

# **A STUDY OF SOME FUNDAMENTAL ONTOLOGICAL CONCEPTS WITH SPECIAL REFERENCE TO TIME**

**THESIS SUBMITTED FOR THE DEGREE OF DOCTOR OF  
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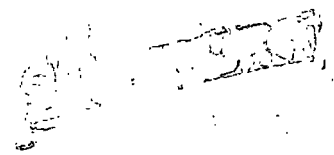


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"So, too, time hath no being by itself,  
But 'tis from things we grasp a sense of that  
Which in the past was set, or what for us  
Today doth hold, tomorrow hath in store.  
Then too, thou must perforce confess that none  
Can e'er perceive time by itself, apart  
From things which move or stand in quiet rest."

----- Lucretius  
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## Preface

The present work is intended as a study of the philosophical problem of time. The problem of time is not an isolated one; it is rather a group of problems arising out of the intimate relationship of time with space, motion, change and the causal nexus. Hence, a proper understanding of the problem of time requires a study of these concepts as well. It is to be admitted that the temporal involvements of these concepts have made the problem of time taxing enough and at the same time most interesting.

Time seems to be an inalienable feature of the world of our experience. An understanding of the nature of time is a prerequisite of any adequate philosophic vision of reality. Philosophical analysis, however, discloses some paradoxes in the heart of the conception of time. It is then only natural that attempts to solve the paradoxes should have prominence in any discussion on time.

The present writer, however, dare not claim that she has solved all these paradoxes. Time, as C.D. Broad said, is 'the hardest knot in the whole of philosophy'. The present writer has tried to state and analyse the problems as they are relevant to contemporary philosophical scene. The approach however is not historical; but at times history of the philosophy of time has surfaced itself as relevant to the discussion of the problems. Hence philosophers starting from Parmenides downwards have entered the discussion as we proceeded. It is interesting to know that some of the problems with which we have struggled were also as much kicking to our distant forefathers two thousand years ago.

The present writer is painfully aware of her limitations, of the incompleteness of her work. There are many questions relating time that have been left unasked, many riddles left unsolved. To repeat, time indeed is a difficult subject to treat satisfactorily.

The present writer is happy to express her deep sense of gratitude to her supervisor Dr. Bhaswati B. Chakraborty, Department of Philosophy, N.B.U., for her inspiring guidance, suggestions and corrections at every stage of drafting the thesis. The work could not be completed without her. The present writer wishes to express her indebtedness to Dr. Pabitra Kumar Ray, the esteemed teacher of the Department of Philosophy, N.B.U., for his active interest in the work.

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## Introduction

The concepts of space, time, matter and motion are deeply entrenched in our commonsense conception of reality. We believe that material objects are capable of existing and moving in space and enduring through time. Realist thinkers have also sought to establish that reality consists of the fundamental entities like space, time, matter, motion etc. Idealists, on the other hand, refuse to admit the existence of matter. As in Berkeley's philosophy the entire material world is reduced to mind and its ideas. Absolute Idealists claim that only the Absolute is real. Absolutists like Bradley in western philosophy and Saṅkara of the Advaita system of Indian philosophy have sought to establish that these commonsense concepts of space, time, matter, motion and causality are unreal appearances or Māyā derived from our ignorance with regard to the Absolute.

It is a curious fact indeed that the concept of time received vigorous attacks even from some realist thinkers. In the history of philosophy we have seen several attempts to reduce the number of fundamental entities. We have found, for example, the Cartesian attempt to reduce matter and motion to purely spatial characteristics. We know that some relationists have attempted to reduce time to motion. But the most frequent attacks are on time. The concepts of matter, space and motion have often tended to erase the concept of time.

Matter is something we can see, hear or touch; material objects, we believe, are causally operative on one another. Visual and tactile sensations, the realists say, justify our concept of space; visual and kinetic sensations justify the concept of motion. All these concepts refer to some external sensations. What sensory datum does time correspond to? Time can neither be touched, nor seen. It is at best apprehended in introspection. Introspection is of course a psychological state. It does not prove the objectivity of our temporal awareness. The perception of motion involves the perception of successive states of the moving body. So it appears that the concept of motion presupposes the concept of time. But we can perceive motion in the form of spatial displacement, not the time required for that. Hence motion has sometimes been regarded as the basis of the concept of time. Thus since the beginning of philosophical thinking,

there has been a tendency to eliminate time from the world of reality, or at least to degrade it to a secondary and derivative entity.

The history of the philosophy of time may, however, be characterised, as the interplay of two opposite attitudes; on the one hand, there are great thinkers who believe that temporality is not an intrinsic feature of reality; these thinkers propose the elimination of time; on the other hand, there are intellectuals of no less importance, who insist that the world has a basic temporal structure, and that time is fundamental and irreducible.

The earliest protagonists of these two view-points are Parmenides and Heraclitus. Parmenides maintained that ultimate reality is timeless, whereas the central doctrine of Heraclitus was that becoming is the only reality. For Plato time is the moving image of eternity. But according to Aristotle the world is basically temporal as there are real coming into beings. Aristotle mentions a number of paradoxes that are designed to show time's unreality, though Aristotle himself does not believe that time is unreal. For him, nature is a principle of motion and change, and it could not be understood without an analysis of time.

The peculiar nature of time has baffled the minds of thinkers of all ages. Since the days of Zeno of Elea, time has been a persistent source of puzzlement and perplexity.

Space seems to be presented to us all of a piece, whereas time seems to appear to us bit by bit. Time has three aspects - pastness, presentness and futurity. The past is known to us; it can be recalled with the aid of memory. The future is not fully known; it is hidden from us. The present alone is directly related with us. Yet as purposive agents we have some kind of awareness of the difference between future possibilities and present actual state of affairs.

