consciousness of itself, whereas a waking apprehension is so attended. We are aware of a dream or an illusion only when it is cancelled by a waking apprehension in which alone we are aware of the two modes of apprehension and their difference. It is impossible for me to suspect that this paper and my writing on it might be illusory, for I can be aware of an illusion only when it is over. One's doubting one's waking apprehension is therefore only idle, and not serious, born of a verbal analogy of the type that since dream apprehensions turn false the waking ones also may.

Thus waking apprehensions are self-evidentially true, and, therefore, constitute knowledge. There is no external criterion of knowledge and truth. Doubt regarding this epistemological principle and the deliverances of our waking experience is unjustifiable arising, as it does, from false analogy, verbal inertia and wrong theory. Doubt here is artificial and sophistic, and it can be dissolved through an examination of its origin and an appeal to one's normal unsophisticated self. The question we posed at the outset was, "Can we point to any apprehension which we can justly claim to be true and, so, knowledge?" Our answer now is, "Any waking apprehension". Our conclusion is that knowledge means true apprehensions and it does not need verification. Our guesses need verification, not apprehensions.

Perception and Direct Awareness

by

KALI KRISHNA BANERJEE

Do we see a colour or a coloured thing? When we go to a zoological garden do we see some two dimensional striated patches or the tigers and the zebras? Common sense gives categorical answers to such questions. It says that we see a coloured object or a zebra, and not merely some two dimensional striated patches. It thinks that a colour *per se* can neither be nor be perceived. A red that belongs neither to a lady's lips nor to her stick cannot be a fact. We can neither perceive nor imagine it. A colour-word like 'red' is grammatically an adjective and demands a noun. Similarly the fact for which it stands is adjectival and should necessarily be owned by a thing. For common sense a colour is necessarily a colour of, and we see a colour when we see a coloured object. Now such a common-sense view is held to be unsatisfactory by many a philosopher whom we propose to call phenomenologists. Phenomenalism is perhaps as old as philosophy is and has not always been formulated in the same way. But still it may be said that the phenomenologists have always held the common-sense view of things to be untenable. According to them, we cannot be said to see the coloured object or the thing. The zebras or the tigers cannot be objects of direct acquaintance. They are not the data for the senses. They are, so to say, creatures of imagination, or logical constructions, and do not form a part of the ultimate furniture of the world. In other words, according to the phenomenologists the word zebra or any thing-word, is not demonstrative but descriptive. Common-sense thinks otherwise. But the truth is that a word like zebra does not stand for a non-linguistic fact. It does not stand for a linguistic fact either. It does not stand for a fact at all. It merely describes, and it is an incomplete symbol. That is, it does not stand for any constituent of the judgment in whose linguistic expression it appears. We can replace a statement in which it appears by one whose every grammatical element will directly represent a propositional element. It, therefore, is a symbol which is simply the correlation of such symbols as represent the propositional elements directly, and so in a logically perfect language it will not occur. Or rather, a thing-sentence is molecular and is equivalent to a group of atomic sense-datum sen-

tences. So a perfectly logical language can eliminate the thing-words completely. Now, as the thing-words are incomplete-symbols, so the things are logical fictions, or constructions, or as the Buddhists said, just imagination (*Kalpanā Janya*), and do not form a part of the ultimate furniture of the world.

This is the phenomenalist theory of things. Now, if phenomenism is as old as philosophy, distrust of it is as old or perhaps older. Common sense has never been able to give up the impression that a phenomenist steals our solid things and palms off what is airy and attenuated and ungente-manly. Indeed common-sense has never believed that the phenomenist's cheque can be cashed in full. Thus the earlier phenomenists, who said that a thing is merely a conglomeration of some qualities, could not enumerate even the present qualities of a thing, and found that it certainly is puzzling that though all the qualities are not known, yet a thing, or rather what the philosopher of common-sense calls the identical being of the thing, is known. Similarly, the contemporary phenomenists who say that the material object language can be fully translated into the sense datum language cannot with success effect such a translation even of a simple material object sentence like 'This is a zebra'. Again the earlier phenomenists reduced a material thing to a permanent possibility of sensation, and their critics or dissatisfied common sense had argued that a thing is not a merely unrealised possibility but an actuality. Similarly the phenomenists of today can translate a material object sentence only into a hypothetical or causal-dispositional sense datum sentence. Thus the material object sentence 'There is a zebra in the Alipore Zoo' is for the phenomenist equivalent to the hypothetical sentence,—'If I go there I shall have such and such sense data.' Now, the contemporary critics of phenomenism (e.g. Prof. Berlin) rightly deny the propriety of such a translation. Thus they argue that the distinction between a categorical sentence and a hypothetical sentence cannot be done away with. An existential indicative sentence has a demonstrative sense. It is ostensive. When in the zoo my children are looking for the zebra I may raise my finger and say 'the zebra', or in lieu of the ostensive act I may make use of such expressions as 'this is,' or 'here is' or 'there is' etc., and say 'there is the zebra'. So it is obvious that when an existential indicative material object sentence describes a thing present in the sense field, the ostensive character of it cannot be denied. And though there may be important semantic difference between

such a sentence and one that describes a thing not present in the sense-field, yet there is no logical difference between the two. Hence, it cannot be denied that an existential indicative sentence is 'actual—fact-asserting'. But a hypothetical sentence is not so. It does not assert something actual or anything that is or was or will be. It makes merely a conditional assertion and leaves it open whether the condition is realised or not. Its meaning, that is to say, is conditional or 'not-actual-fact-asserting'. Hence though a categorical sentence may entail a hypothetical and vice-versa, yet the two cannot be equivalent. The categorical sense of an existential indicative sentence is irreducible, and so a material object sentence cannot be translated into one or more sense datum sentences. Nor can we say that the categorical sense of a material object sentence is emotive or habitual. For the categorical form is, as Cook Wilson said, prior and independent. Again if the meaning of a thing sentence be hypothetical, then there is no reason for the meaning of any sentence being non-hypothetical. That is, if the phenomenist logic of thing sentences be applied consistently, then the sense datum sentences also should mean as implication statements. To deny this would be to hold either that the sense datum sentences are not significant, or that there is no distinction between significance and truth. The phenomenists seem to overlook this as they suppose that the sense datum sentences are ultimate correctors. But as Mr. Llyod has argued, correctors are always relative to a language, and so though the sense datum sentences may be the basic ones in one language say L, yet they are not absolutely basic. And consequently it cannot be held that while the thing sentences mean as implication statements, the sense datum sentences do not.

From this it will be obvious that phenomenism is unsatisfactory or has paradoxical consequences. But what is interesting about it is that though it has received serious dialectical blows from the philosophers and Johnsonian Kicks from common sense, yet it does not seem to die or lose its vitality. Rather the ghost of phenomenism still walks and refuses to enjoy any well-earned rest in some honoured grave. Indeed it seems that there has been no serious student of philosophy who has not flirted with phenomenism. So the question arises what is particularly charming or irresistible about it? The answer we think is its empiricism, and so if a theory alternative to the phenomenist theory of direct acquaintance be not formulated the ghost cannot be laid. That is, according to phenomenism, the thing cannot be an object of

direct acquaintance. It is so to say an inferred entity, and the phenomenalistic creed is, in the words of Bertrand Russell, "wherever possible logical constructions are to be substituted for inferred entities." It is true that the contemporary theories of logical construction are neither theories of perception strictly speaking, nor merely consequences of them. That is, these theories are variously motivated, and the chief motive seems to be to ascertain if the world of the scientists that is peopled by electrons, protons, photons, unconscious etc., is a mysterious realm that literally falls outside the world with which we have direct acquaintance. But still, the advocates of logical construction construct, not the world of science, but the world of common sense or the world that is peopled with such homely objects as tables and chairs and tomatoes. Thus Prof. Ayer and others understand by external world the world of tables and chairs and attempt to analyse them into patterns of sense data. Only Bertrand Russell seems to take the world of physics as his external world, but then, as Prof. Dingle has argued, "discusses it as though its relation to sense data were the same as that of the common sense world". Indeed, it seems that contemporary phenomenalism owes much of its plausibility to the ambiguity of the name 'external world', for, in some cases at least, it mixes up the obviously true proposition that the scientific objects are inferred entities with the proposition that tables and chairs are so. However, that a thing is not an object of direct acquaintance is the basis of phenomenalism. When we say that we see a zebra, a phenomenalist will say that we have not properly used the verb 'to see'. Hence what a student of phenomenalism must ask is whether the paradoxes of it are to be swallowed, or whether phenomenalism along with its empiricism is to be given up, or whether an empiricist, though non-phenomenalistic, theory of direct acquaintance is possible. In this paper I shall make an attempt to formulate an empiricist but non-phenomenalistic theory of perception. This theory to be sure is of the Nyāya-Vaiśeṣikas and has been formulated and defended with care by Vācaspati Miśra in his *Tātparyya Tikā*, Udayana in his commentary on *Tikā*, Vallabhācāryya in his *Nyāya Lilāvati*, and many other writers belonging to this school; and the Navya-Naiyaikas (particularly Gadādhara) often write in a way that suggests that they also accept it.

Common sense does not think that we abuse the verb 'to see' when we say that we see a zebra. Let us see if a theory of direct acquaintance can be formulated which will offer the philosophical

basis of the common sense belief. Now, while formulating this theory we shall use the words 'sensation' and 'perception' not exactly in the sense in which they are used in western philosophy. Indeed, I doubt if in western philosophy these words possess any well-defined sense. However, we shall use the words to stand for *Nirvikalpa* and *Savikalpa* of the Indian thinkers. That is, we shall not consider sensation to be something merely abstract. We are prepared to admit that of a sensation we may have no introspective awareness, but then we are not holding that a sensation is no awareness at all. With these remarks let us develop our theory of perception. We shall not deny that perception involves among other things the working of the dispositions left behind by past experience; and so the real issue for us is whether the working of the dispositions left behind by past experience makes an awareness indirect, or less direct than sensation.

We know that in memory the dispositions work. But what exactly is the nature of memory consciousness. Some text books of Psychology tell us that the dispositions left behind by the past experience of an object, being provoked by something presently experienced, give birth to an image or a pale mental copy of the past experienced object, and with the help of this present image or mental replica I remember the past object. Now, we hold such an account of memory consciousness to be worthless. The past experienced object is as directly present to my memory consciousness as the present provoking object is to my perceptual consciousness. So what happens when we remember is to be explained in a different way. We should say that the present perception of the provoking object sets the dispositions left behind by my past experiences of the remembered object in action and this gives birth, not to a mental replica but to a consciousness that fastens itself upon the past object responsible for the dispositions. So the memory image of an object is the past experienced object present to a present consciousness, called memory consciousness, and 'I remember an object' means that the dispositions left behind by my past experience of it being stirred give birth to a consciousness that immediately fastens itself upon it. Now this is one way of the working of the dispositions and not the only way. The dispositions being provoked may generate a consciousness which makes exactly the object of sensation its object. In other words, if the sensed object or the sense-object contact loses its grip (what the losing or maintaining its grip is I wish to leave undefined not only because defining it is a Herculean task but also because it is

irrelevant) on the working of the dispositions, then what happens is memory or an immediate apprehension of what is not here and now. But so long as the sense-object contact has a firm hold on it, it will merely make the sensation clear and articulate, i.e., will produce a determinate cognition of what was only indeterminately cognised in sensation. So when the dispositions work under the dictation of the sense-object contact, then they cause a cognition that is as direct as sensation is. If the sensed data are hard data, the perceived data are also hard data. It is true that a sensation is never erroneous. It is also true that a perception may be erroneous. And it cannot also be denied that error in perception is due to the working of the dispositions. But that does not justify us in holding that perceptual awareness is indirect, or that it refers to what is not present here and now. That is, dispositions work in memory and in perception, veridical and non-veridical. But in the three different cases they work in three different ways. In the case of memory, they do not work at the dictation of the sense-object contact, and so generate a consciousness that is of an object not here and now. In the case of illusory perception like the mistaking of a rope for a snake, they work under the dictation of the sense-object contact; but as the dictation here is not strict, so a cognition is caused that cognises an object that is not here and now as what is here and now. And in the case of veridical perception, they work strictly under the dictation of the sense-object contact and give birth to a cognition that cognises exactly what was cognised in a sensation only indeterminately. So perception is not a less direct form of awareness than sensation.

Now it may be said that such a contention rests upon a particular theory of the working of the dispositions. That is, it may be said that only when it is assumed that the provoked dispositions do not always work to produce a memory consciousness, then it may be admitted that perception is also a direct form of acquaintance. But what is the evidence in favour of such an assumption? Against such a question we raise the counter question, what is the evidence against it? Why should we say that the dispositions working under the strict dictation of the sense-object contact do not make explicit the sensed content? Would it be said, since in the case of memory, dispositions give rise to a consciousness of an object not present here and now, so in the case of perception they give birth to a similar awareness? Then should we not ask, how do we know that in the case of memory dispositions give birth to a consciousness of a not-here-and-now object? Is it not due to

the fact that memory consciousness is accompanied by a consciousness of the past? Now does such a consciousness accompany perception? Obviously not. Then why should we not hold that dispositions work in one way in memory and in another way in perception? Would it be said that as in the case of illusion dispositions give birth to a cognition cognising a not-here-and-now object as here and now, so also in veridical perception they cause a cognition that cognises a past object but is not accompanied by a consciousness of the past? Then we should like to know what are the conditions uncongenial to veridical perception operative here? Would it be said that though in perception dispositions work exactly as they do in memory, yet as perception is 'memory blended with sensation' so there is here no consciousness of the past? Then we shall say that it is to misunderstand the relation between sensation and perception. That is, it is not the case that perception is sensation plus memory. It is not the case that in the case of perception, memory consciousness comes into existence and clothes with its images the naked sensations that lie, so to say, in front of it. For when the perceptual consciousness appears the sensation has disappeared. A perception and a sensation cannot exist side by side, and so a perception is not sensation plus memory. We are to explain the relation between perception and sensation in the following way. When there is a contact of an object, say a zebra, with the senses, say the eyes, something happens, or a sensation is born. Then the sensation functions, or cognises the zebra as this and the universal zebanness (this cognition being not a cognition of them as related), and provokes the dispositions. This is the second moment in the life of the sensation. In the third moment, the sensation disappears and a new cognition appears. This cognition is owing to the provoked dispositions working under the dictation of the sense-object contact (which is still there though the sensation has disappeared) and gathering together the contents of the sensation. This cognition is perception. It is produced by the sense-object contact and the provoked dispositions. Now, as even memory consciousness which is caused by the provoked dispositions is direct, so this consciousness is also direct. When the conditions are not uncongenial to veridical perception, the sense-object contact gives birth to a consciousness of a here-and-now-object. Hence what is called *Savikalpa* in Indian philosophy is as direct as *Nirvikalpa* is, and the expressions like 'we see a zebra' are perfectly legitimate.