The most controversial aspect of time is its passage. Time, we believe, irresistibly passes away. We cannot stop it; we cannot turn it back. We have the feeling of being carried away by it. Time is thus intimately connected with the consciousness of death. Death seems to be the inescapable consequence of the irreversible flow of time. So we feel that if we could stop this flow, perhaps, we could avoid death and extinction. Otherwise, temporality is mortality.

Man consoles himself, as does the Hindu, by his theological belief that none but the Lord of Time (Kāler adhisvar, in Tagore's phrase) is immortal or mṛtyuñjaya. Prophets and religious thinkers have also preached that the human life with all its temporary experiences of pleasures and happiness, sorrows and sufferings, is nothing but an unreal appearance, whereas the ultimate reality is exempt

from time's flow. Hence Saṃkara's 'mokṣa' or liberation or Buddha's 'nirvāna' requires the state of mind that has been delivered from the consciousness of time's passage.

Celebrated philosophers like Zeno, Kant, Bradley, McTaggart and many other thinkers have offered brilliant arguments to prove time's unreality. Corresponding to this there has been the tendency to explain change in terms of permanence, becoming in terms of being, and time in terms of space. If Parmenides was the first among philosophers to propose a radical conversion of becoming into being, his disciple and defender, Zeno was also the earliest thinker to treat temporal intervals as geometrical segments. Although this point of view is primarily associated with the long line of idealist philosophers, it is found even in some empirically minded realists like Russell, who maintains that time is an unimportant and superficial characteristic of reality and that 'a certain emancipation from the slavery to time is essential to philosophic thought'.

In spite of all the ingenious arguments, the denial of time's reality seems to be self-defeating, for this denial also requires at least a minimum stretch of time for making the negative judgment. It reminds us of Descartes' famous analysis showing the denial of one's own existence or of one's own thinking as self-defeating. We are intimately engaged with time in our daily life, in our thoughts and conversations; hence it betokens a departure

from commonsense to say that time is unreal. The fundamental nature of time in relation to ourselves is evident from the fact that our judgments concerning time themselves appear to be in time, whereas our judgments concerning space do not appear to be spatial. It thus seems that any paradox of time suggesting its unreality must not be superficial but wrong.

The paradoxes cannot of course be ignored. No serious thinker will be able to rest contented unless he finds solutions to them.

The present project of research is intended as an attempt to solve the paradoxes of time. Hence it is primarily a study of time. But the problem of time is not an isolated issue; rather it is a group of intimately connected core of questions concerning space, motion, change, becoming, causality etc. that seem to be equally basic to our conception of reality. It is impossible to study time apart from them. Hence the present work is also a study of some of the fundamental concepts that are closely bound together with 'time'.

The concept with which time is most intimately connected is 'space'. Time and space are similar in many respects. The same sorts of expressions are used to denote spatial and temporal attributes and relations. A brief discussion of our commonsense conception of space and time

may be quite helpful to start with. Chapter 1 of this thesis introduces an account of our commonsense conception of space and time.

The commonsense conception involves some confusions with regard to the nature of space and time. They are both conceived as absolute and independent entities, and as relations between objects and events. These generate confusions, and are largely due to two opposed classical theories - the absolute and the relational theories of space and time. A brief account of the two theories has been presented in chapter 2.

Chapter 3 is concerned with the problem of defining 'time'. The definitions of 'time' given by Aristotle, St Augustine and Plotinus have been analysed and examined. Each of these definitions has been ultimately exposed to be circular. We have examined attempts to define the 'past', 'present' and 'future' times by ancient Indian thinkers and even by modern linguist philosophers. The upshot of the whole discussion has been that 'time' admits no logically perfect verbal or ostensive definition of itself.

Chapter 4 of the present thesis is a study of Zeno's paradoxes of motion. Zeno constructed these paradoxes with the aim of showing that motion is impossible, that change and becoming are illusory. His ultimate aim was to

establish the Parmenidean conception of Being as timeless. Zeno's paradoxes attracted the attention of all kinds of thinkers — philosopher, physicists and mathematicians. The present writer is however concerned with the metaphysical answers to Zeno's problems.

In Chapter 5 Kant's antinomy with regard to the infinity of time has been discussed. The antinomy consists of a pair of conflicting propositions about time; each of these propositions is supported by seemingly conclusive arguments. Kant seeks to prove that these two contradictory propositions are equally plausible ; that the universe must have a beginning in time, and that the universe must have existed for ever. We have examined his proofs thoroughly. On analysis time is found so intimately connected with change, that the conception of the beginning of time with that of the beginning of the world appears to be more convincing.

Chapter 6 is devoted to considering McTaggart's famous paradox of time. McTaggart's analysis shows that time has a dynamic and a static aspect. The dynamic aspect involves contradiction. But any attempt to avoid the contradiction leads to an infinite regress of temporal determinations. McTaggart's analysis is aimed at showing the incompatibility of temporal determinations, thereby proving the unreality of time. To solve this paradox of time the underlying assumptions in McTaggart's thesis have been elicited and examined.



Chapter 7 is a study of the twentieth-century debate on McTaggart's paradox. The dynamic aspect of time is expressed in sentences that are called A-statements. Those who believe that A-statements express real characteristics of time are called A-theorists. B-statements express the static aspect of time, and B-theorists are those who hold that temporal passage is a myth. The central issue concerns the translatability of A-statements into B-statements. The B-theorists offer apriori and empirical grounds in support of their thesis. All these arguments have been examined.

Chapter 8 consists of some general observations on the problems of 'time' in connection with other allied concepts, viz., 'change', 'causality', 'process' etc. Time appears to be something objective and essentially related with the world-process. The present writer, however, dare not penetrate deep into the modern process philosophy of Prof. A.N.Whitehead, or into the scientific speculations of Hans Reichenbach, Stephen Hawking and other scientists. An adequate discussion of them would demand a certain degree of familiarity with mathematics and modern physics. The present writer does not think herself competent enough to discuss them properly.