Some Reflections on Activism and Zeno's Paradoxes

by

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After the paradoxes discovered by Zeno were converted into the problems of continuum and discreteness by mathematicians, every philosopher who is not also a mathematician has been hesitating to deal with them, lest he should produce howlers. And the present writer also being such a philosopher hesitates to deal with them for fear that he will have to enter into the mathematical aspects of the problem. But the solutions given even by the mathematicians baffle his understanding and leave the question unsolved for him; for unless it is also shown how Achilles could have acted according to the mathematician's solution, it is difficult to comprehend how he could have over-taken the tortoise. Any philosophical solution of action problems must be capable of rebuilding the action it analyses; if it cannot, it will be so far defective. And the solution offered by the mathematical philosophers must have been found difficult by Achilles to apply in order to win the race. And the solutions of some of the non-mathematical philosophers also, offered in the course of the history of philosophy, are found to be inadequate.

I

In this section, we may consider some of the solutions so far given. The first is that of Aristotle. For the purpose of this paper, which aims at pointing out the relevancy of activism to understand space and time, and the impossibility of explaining their nature without assuming the reality and unique character of activity, which confers reality on some aspects of their nature, it is not necessary to discuss all the paradoxes invented by Zeno; for all of them are concerned with the same problem of the infinite and its parts or the continuous and discrete magnitudes. Aristotle says that Zeno's arguments are false, because "time is not composed

of indivisible moments any more than any other magnitude is composed of indivisibles".¹ And he advances the same criticism, with necessary modifications, against all the paradoxes. For instance, Zeno says that "if everything when it occupies an equal space is at rest, and if that which is in locomotion is always occupying such a space at any moment, the flying arrow is therefore motionless".² This argument, Aristotle says, is false, because it assumes that space and time are composed of indivisible parts, in which the object rests.

The paradox of Achilles and the tortoise also is similarly answered. "In a race the quickest runner can never overtake the slowest, since the pursuer must first reach the point whence the pursued started, so that the slower must always hold the lead". This argument also assumes a division of space similar to the above. Aristotle's answer is: "And the axiom that that which holds a lead is never overtaken is false: it is not overtaken, it is true, while it holds a lead: but it is overtaken nevertheless if it is granted that it traverses the finite distance prescribed".³

We need not take up the other paradoxes. Now, it is difficult to understand how Aristotle answered Zeno. Suppose time and space are not composed of indivisible parts but of divisible parts. Even then Zeno's paradox stands. If the arrow has to cover every infinitely divisible part of the infinite number of parts of the distance it has to traverse, then it could never have completed the distance. It will be of no avail to say that the time it takes to cover the distance is also infinitely divisible. For the question is: How could the arrow have completed the infinite division at all? Aristotle's solution of the second paradox is only a statement of fact; but not a solution of the problem involved in his own conception. Even Zeno has to accept that Achilles does overtake the tortoise and traverse the prescribed distance; but he would ask; How does he do it, if he is always to cover the distance first covered by the tortoise? For none can deny that, in order to beat the tortoise, Achilles has first to cover the distance covered by it; and if so, Zeno says, he has to do so a second time, a third time, a fourth time and so on *ad infinitum*.

1. *The Basic Works of Aristotle*, p. 335. Edited by Richard McKeon (Random House, New York), 1941.

2. *Op. cit.*

3. *Ibid.*, pp. 335-6.

It has, however, to be pointed out that, according to Aristotle, the infinite is not actual in space. He says that time is infinite but not space.⁴ The infinity of time is unboundedness in thought; then why it is denied to space we do not understand, for space also may be treated as unbounded in thought.⁵ His refusal to accept infinity of space is bound up with his refusal to accept empty space. For him, space is filled with matter;⁶ and so, he thought, space could not be infinitely extended. It is again difficult to understand why he should think of time differently. However, unlike time space is infinitely divisible. Thus curiously enough, according to Aristotle, though the "infinite in addition" for space is not actual, the "infinite in division for space" seems to be actual. For he says: "It is reasonable that there should not be held to be an infinite in respect of addition such as to surpass every magnitude, but that there should be thought to be such an infinite in the direction of division".⁷ Further, "it is natural too to suppose that in number there is a limit in the direction of the minimum, and that in the other direction every assigned number is surpassed. In magnitude, on the contrary, every assigned magnitude is surpassed in the direction of smallness, while in the other direction there is no infinite magnitude".⁸ This means infinite division is possible in space but not in time, while infinite addition is possible for time but not for space. For time is based on number.⁹ Here Aristotle's position is not clear, and his interpretation of time not complete. For the 'Now', which is the indivisible limit in the division of time, is yet not time, that is, not temporal,¹⁰ it is a static unit. Yet, though not a part of time, the 'Now' forms a boundary, a limit, to the division of time. However, "time is 'number of movement in respect of the before and after', and is continuous since it is an attribute of what is continuous".¹¹

The difficulty in solving Zeno's paradox increases. For if space and time are two aspects of movement, the former being

4. *Ibid.*, p. 269. See also Gomperz: *Greek Thinkers*, Vol. IV, p. 119 (John Murray, London, 1949).

5. I am not referring to the space of the relativity theory.

6. Gomperz: *Greek Thinkers*, Vol. IV, p. 120.

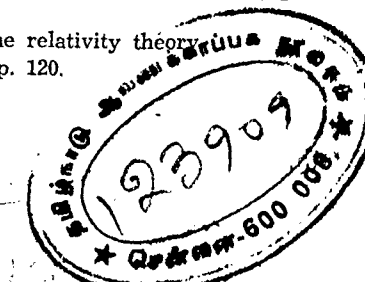
7. *The Basic Works of Aristotle*, p. 267.

8. *Op. cit.*

9. *Ibid.*, p. 292.

10. *Ibid.*, p. 293.

11. *Op. cit.*



infinitely divisible and the latter not, how can they be correlated? It looks as though at every 'Now' the arrow comes to a stop and rest. Aristotle says that time is not made up of 'Nows'; still he divided time into them with the help of number. The arrow then may not rest at non-spatial or indivisible points, as there are none for Aristotle; but it will have to rest at non-temporal 'Nows'. Therefore, it may at least be said that Aristotle's analysis is not clear. Had he said that the arrow does not make any divisions in the space traversed and also in the time taken, the difficulty would have been removed. But instead, he maintained that space consists of divisible parts, not of indivisible parts, which is an improvement upon Zeno's understanding, but which does not take us very far in solving the problem. And his different analyses of time and space complicate the problem.

Zeno formulated the paradoxes in order to prove the unreality of motion, change and becoming, and in order to establish the reality of Being. For Zeno therefore they were not paradoxes but arguments to prove the unreality of the entities concerned. For a paradox, though it asserts opposite theses, is still a truth about something considered to be real, and retains its paradoxical nature only for the person who, accepting the contradictory theses, accepts also the reality of the entity about which they are made. But Zeno did not accept the reality of the entity. The paradox therefore is only part of his argument. The rest of the argument is: if any entity is real, it cannot be self-contradictory, that is, two contradictory statements cannot be made about it; but contradictory statements can be made about motion, change etc.; therefore motion, change etc., are not real. Zeno was prepared to treat them as unreal. But others are not. So for them Zeno's arguments become paradoxes. They cannot be denied, yet his conclusions have to be denied; and so the arguments become paradoxes, and the contradictions have to be reconciled. Similarly, the whole of the absolutistic dialectic, which is aimed at proving the ultimate unreality of everything belonging to the mundane world like cause and effect, substance and attribute, relation and terms etc., may be treated as a set or a system of paradoxes, when we are not prepared to accept the absolutist conclusion, but feel obliged to accept the truth in the arguments. The problem of continuity versus discreteness is only one of them. For instance, cause and effect have been shown by Bradley in the West and Nagarjuna and Sri Harsha in the East to be self-contradictory concepts, and are therefore regarded as only appearance but not reality. The method adopted

by them is very similar to Zeno's. Now, if we wish to treat cause and effect as real and not as appearance, we have to deal with the contradictions discovered in the concepts of cause and effect as paradoxes and reconcile them.