On the basis of the discussions in the earlier chapters, in chapter 9, some concluding remarks have been made. The present thesis is after all an humble attempt to deal with one of the most difficult of philosophical problems by way of analysing them. No pretension, however, to give definite answers to them is at all made.

## CHAPTER I

### Our Ordinary Conception of Time

The notion of time is commonly taken for granted; its validity is seldom questioned by us, for time appears to be an inalienable feature of the world of our experience. The commonsense conception of a physical object involves both the notions of space and time. A particular object is said to exist at a particular space and at a particular time. In ordinary discourse there are many words that are used to express either spatial or temporal relations between objects or events. An event is said to be something that happens at a particular spatial point and at a particular temporal instant. For, every event seems to have a duration; that is to say, it occupies some time. An allied notion is that of 'being present' which is understood in terms of the temporal concept 'now'. A corollary to this is the notion of 'distance' or 'interval' which is also used in

a temporal sense. Just as Calcutta and Delhi are spatially distant from each other, Zeno and Bradley are temporally so. We distinguish between spatial parts of things; in the same manner, we speak of temporal parts. Anything having temporal length or duration can be divided into temporal parts. Some physical objects are spatially very small like dust; similarly, there are also very small temporal events like a flash of lightning. We commonly conceive space as something distinguished from the matter or objects in it and time as something distinguished from the events that occur in it. Time has only one dimension, while space has three - length, breadth and thickness. It is said that all movements in time are in one direction, from past to future. In space an object can move from one location to another and come back to its starting point. But in the case of time the movement is towards future and there is no return; time is said to be irreversible.

Time appears to involve the characteristics of pastness, presentness and futurity. We conceive of events as continually changing in respect of these characteristics. An event continually becomes less and less future, becomes present, and then continually becomes more and more past. These temporal facts are expressed in language either by means of temporal copulas or adverbs, e.g, 'I am writing now', 'I was eating my dinner', 'I shall be eating my

breakfast'. But these are also expressible by a non-temporal copula and temporal adjectives, e.g., 'My writing is present', 'Eating my dinner is past', 'Eating my breakfast is future'.

Thus temporality has a very important part in our ordinary thinking and acting. Just as if we try to imagine the world without the spatial aspects in things then these things would not have shapes, nor would they be extended; the different things would not be separated from one another by various distances; the entire physical world would then have no dimensions; likewise, without time in human experience, birth, and the years of activities would be without any order. Events would have no duration. Durability of particular things would mean nothing; between the beginning and the end of anything, or of all things, no time would pass. The removal of temporal aspects of things and experiences would then completely change our conception of the physical world, of human life and experience, of the universe as a whole.

But how is time known? We experience objects and events in space and time. We perceive shapes and sizes of objects and distances between them. We have also the awareness of the duration of events or of the intervals of time. But we do not perceive space itself or time itself. A curious fact about the nature of both is that space seems

to be divided into smaller spaces and time into a number of shorter times. Even in the case of smaller spaces and times we perceive only that which they contain. The spatial and temporal units thus appear as relations between these contents. But the particular units of space and time are not complete in themselves. Each particular unit of space requires other space to surround it, and each movement of time needs other time to precede and follow it. So we common people assume that there is an all-embracing Space and an all-embracing Time of which these spaces and times are fragments. It seems that we could not think intelligibly about objects and events without this conception of a whole Time and Space as a framework within which particular spaces and times are related. Moreover, the world as it is, the objects which it contains, the events that occur within it are said to have their existence and reality only when they are located in space and time. So it can be paradoxically said that if Space and Time are to exist, they must also exist somewhere at some time.

It appears that though space and time play an important part in our experience, they are most curiously contradictory conceptions. In our ordinary conception things and persons occupy space. This suggests the image of a large container holding the material world as its content. Within space material bodies seem to move about. But Space itself

does not seem to move. In the same manner the concept of Time suggests the image of a river in which events flow. But this kind of conception has the implication that if no bodies existed and no events occurred, Space and Time might still remain. But empty space and empty time would then be two non-entities equivalent to nothing at all, yet without them we could not conceive any reality.

So it may be said that we ordinarily think of space and time in two opposite ways : (i) we think of space and time as independent substantial entities, (ii) but we also think that spatial and temporal expressions only denote relations between objects and events. But how can space and time be relations between objects and events, and so dependent upon them, and also be substantial entities independent of them ?

The commonsense conception of space and time is, therefore, confused and contradictory. This confusion is largely due to two opposed classical theories - the Absolute and the Relational theories of space and time. And to do away with this confusion it is necessary that we present a very brief account of these two theories.

## CHAPTER 2

### The Absolute and the Relational Theories of Space and Time

#### 1. The Absolute Theory of Space and Time :

The absolute theory of time is intimately connected with the absolute theory of space, which is to be found first, in clear terms, in Newton's<sup>1</sup> conception of space and time. In Newton's theory space and time are real independent entities; each of them constitutes a continuum such that any one part of that continuum is indistinguishable from any such other part. The different parts of space and time are due to the things that occupy place and the events that happen at moments; they are not due to space and time themselves.

Both space and time are absolutely immutable and homogeneous. The basic attributes of space and time follow from their homogeneity : their independence from physical contents, their uniformity, continuity and infinity. As



space is independent of matter, time is also independent in regard to the concrete changes that take place in it. This has been explicitly formulated by Newton in the following sentences :

"Absolute, true and mathematical time of itself and by its own nature flows uniformly, without regard to anything external. It is called duration. Relative, apparent and vulgar time is some sensible and external measure of absolute time (duration), estimated by the motions of bodies ..., and is commonly used instead of true time, such as an hour, a day, a month a week"<sup>2</sup>.