Kant did not deal with Zeno's paradoxes directly, but noticed similar difficulties and called them antinomies. The metaphysical position of Kant is not similar to Zeno's. Kant was concerned to show how cause and effect, space and time, etc., could be real; but he also found that certain contradictory statements could be made about some of the entities. These he called antinomies. Zeno's dichotomy of the continuous and the discrete may be found in the second of the four antinomies of Kant. Whereas Zeno attempted to disprove the reality of space and time in connection with motion, Kant took up the analysis of space and time apart from motion, and his aim was to prove their reality. His second antinomy, one of the two mathematical antinomies, is concerned with the infinite divisibility of space. In fact, this antinomy is not directly concerned with space, but only with the infinite divisibility and indivisibility of things or substances. The thesis asserts that substance consists of ultimately indivisible parts and the antithesis that it consists of infinitely divisible parts. In proving the thesis, Kant does not make use of space and time; but in proving the antithesis, he makes use of space, though not of time. But the antinomy about substance is applicable to space and time also, in fact to everything that is considered to be both discrete and continuous.

Kant's solution of the problem lies in treating space and time as intuitions or rather forms of intuition. They are forms of our spontaneity, and possess phenomenal objectivity and transcendental subjectivity. The whole is given in intuition and we proceed to divide it into parts. Our mistake lies in thinking that the whole is *made up of* the infinitely small parts into which it is divisible, but not yet divided.¹² "If we divide a whole which is given in intuition, we proceed from something conditioned to the conditions of its possibility. The division of the parts—is a regress in the series of these conditions. The absolute totality of this series would be given only if the regress could reach *simple* parts. But if all the parts in a continuously progressing decomposition are themselves again divisible, the division, that is, the regress from these conditions, proceeds in *infinitum*.—We are not, however,

12. N. K. Smith: *Immanuel Kant's Critique of Pure Reason* (Abridged), p. 250. (Macmillan, London, 1952).

entitled to say of a whole which is divisible to infinity, that it is made up of infinitely many parts.. For although all parts are contained in the intuition of the whole, the whole division is not so contained, but consists only in the continuous decomposition, that is, in the regress itself, when the series first becomes actual."¹³

Kant's position is this: "Whatever is given in intuition is some whole to which it is possible to make successive additions or in which it is possible to make successive divisions. But neither process can be completed. He calls the first regress *in indefinitum* and the second regress *in infinitum*. Ewing says: "The distinction depends on the supposition that in the former case (*in infinitum*), as the part must be present in the whole, all the infinity is in some sense present already in our starting point, while in the latter (*in indefinitum*) it need not be present in it but is only implied by it."¹⁴ Now, what the intuited whole actually consists of is the successive infinite divisibility, but not of actual infinite divisions. The antinomy is due to the false assumption of the latter.

One may perhaps think that Kant has successfully answered Zeno. As space does not consist of an infinite number of actual parts, the arrow does not have to rest in infinite number of times at an infinite number of parts; and Achilles also can overcome the tortoise because the distance to be traversed by both does not have to be divided necessarily into an infinite number of units. Achilles can divide the given spatial magnitude in his own way into a finite number of parts and complete them in his own time, which also he can divide in his own way into a finite number of parts and then correlate each temporal part with a spatial part. The tortoise can perform the same process in its own way. The divisions covered by the tortoise in a certain time can be covered by Achilles in less time also.

Yet Kant's solution of the problem is not without ambiguity and difficulty. We need not question now whether space and time are only forms of intuition and not objects of intuition. Whatever

13. *Ibid.*, pp. 250-1.

14. A. C. Ewing: *A Short Commentary on Kant's Critique of Pure Reason*, pp. 224-5. Ewing adds: "But since Kant did not believe that the infinite parts of a spatial object actually exist, any more than all the infinite number of unperceived spatial objects, it is difficult to see the point of distinction", p. 225. (Mathuen, London, 1950). But Russell and Whitehead, as we shall see, would support Kant on this point.

position is accepted, Kant's speaking of them as *actually containing* the regress involves a difficulty. And if the regress is actually contained, Zeno's problem remains unsolved. Kant indeed says that the whole division is not actually contained in any intuited whole. But he uses the expression, "all parts are contained in the intuition of the whole", and also says that the regress itself is contained when the "series first becomes actual". But if the regress is contained, then the result of the regress also is contained, and so the parts to which the regress gives rise are contained. And the difference he makes between regress *in indefinitum* and regress *in infinitum* tends to show that at the back of his mind, Kant must have been thinking that the infinite regress must have been completed within any intuited magnitude. But what Kant did not see is that this completion involves not only infinite division but also infinite addition, which he is not prepared to treat as completed. This infinite division is supposed by Kant to be completed, because the intuited whole is an actuality given as completed, and so whatever it involves must be treated as completed and actual, and it involves the infinite division and so an infinite number of parts. An infinite number of parts must be treated as being present in any presented magnitude, and so as being completed. But there is an opposite side to this interpretation. If the infinite number of parts were not put together, the given magnitude could not have been presented; the given magnitude is presented, and so the infinite number of parts were put together; and so an infinite addition was completed. Even if the completion of the infinite addition is supposed to have been finished transcendently, the problem remains unsolved, because it remains a mystery. And empirically the arrow will have to be regarded as having passed through an infinite number of parts of the distance. Even if simple parts like non-spatial points are not admitted, as it is difficult to derive space from non-spatial units,—it is still difficult to understand how the arrow could have passed through an infinite number of actual parts. It is no answer to say that the time taken to complete the distance also contains that infinite regress and that the arrow can complete traversing an infinite number of spatial divisions in an infinite number of temporal divisions. For the objection here is not whether the arrow can complete an infinite number of spatial divisions in a finite time, but whether it can complete an infinite regress at all either of space or of time. For it is the inherent nature of the infinite that it cannot be completed: it has to be incompletable. I do not see, further, how, if an infinite

addition of space or time cannot be complete, an infinite division of the same can be.

The answer to the objection may be: Any given magnitude of space or time contains the *possibility* of infinite division. This, one may say, Kant had in mind, when he spoke of the conditions of the possibility of a magnitude. But it is doubtful whether Kant had this possibility in mind. The conditions of possibility he is speaking of are the conditions of the possibility of the given intuited magnitude. But as the magnitude is actual, its possibility has become actual, and the conditions of the possibility have therefore to be considered as actual. As the conditions of possibility are the infinite number of parts, they also must be actual. How then can the empirical arrow complete the infinite series?

Let us suppose that Kant had only the possibility of infinite division in mind. Then if the possibility of infinite division is there, the possibility of infinite addition also must be there. If both are possibilities, it is difficult to understand why Kant wanted to draw a distinction between the two. The infinity of either addition or division can only be a possibility but not an actuality, of which Kant does not seem to be absolutely unaware.

Again, to speak of any magnitude as *containing* a possibility is ambiguous and misleading; for the word 'containing' implies actualisation of the possible, which, in this case, is not true. I may say: "This room contains the possibility of accommodating five beds", though it may have only two. The statement means that, if five beds are actually placed in it, it has space for them all. But in the above case, the infinite division is inherently incapable of being completed in act, for whatever be the number of divisions carried out, it is always possible to carry out one more. This is a logical feature of the idea of the infinite, and does not merely concern impracticability. The idea of the completeness of an infinite division can at most be a concept only.

One perhaps would use some such language as "any given magnitude contains the actual possibility of infinite division." But it is generally difficult to distinguish 'actual possibility' from 'possible actuality', and either expression can only mean possibility. In mathematics one may raise questions about the probability of probability and so, it may be said, one may significantly speak of the possibility of possibility and so of the actuality of possibility also. But I do not understand how these distinctions can help solving Zeno's paradoxes, which concern actuality and activity.