According to this theory time flows irrespective of the events or changes occurring or not in it. Only in a contingent way it is filled in by changes; but in its own nature, it is empty. The uniformity of time may be more clearly designated as uniform fluidity or duration. As space does not imply matter, time also does not imply motion or changes. According to Russell<sup>3</sup>, just as matter occupies or fills portions of space, so motion or changes fill portions of time. Just as space is a container of matter, so time is a receptacle of all changes. It is only because of time's independence from change, Russell says, that we can speak of different moments of duration even when no actual changes seem to occur; as for instance, when a body retains its position unchanged through time or when

a psychological state persists through a certain interval of time.

This conception has been exquisitely expressed in the following sentences :

"... whether things run or stand still, whether, we sleep or wake, time flows in its even tenor. Imagine all the stars to have remained fixed from their birth, nothing would have lost to time ..."<sup>4</sup>.

It should be pointed out that this kind of conception with regard to space and time was not natural to the ancient Greek thinkers. The notion of a void appears in Greek thought as a substitute for the idea of space. But it means simply the intervals between the bodies. Aristotle does not offer any theory of space except his discussions on spatial magnitudes that are potentially divisible ad infinitum. In Aristotle's Physics<sup>5</sup> we find the concept of 'place', by which Aristotle means the inner boundary of the first unmoved body that contains it; the universe is conceived as the sum total of bodies, and there is nothing outside the universe; so, while everything in the universe is in place, the universe is not.

Time, according to Aristotle, is the measure of motion in respect of 'before' and 'after'; temporal intervals are said to be potentially divisible ad infinitum and

potentially extendable ad infinitum.

Aristotle's argument for the limit of the universe is utterly unconvincing to the absolutists. This reminds us of an ancient question put forward by Lucretius<sup>5</sup> : whether it was not possible to shoot an arrow beyond the boundary of space. This question expresses our irresistible tendency to regard every limit in space as provisional. This very tendency is embodied in the Second Postulate of Euclid, according to which any straight line can be extended beyond its extremities.

The homogeneity of space involves that there cannot be any privileged class of points constituting the boundary of space. Similarly, if time is homogeneous no moment can have a privileged character; this means that there can be no first or last moment — every moment or instant must have its ancestors and successors.

The mathematical continuity of time follows with equal logical force from its homogeneity. No matter how narrow a temporal interval may be, time must flow within it, or otherwise the temporal interval would stand still. In such an interval there would be no possibility of distinguishing successive instants. Such a durationless atom of time would then be non-temporal. The mathematical continuity of time is thus another name of its divisibility, that has no limit as long as we deal with a finite temporal series; the

only true indivisibility belongs to a durationless instant. Space is also infinitely divisible. To say that certain spatial intervals are indivisible is to mean that it is impossible to find within them any juxtaposed parts. Such indivisible spatial intervals are, on this thesis, devoid of spatiality.

According to the absolute theory, the spatial and temporal intervals are relative. Just as we measure spatial magnitudes by the size of our measuring instrument, so we estimate temporal intervals by comparing them with our 'specious present'<sup>7</sup>. The term 'specious present' indicates that what we call 'now' is only a spurious present, since the only true present is a mathematical durationless instant; all the instants prior to this are called past and all that follow it are future.

In the realistic philosophy of Samuel Alexander<sup>8</sup> an attempt has been made to correlate time with space so as to put both of them in a space-time continuum. This packaged concept of Space-Time is, according to Alexander, the absolute and ultimate stuff which things are made of. Space and time are not separate and independent. They are interdependent, so that there is neither space without time, nor time without space. Space-Time as a single vast entity is the substratum of all that is. Here 'is' means existent.

Bound together by motion, space and time may, however, be quite empty of historical events, beings or objects.

Alexander sought to combine realism with the philosophy of evolution. Space-Time, he says, is the ultimate stuff of reality and the source of evolution.

In Indian philosophy Kālavāda means the doctrine which identifies the Absolute with Time; it is also the opinion of those philosophers who hold time to be a real substance. The first conscious reflection on time as the Supreme Ontological Being and Cosmic Power is to be found in the Atharvaveda<sup>9</sup>. In Indian mythology Time is the symbol of Life and Death. In philosophy this has been reduced to the conception of time as the general cause determining the origination, duration and destruction of all contingent beings. But with the development of the Upaniṣadic thought there was an emphasis on permanence and eternity. As a consequence, time, change and causation were degraded to the status of derivative realities. The Upaniṣadic tendency might have influenced even the realistic thinkers of the different systems of Indian philosophy, who also conceived real time statically rather than dynamically.

In Vaiśeṣika-Sūtra<sup>10</sup> Kaṇāda says that Time is an eternal, unique, all-pervading real substance. It is one of the nine padārthas side by side with ether, space, mind, soul etc. It is the static background against which events

happen. Time has no specific physical quality; it is imperceptible.

But how is time known ? The Vaiśeṣika answers that (i) Time is known by means of inference. The notions of priority, posteriority, simultaneity, succession, quickness and slowness are said to be the grounds for inferring the existence of Time. We cannot have any doubt about the reality of the above-mentioned notions. And these are not found to be associated with other substances, namely earth, water, air etc. So the substance to which these notions are attributed must be Time or Kāla<sup>11</sup>.

The Vaiśeṣika here infers the existence of time from the notions of priority and posteriority, though these notions themselves are understood with reference to time. So it might appear that the Vaiśeṣika is arguing in a circle. In order to avoid this criticism, they explain these notions with reference to the revolutions of the sun<sup>12</sup>. The Vaiśeṣika has thoroughly discussed the necessity for the assumption of a ubiquitous substance, through which solar motions may be related to any individual. If, for example, A is said to be prior to B, that means that A has experienced a larger number of solar motions than B is known to have. But we all know that the motion of the sun inheres in the sun. So neither A nor B can be connected with solar motion through the relation of inherence. A and B are

widely separated from the revolving sun, so there cannot be a relation of conjunction between them. Hence, A and B, or for that matter, any individual or event must be connected with solar motion through something else. That something is Time. This relation is called samyukta-samyukta-samavāya<sup>13</sup>.

Thus, the Vaiśeṣika says, though we do not have direct intuition of time, we know its existence by means of inference. This was suggested by Vācaspati who was supported later on by Udayana and other Vaiśeṣika thinkers. But Śrīdhara suggested a different way of proving the existence of time. Time can be inferred, he says, as the cause of the notions of priority, posteriority etc. In our daily life we use these words that express time-relations between objects and events. If there were no reality corresponding to these words and expressions, it would not be possible for us to understand these words. So time must be postulated as a necessary correlate of temporal concepts and temporal expressions<sup>14</sup>.

This point reminds us of the modern controversy between the tensed theory and the tenseless theory of time, which will be discussed in a later chapter. Śrīdhara's idea seems to suggest the existence of tensed facts that can only validate our tensed utterances. However, according to the Vaiśeṣikas, Time being an all-pervasive objective substance, the temporal concepts are common to all people.

(ii) The existence of the Time-Substance is also inferred from the fact of changeability and impermanence of contingent products. For every change in this world there are some specific as well as general causes. Time is said to be the general cause or nimitta kāraṇa for the origination, extinction and endurance of these contingent things — janyānaṁ janakah kālah<sup>15</sup>.

But the question arises : Time is said to be one and indivisible. But we speak of three times — past, present and future. We also make distinctions between moments, hours, days, years etc. How are these empirical divisions of time intelligible ? What is the ontological status of these divisions ?

The Vaiśeṣika replies that these divisions are not integral to Real Time. Time is essentially independent of all events happening in it. The distinctions of Time are due to its association with limiting adjuncts - janyamātram kālopadhiḥ<sup>16</sup>. Just as the one, unique space is divided by pots, etc., apparently, Time is also differentiated into smaller and greater parts only apparently. The Vaiśeṣika thus distinguishes between Mahākāla or Pāramārthika Kāla and Kṣanakāla or Vyāvahārika Kāla. It appears that these realist philosophers distinguish between transcendental time and empirical time. But time is something objective and substantial in this system, not merely a subjective form of



intuition as in Kant's philosophy. For Kant time is transcendently ideal. But according to the Vaiśeṣika these empirical divisions of time are unreal with reference to Real Cosmic Time. This conception seems to be inconsistent with their realistic philosophy.

According to Dinakara<sup>17</sup>, however, Time is one; the divisions of time into moments, days, years etc. do not signify different times. These different temporal divisions in our ordinary discourse represent different proportions of temporality — kiñciddharmaviśiṣṭasya kṣaṇatvaṃ  
kiñciddharmaviśiṣṭasya dinatvaṃ etc.

Dinakara's commentary appears to be more logical from the absolutist stand-point of the Nyāya-Vaiśeṣika philosophy of time. With other Nyāya-Vaiśeṣika thinkers, Dinakara asserts the existence of a unique, indivisible, absolute, real Time of infinite magnitude. As an absolutist he could assert neither the existence of different times, nor any real division or parts in time; nor could he logically maintain any distinction between transcendental time and empirical time of the Kantian type. So he admits that Time is apprehended by us, as finite beings, in different proportions in different contexts. Some proportions of temporality are thus apprehended by us as momentary i.e. kṣaṇatvaṃ. These are called moments. In the same manner, hours, days, years etc. represent different proportions of the infinite magnitude of Time.

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However, all Indian thinkers were not kālavādin. The Sāṅkhya philosophers refuse to admit the reality of time as a separate entity. According to them the idea of an infinite, all-pervasive time is a construction of imagination - buddhinirmāna. That is to say, this idea does not correspond to anything in reality. The Sāṅkhya philosophers admit that the very structure of our language is embedded with time and tenses. It is impossible to give up tenses and temporal predicates. Without the words like 'past', 'present', 'future', 'simultaneous' and 'successive', it is impossible to describe and communicate our ideas. All these signify that temporal distinctions are rooted in our basic modes of thinking.

The question arises : do not these temporal words and expressions implicitly refer to some real distinction in time itself ? And if 'time' does not stand for any real entity, why and how temporal discrimination arise in our thought at all ?

The Sāṅkhya philosophers<sup>18</sup> contend that the ideas of time and temporal characteristics arise from the awareness of finitude and limitation of actions and events. Whatever has a beginning and an end may be said to be finite and limited. Time is the means of conceiving such limited existence and persistence of events. Thus according to the Sāṅkhya philosophers the concept of time as an eternal,

infinite, absolute substance cannot have ultimate validity.

The Sāṃkhya and the Yoga are not two independent philosophies. But the Yoga conception of time is very close to the Buddhist ksāṇa-bhaṅgavāda. Time, according to the Yoga, is something that flows or passes away. The Yoga rejects not only the idea of an absolute infinite time but also the reality of the concepts of finite durations, such as minutes, hours, days and years etc. Against the idea of an absolute Time, the Yoga posits the conception of a momentary atomic time. A moment is said to be the minutest division of time, the time taken by a moving atom to reach a new position<sup>19</sup>.

It might be contended that, if as an infinite magnitude time is unreal and fictitious, how can one speak meaningfully of an infinitesimal part of it? The Yoga would reply that, if the moment is defined or explained in terms of infinite time, it will appear equally unreal. The moment is not the microcosmic part of duration. It is the moment, that is basic and primary, while duration is a construction. The moment is ultimate, irreducible, subtle, and therefore, indefinable. Moments exist one after another; this order is called succession. By succession the Yoga means the relation of priority and posteriority or order of moments. Each moment is real time, but the moment does not possess succession as its constituent. Succession, in the Yoga philosophy, is conceptual. Only one moment exists, which

is the present; past and future moments do not exist. The present moment is known by activity and change. Time, in the Yoga conception, is, therefore, intimately connected with change<sup>20</sup>.

The Yoga do not explicitly identify time with change, whereas for the Sāṃkhya time is nothing apart from change and activity. For both Sāṃkhya and Yoga time is a modification of the elements of 'sattva-rajas-tamas' of the undifferentiated Prakṛti.