We may next consider Bergson's attempt to solve the problem. In his *Time and Free Will*,¹⁵ he writes: "But the truth is that each of Achilles' steps is a single indivisible act and that, after a given number of these acts, Achilles will have passed the tortoise. The mistake of the Eleatics arises from the identification of this series of acts, each of which is of a *definite kind* and *indivisible*, with the homogeneous space which underlies them. As this space can be divided and put together again according to any law whatever, they think that they are justified in reconstructing Achilles' whole movement, not with Achilles' kind of step, but with the tortoise kind: in place of Achilles pursuing the tortoise they really put two tortoises, regulated by each other, two tortoises which agree to make the same kind of steps or simultaneous acts, so as never to catch each other." Bergson's conclusion is that Zeno confused space with motion.

It is difficult to say that Zeno really confused space with motion. We may admit that motion is one. But it is measurable in terms of space and time, and we do often and have often to measure it in that way. And though we measure it, Achilles overtakes the tortoise. It is this fact that has to be explained. Each step of the tortoise may only be two inches long and each step of Achilles may be two yards long; and the former may take one minute to make its step and the latter only one second to make his. But unless we measure the time and space of each with reference to some common time and common space, we cannot compare them and say that one is faster than the other and so overtakes the other. So it is not only not a mistake of Zeno to correlate them to a common standard but also necessary. Space and time need not be reduced to motion and confused with it or *vice versa*; yet space and time are two aspects of motion, in terms of which two different motions are compared to each other. Even if Achilles is not treated as a second tortoise, we can conceive of a race between two tortoises, one of which can make the same kind of steps as the other but quicker and so can overtake the other, even when the earlier is given an earlier start. Even if movement is identified with time, space has to be there with the help of which two movements can be compared. If the movements have nothing in common, if, for instance, Achilles' step and tortoise's step have nothing in common, they cannot be compared, and it would be meaningless to say that one is faster than the other and overtakes the other. And unless

15. P. 113. (George Allen and Unwin Ltd., London, 1950).

we reconstruct the movements of both Achilles and the tortoise either with Achilles' step or with the tortoise's step or with some unit which can be a common denominator for both, we cannot compare the two movements.

In his *Matter and Memory*, Bergson says: "They (Zeno's paradoxes) all consist in making time and movement coincide with the line which underlies them, in attributing to them the same subdivisions as the line, in short in treating them like that line."¹⁶ How then are we to compare two movements, e.g., of Achilles and the tortoise? We may agree with Bergson when he says: "But the philosopher who reasons upon the inner nature of movement is bound to restore to it the mobility which is its essence, and this is what Zeno omits to do."¹⁷ Even then, without comparing the space and the time of the two movements, we cannot compare the movements. But when we take the two aspects into consideration for the purpose, Zeno's paradox remains unanswered; and when they are not taken into consideration, our assertion that Achilles can overtake the tortoise becomes meaningless, as we do not have anything common to use as a standard for both.

Again, if time is an intuition, there is no reason why space should be assigned to the intellect. Space also can be an intuition or an object of intuition. An expanse of space, whether it is known through touch on my skin or through sight at a distance, is known as a whole and so intuited. Kant held that both space and time are forms of intuition, thus giving them a kind of unified wholeness, though subjective existence. We need not now question his view; we may hold that they are objects of intuition also, because certain magnitudes of space and time can be cognised intuitively as undivided wholes. We may later make divisions in them or make additions to them. As in the race between Achilles and the tortoise, we introduce certain homogeneous divisions in order to compare. Or if it is possible, we divide the steps of Achilles into the smaller steps of the tortoise and then compare. So even if we take movement as an intuited whole as Bergson wants us to do, we cannot compare two movements without a common standard.

Bergson is right in asking us to treat activity as an intuited unity and not to reduce it to space. As the Naiyāyikas say, acti-

vity is an essential categoreal feature of this world; and if we omit activity, our understanding of the world will so far be incomplete. And activity belongs not only to the organic world but also to the inorganic. And though activity can be correlated to some other categorical features of the world, yet its nature cannot be exhausted by those features. Colour is an object of intuition and is not the same as the wave length of light to which it is correlated by the physicist. Just as, in spite of correlation, wave length is not the same as colour; space and time, in spite of their correlation to activity, particularly to movement, in the physical world, are not the same as movement. And just as two movements are compared through space and time, spaces and times are compared through movement. We take some arbitrary bit of space like an inch, foot or yard and, by moving it along, compare two other spaces. We compare two bits of time in terms of an arbitrary unit of movement by asking how many such units of movements are required to fill each. So just as common homogeneous space can tell us about some aspect of movement, movement can tell us about some aspect of space. So space and movement can be determinants of each other: so also time and space, and time and movement. All can equally be objects of intuition and intellect. Bergson's strictures on space seem to be due to a tacit assumption, which he does not clearly express, that space actually consists of infinite divisible parts, though no activity has made them. Neither the activity of the tortoise nor that of Achilles divides distance into an infinite number of parts. We also do not do so and do not have to do so, when we compare two activities.

It therefore looks doubtful whether the modern mathematical analysis of space and time and the solution of the problem of continuity and discreteness also can solve Zeno's paradoxes. Whether we take space and time separately or space-time as one, if we start with the assumption that they consist or it consists of an infinite number of parts in any of its magnitudes, the problem remains insoluble. Even the simplest of the paradoxes, namely, of the arrow, cannot be solved; for we cannot explain how it can complete an infinite number of parts at all, because whatever the number of parts it completes, there always remains one more to be completed. It is the nature of the infinite always to present one more. Bertrand Russell, who is one of the great philosophers of our century and undoubtedly one of the greatest philosophers of mathematics, devoted three chapters in his book, *The Principles*

16. P. 250. George Allen and Unwin Ltd., London, 1950.

17. *Ibid.*, p. 251.

of *Mathematics*,¹⁸ to the problems of the infinitesimal, continuum and infinite, and in Chapter XLII attempted to answer Zeno. A non-mathematician like the present author hesitates to discuss a mathematician's theories. But still he may present his difficulties. Russell says: "The definition of whole and part without enumeration is the key to the whole mystery".¹⁹ The question here would be whether any definition of whole and part, which can only be conceptual, can explain the problem of Zeno's arrow, which is a question of practical activity. It is not meant that concepts should not be used for explaining anything; in fact, all explanation is conceptual. But a concept meant for explaining activity must be capable of being worked out in activity. Russell maintains that there are two kinds of wholes, finite wholes and infinite wholes. Finite wholes can be defined both extensively and intensively. Extensive division consists in a complete enumeration of all the parts which are individuals, and intensive division in saying that the whole consists of individuals which are defined by class concepts. Already there is an unnoticed difference; one division consists of acting and the other of saying or thinking. Now, a continuum is an infinite whole and can be defined only intensively, that is, without enumerating the individuals.²⁰ Even then the difficulty remains. If the arrow has to pass from one end of the continuum to the other, it has, in fact and in act, to pass through all the infinite number of parts, if they are there. And because its motion is activity, its passing from one end of the continuum to the other amounts to an enumeration of all the infinite number of parts, for the continuum is said to consist of an infinite number of parts. Russell accepts an actual infinite²¹ but not an actual infinitesimal.²² In arithmetic, on which Russell bases his arguments, what he says may be true. We may define an infinite whole as that the parts of which and the parts of the parts of which *ad infinitum* have one-to-one correspondence with the whole. This can be exemplified by numbers. But this correspondence involves infinite regress; and because the whole is complete, we are asked to take the regress also as complete. The completeness of the regress is therefore an arithmetical presupposition. But Zeno does not question that the

18. George Allen and Unwin Ltd., London, 1951. Chapters XLI, XLII, and XLIII.

19. *Ibid.*, p. 361.