In the Yoga conception, time is essentially atomic, and is accessible to yogic experience. The entire universe, according to the Yoga, undergoes change in the single atomic moment. And only in yogic intuition this entire universe can be known in one moment. Such a view seems to advocate an absolute atomistic conception of time.

## 2. The Relational Theory of Time :

The relational theory of space and time is very old dating back as far as the ancient Greeks. In Leibniz's<sup>21</sup> philosophy, however, we find a clearer and fuller version of this view. But long before Leibniz we find Giordano Bruno quoting Lucretius<sup>22</sup>, "Time is nothing by itself". It is also a very significant fact that Spinoza, a contemporary of

Newton, refused to recognize time as an attribute of the ultimate reality. It is also to add that doubts concerning the ontological status of both space and time were raised mainly by idealistic philosophers and philosophically minded scientists.

According to Leibniz, space is an order of coexistences and time is an order of successions; space and time, outside the world, are imaginary and ideal things. Space and time, Leibniz says, are those wherein the mind conceives the application of relations. Space is what comprehends all places, and similarly for time. Against the Newtonian conception that spatial and temporal distinctions are due to the things that occupy places and the events that happen at moments, Leibniz argues that where no distinction exists, there is no way of making a distinction. This is the application of the Principle of Identity of Indiscernibles. Then with his most favourite, the Principle of Sufficient Reason, Leibniz argues that God would have no sufficient reason for putting things at one place or in one order than another, or for creating things at one time rather than another. In other words, since there is no way of determining one place or moment as distinct from others apart from what occupies these places and times, there is no sense in speaking of one part of space or time rather than another.

Against Descartes, Leibniz argues that the essence of matter is not extension, but vis viva or active force. The

only ultimate realities are individual substances, that is, the metaphysical points endowed with vis viva, and minds. Nothing else has ultimate reality. It is clear then that space and time are not ultimate realities as they are in the Newtonian conception, nor are they infinite substances. Bodies and movements of bodies are not real existences, but ideal existences, created by imagination. Space and time are themselves even further removed from real existence. For, motions of bodies in space and changes in time can only be significant if there is empty space and empty time. But, as it has been held by Leibniz, the notion of empty space and empty time is a vulgar error.

But if space and time are orders of relations, what is it that is related by these relations? On the relational view, spatiality consists in relations between elements. But if these elements themselves are spatial, the same argument must apply to them; the only way to stop this infinite regress is to suppose that the objects related by spatial relations are themselves non-spatial. It is perhaps this problem that led Leibniz to construct a physical world out of non-extended spiritual atoms named "monads". But that in turn led to the suggestion that space and time must be merely ideal.

Thus the suggestion that space and time must consist simply of relations does lead to the problem about what is

so related. It is this kind of conception that inspired Bradley<sup>23</sup> to introduce a piece of Hegelian dialectic, and declare space and time to be mere appearances.

Bradley, however, refuted both the absolute and relational theories of space and time. Against relationists he argued that space and time cannot be mere relations; against absolutists he argued that space and time are mere relations. According to the absolute theory, space and time are infinitely divisible; but at any stage of this division there must be parts that are spatially or temporally related to other parts. As Bradley says,

"The terms are essential to the relation, and the terms do not exist. Searching without end we never find anything more than relations ... space is essentially a relation of what vanishes into relations"<sup>24</sup>.

Bradley, in his dialectic, intended to show that dilemmas are inherent in the very nature of our thoughts of space and time, and, therefore, they are unreal.

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### CHAPTER 3

#### Is 'Time' Definable ?

In the previous chapter we have discussed two opposite theories with regard to the nature of time - the Absolute and the Relational theories. For an understanding of the real nature of time it is essential that we analyse the concept of 'time' in some detail. It is usually convenient to introduce discussions on any subject with a suitable definition of it. So let us begin with Aristotle's definition of 'time.'

Aristotle defines 'time' as "the number of movement in respect of before and after"<sup>1</sup>. In his definition Aristotle uses the Greek synonym of English 'number'. He says that we discriminate the more or less of anything by number. Similarly, we discriminate the more or less of movement by time. Time is the number of movement in the sense of that

which is numbered. That means that time is the numerable aspect of movement.

In Aristotle's conception only individual substances are existent. Motion is an attribute of the individual substance, and time is the attribute of motion.

Aristotle distinguishes 'time' from 'motion'. These are inseparable but not identical: time is one but movements are many; movements may be fast or slow, but time cannot be; time is not movement; it is the number of movement.

Time, Aristotle says, is intimately connected with motion or change. Movement is recognised by observing a single moving body successively at different points in space, and the passage of time is recognised by noting that the single character of 'nowness' has been attached to more than one experienced event. Thus it is only in movement or change that we notice a lapse of time. The before and after are two nows, and what is bounded by a 'now' is time.

It is, therefore, the 'now' that makes time continuous; it is again the 'now' that differentiates time into parts. But the 'nows', Aristotle says, are not really parts of time, just as points are not parts of a line. Each 'now' is by its very nature the beginning of a future as well as the end of a past; just as a mathematical point dissects a line by

serving as the end of one segment and the beginning of the other.

Aristotle deduces the continuity of time, its infinite divisibility from the continuity of motion, which in turn is deduced from the continuity of the space traversed. Since the space traversed is continuous, the motion must be continuous, and since the motion, the time that measures it must also be continuous, "because there is a one-to-one correspondence between each point of space and each moment of time.

Aristotle contends that past, present and future are in time as being parts of it; and events are in time as being measurable by it; so time must be greater than anything that is contained in it.

Aristotle then adds that since time is the measure of movement, it is the measure of rest as well. Anything is said to be at rest when it can be moved, though actually it is not moved. Here 'can be moved' means moveable or capable of being moved. It is not necessary that what is in time is necessarily in motion; for time is not motion, it is the number of motion. That which is at rest, but is capable of being moved, can, therefore, be the number of motion.