20. *Ibid.*, p. 360.

21. *Ibid.*, p. 255.

22. *Ibid.*, p. 347.

whole is given, that is, that the arrow traverses the given magnitude of space or that Achilles overtakes the tortoise; he questions how, if the regress is actually there, the arrow can complete the distance and Achilles can overtake the tortoise. That is, how can the arrow or Achilles put the regress into act? It is not necessary to think of the regress as the regress of infinitesimals. Even without infinitesimals, if there is a regress at all, how are we to understand that it is completed in act? To express the same question in other words: We may assume, for the sake of arithmetic, that the regress is completed, as a regulative idea; but how is this regulative idea to be made constitutive of the actuality of the arrow's motion and trajectory?

A. N. Whitehead also is one of the greatest mathematical philosophers and in addition one of the greatest metaphysicians of this century. He also gives a solution of Zeno's paradoxes. But he also gives a kind of answer similar to Russell's by reducing Zeno's problem to that of continuity and discreteness, and explaining points in terms of lines, lines in terms of planes and planes in terms of spaces etc. Further, like Russell, he bases his argument on the notions of arithmetic, and says that the infinite converging numerical series is actual and complete. Then again, he eliminates motion from Zeno's problem.²³ But motion is exactly what Zeno challenges us to explain. First, we may say that, if motion is omitted, then much of the importance of the paradox is omitted, and the solution amounts to shelving the question. For Zeno's question is: How can the arrow in act complete the infinite series? Arithmetic tells us, according to Whitehead, that number 1 can be divided into an infinite series like $1/2 + 1/4 + 1/8 + 1/16$ etc., *ad infinitum* and the total converges to 1. But does it say that any one has actually divided it in that way and added the parts? A man who swallows an apple certainly swallows every part of it; and we can significantly say that he swallows the infinite number of parts into which the apple is *divisible*. But we can as significantly say that, if he divided the apple into an infinite number of parts and began swallowing one part after another, he could never have completed swallowing the whole of the apple. We can further question also whether he could ever succeed in dividing the apple into an infinite number of parts. As pointed out already in this paper and also by a number of philosophers including the mathematical, what-

23. *Process and Reality*, p. 107. (The Social Science Book Store, New York, 1941).

ever be the number of divisions he makes, there is at least one more and we may say that there is even an infinite number more to make. Arithmetic assumes that this infinite is completed. It is the prerogative of arithmetic and in fact of all mathematics to treat the impossible as possible, unsolved problems as solved, and then work with the assumptions as facts. But when we come down to existence, with which Zeno's problem is concerned, we cannot follow arithmetic all the way it goes. And so Zeno's problem remains unsolved.

II

The discussion so far has tried to show that the attempts to solve Zeno's problem have not really been successful. Aristotle did not see that not only indivisible parts or infinitesimals but also divisible parts can be infinite. Kant overlooked the fact that, if any given magnitude can contain the infinite regress in division, it has to contain the result also of that infinite division. And if there is infinite division, there must be infinite addition also, as the given magnitude is a totality of those divisions. Bergson's solution fails to supply a standard and method to compare two motions; and also he overlooks the fact that space also can be an intuited whole and leaves the problem of space unsolved. And if motion is detached from space and time, then Achilles and the tortoise will live in separate worlds and there can be no race. Even if it is detached only from space and is identified with time, then also there is no knowing that Achilles's time and the tortoise's time are one and the same. Russell and Whitehead give only arithmetical solutions of continuity and discreteness, leaving motion out of the picture. But the problem loses its point, if motion is left out of the picture. And when it is brought in, the problem remains unsolved. If we accept the reality of space, time and motion and also Zeno's assumptions about their nature, we have to swallow one kind of paradox; but if we accept the modern mathematical concept of the completedness of the infinite, we have to swallow a different kind of paradox. If the completedness of infinite division is acceptable, then the completedness of infinite addition also must be acceptable. For if number 1 can be divided into the infinite converging series, as 1 is a completed unity or whole, then the infinite addition of the infinite number of members of that series must be treated as a completed fact. And the series would not only be a converging series, but also a converged series.

The situation therefore contains fresh problems and unrecognised aspects. As the title of the paper indicates, it contains only reflections and does not claim to give solutions, much less incontrovertible solutions. Maybe, others will take up the problems and discover satisfactory solutions.

Zeno wanted to prove that space, time and motion are unreal on the ground that, if they were real, and if space and time were understood in the way they are generally understood, the arrow could not have completed its trajectory and even could not have moved at all; and also Achilles could not have overtaken the tortoise. The answer is: The arrow has traversed its trajectory, and Achilles has overtaken the tortoise, and so many fast runners have overtaken slower runners, even though the latter were allowed to start earlier; therefore motion is real and space and time too are real. But if space and time consist of an infinite number of parts, how can this be possible? For both the arrow and Achilles must have traversed each of the infinite parts.²⁴ The answer is that space and time *do not consist of an infinite number of parts*, but of parts into which they are actually divided. Bergson noticed this distinction in a way, when he spoke of the Achilles step and the tortoise step separately dividing the distance.²⁵ The arrow does not at all divide the trajectory. But Achilles and the tortoise divided, though each according to his or its step, the same distance. So we need a common denominator to compare the two kinds of divisions and to divide the same distance in terms of the denominator. In this comparison, we take also into consideration the time taken by each to complete the distance. Bergson seems to ignore the necessity of a common denominator and his answer therefore looks somewhat mystifying.

But this common denominator need not and cannot be one of those infinite parts into which the given distance is conceptually divisible. Such a part is only a *mathematically possible* part, if at all, but not an actual one. I say "if at all", because the mathematician has still to explain the self-contradictory notion of a completed infinite. Actual distance or space does not consist of such parts. The actual parts, in this instance, are the parts made by the tortoise, next those made by Achilles, and then those we make

24. We may leave out the consideration of the view that space consists of non-spatial points and time of non-temporal instants, as such a view is rejected by many philosophers already.

25. *Time and Free Will*, p. 114.

in order to compare the two. Of course, either can make the third kind of parts in order to compare; or if the Achilles step is divisible by the tortoise step, the third kind of parts need not be made. And whatever division we adopt, space is unaffected. So when Zeno said that actual space consists of an infinite number of parts, he was virtually saying that *actual* space consists of *possible* parts,—which is a controversial statement—, and then was comparing the *actual* parts into which the distance is *divided* by Achilles and the tortoise with the *possible* parts into which it is *divisible*. And as whatever be the number of parts, space is unaffected by them, we think that we can carry this possibility to any length and so to infinity. As already said, this possibility of infinite division is only a mathematical possibility, not a real possibility; for a real possibility should not have to face an impossibility, which here is the completion of the infinite regress. Now, how is Zeno justified in comparing actual parts with mathematically possible parts? He is naturally committing a fallacy. The actuality of actual parts is conferred on them by the activity of Achilles or of the tortoise or of ours. But none has conferred actuality on the mathematically possible parts.

Regarding the aspect of rest in the paradox of the arrow, it has rightly been pointed out by both Bergson and Whitehead that motion or becoming is one. If the arrow's motion throughout its trajectory is one, then the arrow does not rest at any point, spatial or temporal. For the arrow, the whole trajectory is one unit or unity. But what is difficult to understand is that motion or becoming is indivisible, whereas space and time are divisible. Here one will be justified in drawing a distinction between motion and becoming. Motion has generally reference to the place from which it starts and to the place at which it ends. And when we compare two motions, do we not divide them into convenient parts and compare them in terms of a common denominator? One may say that the comparison is done in terms of space and time. But space and time are two of the essential conditions or aspects of motion, and we compare two motions in terms of those conditions or aspects. But apart from these conditions, can motion be adequately understood? One may say that motion, apart from space and time, is becoming. Now when the arrow moves from one place to another, what is it that is becoming? The arrow remains an arrow and does not become anything else. So far as its motion is concerned, any internal changes that might have taken place in the arrow are irrelevant or what the Naiyāyikas would call *anyathāsiddhas*. One

would perhaps say that, during the movement of the arrow, the distance to be traversed by it and the time to be spent by it *become* less and less. That is, space and time become less and less. But then space and time are measurable and so divisible. We can significantly say that the becoming in the case of one motion is less than the becoming in the case of the other.

Let us take an example of becoming which is generally understood without reference to space and time. Theameleon changes its colours. Suppose it changes from some colour to light green at one time and from the same colour to dark green at another time. We say, "It *becomes* less green at one time than at another." Though the cameleon exists in time and space, these are not taken into consideration for understanding its becoming light green or dark green. Space and time here are not relevant, they are *anyathāsiddhas*; because they are there whether the cameleon changes its colour or not. Now, do we not meaningfully say that the change in the one case is less than the change in the other, though we measure this change in terms of the intensity of green? Is not change then measured and measurable? One may still differentiate change from becoming; even then becoming is measured and measurable. The comparison here is in terms of degrees of green, and the division involved may be called intensive division as compared to the extensive division of space and time. And even Bergson has to admit intensive division of time, even if it is not capable of extensive division. Whether extensive or intensive, both are divisions, and the difficulty we encounter in the case of extensive division has to be met in the case of intensive division also. Every magnitude, whether extensive or intensive, gives rise to similar difficulties.

One might say that becoming itself is not divisible and measurable; it is green that is divisible and measurable. But the objection is applicable to space and time also. When, for instance, a bit of space is measured as ten inches long, it is measured by the movement of an inch as a unit along the length and so it is measured by movement. Similarly, when time is measured, it is measured by an arbitrarily chosen unit of movement in space, for instance, the movement of the second hand of a watch. So without movement, time and space cannot be measured, and one may as well say that it is not time and space that are measured but movement. So of time, space and movement, each is measured in terms of the other two. Of course, in the case of space, we say that the time

taken to move the unit along the length is not relevant, though we speak of so many 'times' an inch. Similarly, we say that the actual space traversed by the minute hand is not relevant for measuring time. For instance, the space traversed by the minute hand of a clock tower is more than that traversed by the minute hand of a lady's wrist watch. These differences pertain to the peculiarities in the nature of space, time and movement.

The upshot then is that we have no justification to say that time, motion or becoming alone is a unity and not space. Actual space, like actual time, motion or becoming is an object of intuition; and intellectually, through the application of the mathematical possibility, we can introduce divisions or additions *ad infinitum*. But the actuality of any actual division or addition is conferred by activity; and activity cannot carry division or addition *ad infinitum*. Without activity, no division of any intuited magnitude, intensive or extensive, can be actual. It remains only a possibility.

Now comes another problem. Is not arithmetic a workable and applicable instrument? If the idea of the infinite converging series contains a contradiction when treated as actual, then how are numbers applicable to actuality? Even if the idea is only a regulative idea, when it is found applicable to actuality, it has to be regarded as constituting the actuality to which it is applied. I confess that I find it difficult to answer the question definitely. A regulative idea, if it truly regulates our experience, must be considered to be constitutive also: which means that it is not only a possibility but also an actuality. Arithmetic regulates our experience and therefore constitutes our experience. Hence arithmetic must constitute actuality also. And along with integers, the infinite converging series involved in them forms part of arithmetic. So when numbers constitute an actuality, the infinite converging series also must constitute that actuality. And if the infinite is there, the arrow must have passed through each member of that series. But if the arrow cannot do so, then the regulative idea need not be constitutive.

The question is a question as to how the regulative principles of mathematics become constitutive of our experience of actuality. Sir James Jeans said that God must be a mathematician and must have created the world in harmony with mathematical laws. And Kant said before him that the transcendental spontaneous activity of mind builds up the world according to certain *a priori* laws, which include the mathematical also. One may be tempted to say that the infinite regress must have been completed transcendently.

But we cannot say so about the activity of the arrow, which is not transcendental but empirical. And the idea of the transcendental completion of the infinite regress has something mystifying about it. For how can an infinite converging series be actually completed at all? It may be said that, for instance, such a series between 0 and 1 converges to 1; 1 is actual and complete; and so the series is actual and complete. But an opposite argument can as well be framed: 1 is actual and complete; the infinite converging series is not actually completable; therefore it can never become 1 by converging to it, or a converging series cannot be a completed series. Arithmetic may assume that it is a completed whole and use this as a regulative idea.

It is therefore difficult to answer by a straight Yes or No the question whether every regulative idea that works has to be treated as a constitutive idea also. A constitutive idea is an idea that constitutes actuality. 1 can constitute actuality as in one apple. And the one apple may be said to contain an infinite converging series of parts. Thus as a regulative idea, the infinite converging series of parts helps us in understanding arithmetically the relation of the apple and its *possible* parts. But as we cannot carry out this infinite division, we cannot treat it as constitutive also. We have then to say that some of the arithmetical ideas are both regulative and constitutive, but others are only regulative, though we may work with them in arithmetic. For instance, we cannot carry out the process of $\sqrt{-1}$ practically, though finding out a square root is a kind of division.

But one may insist that a regulative idea, which is to regulate our experience has also to be constitutive and must be capable of being carried out in act. Such a person may say that the idea of a completed infinite series is not even a regulative idea. If it works in arithmetic without contradictions, it may be a regulative idea for numbers and may constitute them, but it cannot be a regulative idea for actuality or existence. Numbers are applicable to existence only as abstractions from existence; but abstractions from numbers and abstractions from those abstractions may not be applicable to existence, and when applied to existence, they may lead to contradictions.

Through a similar argument, the Naiyāyikas refused to accept the reality of the universal of a universal. If cow-ness is a universal, it is applicable to all cows. But if cow-ness-ness is also another universal, it is not applicable to cows and so is not a real

universal. Apart from the question of reality, we may say that the universal cow-ness helps us in understanding cows and in ordering them into a single class. But cow-ness-ness can at the most be a concept enabling us to understand what cow-ness is, but may not enable us to order the cows. Similarly, ideas that enable us to understand numbers and regulate their order may not enable us to understand existence and regulate it. And very likely, even if we treat the infinite regress as a regulative idea, arithmetic may not be jeopardized. Intellect is capable of inventing other methods and postulates to save the numerical structure of numbers.

The discussion shows also that there is nothing very mysterious about intuition, which is generally contrasted with intellect. Intellect, it is said, is relational, discursive and so on. But what are the terms that it relates? Are the terms in the experience of existential entities also mere relations? They are intuited unities. Intellect adds one intuited unit to another intuited unit and relates them, or introduces divisions within a unit and relates those divisions. And these parts also are intuited. Intellect compares intuited wholes, discovers similarities, and relates the similarities again to the original intuited wholes. So far, as regards perceptual experience, which is a combination of intellect and sensuous intuition. But intellect does the same with what it conceives also. One may ask whether relations are not intuited; and if not, how they are cognised. For instance, intellect can formulate the concept of man and the concept of animal and relate them. When we see a man and form the concept spontaneously, the concept man is not sensed but yet cognised as a unity. It is not a fact that we always compare the individuals, take the common characters, group them and form the concept. Even when we perceive a single individual, we may cognise the universal or form its concept spontaneously. The universal or concept is not therefore an object of sense intuition,²⁶ but of intellectual intuition, an intuition of intellect through sense. But intellect can have its own intuitions, independently of sense also as in mathematics. So not only sense but also intellect can have intuitions. Whenever we cognise a whole spontaneously, either through intellect or sense, we have an intuition.