Aristotle raises another vital issue : would there be any time if there were nobody to count or measure movement ?

Then there would still be movement, but it would have no measurable aspect. So without a soul there would be no time.

It should be pointed out that Aristotle does not suggest that time is purely subjective. He simply denies that time is a substantial entity existing independently of other things. Time, according to Aristotle, is potentially in motion, and becomes actual when motion is noted and measured. This conception is to be distinguished from that of Kant. According to Kant time is subjective in the sense that it is an a priori form of our intuitions, while, for Aristotle, time is not subjective; it belongs to the objective world, though it requires the human mind to be noted and measured.

Several objections have been raised by Plotinus<sup>2</sup> against Aristotle's definition of 'time'.

First, since movement is continuous, it cannot be numbered; time may be called the measure of movement. Again, if time is said to be the measure of movement, we have some idea of the things of which time is a measure. But that does not lead us to any understanding of what time itself is. Moreover, if time is the measure of movement, how can it be the measure of rest also? Aristotle's explanation does not satisfy Plotinus.

It might be said that Plotinus, in the context, does not seem to follow the full implication of Aristotle's conception;

motion and rest are relative terms; rest implies the absence of motion of that, which is capable though not actually moving. Aristotle's idea is quite clear here.

But the most serious charge against Aristotle's definition of 'time' is that of circularity. We are told that time measures successive stages of movement, that is to say, the 'before' and the 'after' in succession. Yet there is also 'before' and 'after' in space by virtue of relative positions. So if the 'before' and 'after' are to refer to temporal relations, they must imply 'before' and 'after' in time rather than in the space traversed. So the definition of 'time' requires a reference to time which renders it circular.

Moreover, motion, in Aristotle's explanation, presupposes time, as 'motion' or 'locomotion' is defined by him as the occupation by an entity of a continuous series of places at a continuous series of times. This means that when a particular body is in motion it occupies consecutive points of space at consecutive moments of time. This is the Pythagorean conception of motion as accepted by Aristotle.

It can hence be said that Aristotle defines 'time' in terms of motion, and 'motion' in terms of time. Aristotle, himself is not unaware of this circularity; he himself says, "we measure the movement by time and vice versa".

It is however interesting to note that Plotinus does not get any further than Aristotle in his own definition of 'time'. He defines 'time' as "The life of the soul in movement as it passes from one stage of act or experience to another". But this definition too involves a reference to time. If we speak one state of consciousness passing into another, we must be able to distinguish between these states. And these different states of consciousness are distinguishable only as occurring at different moments of time. This means that the definition of 'time' formulated by Plotinus as well involves a reference to time.

St. Augustine<sup>3</sup> realised this difficulty as surfacing in any attempt to define 'time', and consequently there is his famous expressions : "what, then, is time ? If no one asks me, I know; but if I wish to explain to one that asketh, I know not".

The situation is really puzzling. As Augustine admits, he has an immediate experimental awareness of time. He knows how to use temporal expressions about past, present and future; but when he tries to define 'time' verbally, he finds that the definition involves circularity.

There are many words that cannot be verbally defined. 'Yellow', for example, stands for a simple, verbally indefinable property. Such words, however, can be defined ostensively or demonstratively. One can point to an instance

of 'yellow' and make the hearer understand the meaning of the word. But 'time,' says Augustine, admits of no such straight-forward ostensive definition. There is nothing that one can point to and say 'This is time'; we cannot even ostensively define the 'past', 'present' and 'future' of which time is composed. Definitionally the past is that which is already over, and the future is that which is yet to become. Thus it is impossible for one to point to them. Can one point to the 'present'? Augustine contends that this is also impossible. Aristotle said that the present or now is the boundary of the past and the future, for it serves merely to connect them. This means that the present is an indivisible instant of zero duration having no sensible property that we can point to and say, 'this is the present.' This point needs further clarification.

Let us suppose that a particular event is occurring. It certainly does not occur all at once, but it must have parts or stages that occur one after another. When any one of these parts is occurring, among the other parts some have already occurred (past) and others are yet to occur (future). But which part of the event could properly be said to be occurring now? Ordinarily our use of the present tense and of the temporal adverb 'now' is not very strict. Events of fairly long duration and of very short duration are equally characterised as 'occurring now'. For examples, 'The



'Twentieth century is heading fast towards its end', 'The history of India is now repeating itself' or 'The National Anthem is now being sung'. We might be pressed to use the present tense and temporal adverb 'now' in stricter and stricter sense. In this way we might be persuaded to give up saying that anything which takes time is happening now. In other words, nothing of which a part lay in the past could properly be said to be happening now. For an event does not happen all at once; it must have stages that occur one after another. Some of its parts must have already occurred, while some other parts are yet to occur. If it is assumed that a whole cannot be said to be occurring now, unless all its component parts are also occurring now, then no occurrence which takes time can be said to be 'taking place', which ultimately amounts to saying that only that part of an event could be said to be occurring that does not take any time at all. Properly speaking, one cannot point to anything and say 'this is occurring now'. For on analysis 'the now' is found to be an instant of zero duration and even the act of pointing also requires time. In our ordinary discourse we use the temporal adverb 'now' without any confusion; we can communicate to other people what we mean by the word; but it eludes us whenever we try to point to it. If there happens to be no part of time that can be pointed at as 'now', then 'time' admits no ostensive definition of itself.

We may distinguish here three aspects of Augustine's bewilderment :

(1) He finds it difficult to understand how an accumulation of zeroes can be more than the zero, for each 'now' is of zero duration, and time is made up of 'now's. How can we hope to make something out of an accumulation of nothings ?

(2) The stages of an event that takes time never occur together. How can we say of a number of stages that are always apart to form a whole of any kind ?