26. Only the Naiyāyikas and Vaiśeṣikas among the Indian philosophers say that the universal is sensed. But this view can be explained by saying that the universal is intuited by intellect through sense.

We cognise pain similarly, and it is a whole unity. It is not an object of the eye, ear etc.; yet it is intuited as if through some sense. Similarly, aesthetic pleasure is intuited; and Indian writers on aesthetics say that reason (*buddhi*) or intellect is involved in it; they may therefore say that it is a kind of intellectual intuition. Mystics again speak of supra-rational intuition. Activity also is experienced through intuition. Indian philosophers on the whole did not discuss the nature of the relation of activity to intellect and intuition. But it is also an object of cognition, intellectual and intuitive. The epistemology of activity, which is one of the basic categories of Nyāya, still needs to be carefully worked out. Similarly, space and time are objects of intuition. Intellect can penetrate some intuitions and work within them, just as it works on some intuitions from outside. And it has its own intuitions, like that of the infinite. And it can build up other conceptual intuitions, some of which, like the infinite regress, it cannot analyse without contradicting itself, and yet it may work with them. It is not possible in this paper to enter into the details of the relation between intellect and intuition. But what has been pointed out can show that all of us are working with intuition and that even our intellect is working with it, just as much as every one of us is talking prose.

The basic mistake of Zeno's argument may therefore be traced to a confusion between possibility and actuality. We may leave out Zeno's assumption of space, time and motion as consisting of non-spatial, non-temporal and static parts. This assumption is not accepted now by many philosophers; and points etc., may be defined in other ways. But that any given magnitude, at least of space and time, is infinitely *divisible* is accepted by many. But 'divisible' means 'capable of being divided', but not 'actually divided'. It therefore means a possibility, and conceivability. It is possible to divide space infinitely: it is conceivable that space is infinitely divided. What Zeno did is to coordinate these infinite number of conceivable or possible parts with a finite number of actual parts into which space is divided by the steps of Achilles and the tortoise. We have already pointed out that the idea of any given whole as containing a complete series of an infinite number of parts involves a contradiction. And then this possibility is not even a real possibility. Supposing we do not press this objection. Even then two more difficulties remain. First, how can a finite number of parts of a given magnitude be coordinated or correlated to an infinite number of parts of the same magnitude? An infinite

number of parts of any magnitude can be grouped into an infinite number of sets, these again into an infinite number of sets and so on *ad infinitum*. So we cannot start with the infinite series and divide it so that it can correspond to a finite series. We may then start from the side of the finite series and then correlate to each item or member one infinite series involved in it. Our performance would then amount to nothing more than *actually* dividing a magnitude into a finite number of parts, and then say that it is *possible* to divide each part into the same number of parts, and each of the parts of the parts also into the same number and so on *ad infinitum*: but it is the same as the attempt to correlate actuality to possibility. Moreover, it is not necessary to think of the possible division of each part into parts equal in number to the parts of the whole; for each part can be thought of as capable of being infinitely divisible and the correspondence between the parts and the whole may not necessarily be one-to-one but many-to-one. Again, if the steps of Achilles and the tortoise equally contain an infinite number of parts, how can one be longer than the other, and how can Achilles overtake the tortoise? Next, suppose the tortoise divides the given distance into 1000 steps and Achilles into 100 only. Then each step of the tortoise may be divided into 1000 parts and each part again into 1000 parts and so on *ad infinitum*. Similarly, each step of Achilles may be divided into 100 parts, and each part again into 100 parts and so on *ad infinitum*. But this difference in division makes very little difference to the difficulty raised by Zeno. For when once the infinite in division and addition is admitted as actually embodied in any finite, it is impossible to understand how Achilles or the tortoise could have completed the actual infinite series involved in any step. That they complete it is the assertion of a fact, but not an explanation of the difficulty created. Assuming that this objection is answered, we have to ask, in the second place, what justification Zeno had in trying to correlate infinite possible division to finite actual division? The fact is this: The magnitude of space is the same both for Achilles and the tortoise. Through action each divided the magnitude into a smaller or greater number of divisions and each completes a division in less or more time. So Achilles overtakes the tortoise. One may say that this statement also is the assertion of fact, but not the explanation of the paradox. Indeed, this is a statement about actuality; and no further explanation is needed, because the statement avoids the confusion that created the problem. The problem was created artificially by treating possibility

as actuality. In other words, the problem was due to the attempt to correlate false actuality to true actuality. There can be no actual parts of space without being produced through activity. And activity, except in pure mathematics, never completes and can never complete an infinite division or addition. Even in pure mathematics, that it completes the infinite regress is at the most a regulative idea or assumption.

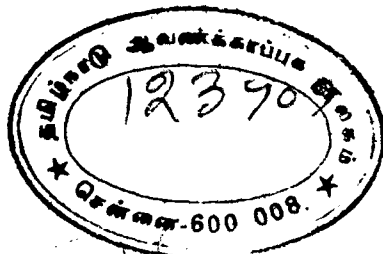
Then, how is it that the infinite regress is generally taken to be actual in considering space and time? Because space and time are intangible objects. We do not experience space and time without some concrete object existing in them. But we can conceive them apart from any concrete object. Infinite division also is conceivable. And we think of infinite division only when the object so divided is supposed not to be affected at all by division. Pure space and time are such objects. The space occupied by my book could have been occupied by a stone or by two smaller books; and the time occupied by one set of events could have been occupied by some other set or two sets of events. Yet, space and time could not have been affected. So infinite division also does not affect them. And so at the level of conceivability, infinite division and pure space and time get easily connected. But conceivability is only bare possibility. We know that any bit of space or time is divisible; and the parts also, as bits of space or time, must be divisible. But we here use 'divisible', not 'divided'. And like Mill thinking, "Every man desires happiness, and therefore ought to desire happiness", we think in the reverse way and say, "Space is infinitely divisible, and so it consists of an infinite number of parts". The abstract etherial nature of the entities makes the transition in our thinking easy. We do not generally think that material bodies are infinitely divisible except in so far as they occupy space and time.

The problem of the relation between conceivability, possibility, probability, necessity and actuality is a very complex one; and practically little more than a reference to it can be made within the limits of this paper. At the level of conceivability, conceivable possibility, conceivable necessity and conceivable actuality can easily be mixed up and identified, sometimes leading to true conclusions but at other times to false ones. This is what we do when we think of pure space and time, which, as pure, are more easily conceivable than experience as existent objects, and therefore raise the problem of the transition from conceivable possibility to actuality in existence.

Abstract thought as in pure mathematics or formal logic can treat of pure possibilities as actualities and draw conclusions which may or may not be applicable to actualities. Logic and mathematics work with the principles of necessity and yet move within the realm of possibility. For instance, the science of probability or statistics is the application of the laws of necessity to the realm of possibility; and according to some, it is the discovery of necessity within chance. Whether this is a self-contradictory idea is a different question; yet mathematics can work it out systematically. What is probable or possible may or may not happen and so may or may not become actual; yet probability or possibility does not lose its truth. Either needs something to become actuality, and mathematics itself cannot supply that something. It is activity that can supply the missing something in the problems of Zeno.

This paper does not attempt to show that everything actual or real is due to activity and does not support the extreme forms of activism, according to which activity makes an object real and a cognition true. But it is able to show that, in the context, activity alone can confer truth upon some ideas concerning space and time. The *Bṛhadāraṇyaka Upaniṣad* says that the world is name, form and activity, *namā, rupa* and *karma*.²⁷ The first two have been elaborately discussed by Indian philosophers, who have not explained how the world is activity also. The paper attempts to show how at least the spatial and temporal aspects of the world cannot be understood without the help of the concept of activity; for if we leave it out, we create artificial problems.

27. I, VI, 1.



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