(3) So, Augustine says, when we measure an interval of time, we must be measuring something of which a fast vanishing segment alone has reality; all the other segments of it are either not yet there or not there any longer. But how can we measure that which is no longer or which is not yet ? Both of these must be nothing to us at present.

Augustine is obviously puzzled with these paradoxical aspects of time and concludes that time is a 'protraction' of the mind, and that when we measure time we really measure a certain expanse in our memory. Time, for Augustine, is essentially subjective or belongs to one's mental history, i.e., it is psychological. Past, present and future times depend on the human mind. It is not proper to say that there

are three times. It might rather be said, as Augustine does, that there are a present of things past, memory; a present of things present, sight; and a present of things future, expectation.

But if all these are to be taken as the definition of 'time', then the matter suffers from circularity. We cannot talk about memory and expectation without making explicit reference to a past or future event which is remembered or anticipated. This shows that Augustine's account fails to avoid circularity.

So far we have discussed three attempts to define 'time' by three eminent philosophers. None of these attempts succeed in avoiding circularity. One at once realizes that to find a suitable definition of 'time' is really a taxing enterprise.

Among Indian thinkers the Nyāya-Vaiśeṣika philosophers have attempted to define the past, present and future times. It has already been discussed in the previous chapter that time, according to the Vaiśeṣika is one, infinite and indivisible. Whatever exists must be in time, but time is independent of all the events that occur in it. The divisions of time into past, present and future are not integral to real time, for they are essentially incompatible. These different temporal determinations are due to the association of time with limiting adjuncts.

The Vaiśeṣika suggests that the past, present and future are distinguishable only with reference to some external condition. A particular day, for example, is known as present owing to its relation to a particular solar motion; that very day is understood as past on the days that follow it, and as future on the days that precede it.

But it might be argued that the particular solar motion is common to all the three determinations. How could any relation to it serve as the condition for distinguishing between the different determinations? Hence a necessary qualification in respect of the relation has been made; that the present is the time of an event which is in actual relation to a solar motion; when the relation has already obtained and is no more, we have the past time; and the future is the time when the relation is yet to obtain<sup>4</sup>.

According to Śrīharṣa, an absolute Indian sceptic, the term 'actual' means existent, which is the same thing as 'present', whereas 'has been' and 'will be' are synonyms of 'past' and 'future'<sup>5</sup>.

The Vaiśeṣika has then suggested that the time determined by an action is present; the past and future are determined by the prenonexistence and post nonexistence of that action. But here the Vaiśeṣika thinkers get themselves involved in a circle. The terms 'pre-non-existence' and 'post-non-existence'

refer to the notions of the 'previous' and the 'subsequent'. But 'the previous' means 'the past' and 'the subsequent' means 'the future'.

The Vaiśeṣika then, as a next move, offers an amended definition of the 'present' : the present time is determined by a present action which is actually in progress and is not determined by any past and future action. But this definition is no less circular - for it defines the present time by using the term 'present'. Śrīharsa reasonably contends that the different time - determinations cannot be defined.

From the above discussion it is clear that one of the problems related to time is that of defining it, and some ancient thinkers were quite well-aware of that.

Some modern western thinkers of linguist persuasion have also attempted to define the 'past', 'present' and the 'future' times. Ayer, for instance, contends that temporal precedence is an empirical fact given to us in experience. He also thinks that the 'present' may be defined ostensibly. These two, he believes, are sufficient to yield the concepts of past and future. Ayer defines 'The present' as "the class of events which are contemporaneous with this, where 'this' is any event that one chooses to indicate at the given moment"<sup>6</sup>.

But Ayer's definition of 'the present' makes use of the word 'contemporaneous with' which has not been defined by

him. Moreover, a proper analysis of Ayer's definition shows that it involves contradiction. An ostensive definition must be unrestricted in its scope. When I ostensively define A's redness, for example as, 'This is red', it entails that if, at any time, a thing has the same colour as A, then at that time it is red; and negatively speaking, if a thing does not have the same colour as A, then at that time it is not red. But the negative formulation of Ayer's definition of the 'present' leads to a contradiction. In Ayer's definition 'the present is the class of events which are contemporaneous with this', where the 'this' is any event chosen at the given moment. It means that if at any time an event is not contemporaneous or simultaneous with A, then at that time it is not present. Let us now take another event B, which is not contemporaneous or simultaneous with A. Then even when B happens i.e., is present, B is not present, according to the negative formulation of the definition. This is a contradiction undisguised.

Following Ayer's definition of the present, the 'past' and the 'future' might now be defined as 'the class of events which are earlier than the present' and 'the class of events which are later than the present' respectively. As his definition of the 'present' involves circularity, and 'the past' and 'the future' have been defined in terms of the 'present', the charge of circularity applies to these definitions none the less.

It should be noted that temporal predicates like 'now', 'present' etc. and indexical terms like 'I', 'you', 'this' can neither be defined verbally, nor be identified ostensibly. To understand them we must know who uses the word, whom he speaks to, where and when does he point at something. They cannot be defined because they are not general terms. They are also different from non-indexical singular terms. So they cannot be identified ostensively. To define something ostensively is, in effect, to identify it.

This very fact had been the cause of Augustine's bewilderment. He could not find a suitable definition of time. He wanted to point to something called 'time' and being unable became mystified.

It was Śrīhaṛṣa who remarked that to define a thing is to mark it off from others; so, to say that something is indefinable is to admit that it has no recognizable specific character, and to say that, is to say that it is unreal.<sup>7</sup>

It is, however, an undeniable fact that time judgments are forced upon us by our experiences. We cannot express our experiences without employing temporal words. We cannot conceive of any intellectual activities without the concepts of time and temporal determinations. So it appears that the temporal characteristics are among the most fundamental in the objects of our experience. That is why we cannot find

any logically immaculate definition of 'time' or of the temporal determinations 'past', 'present' and 'future'. But whether they are fundamental or not, that is yet to be decided.



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#### CHAPTER 4

### Difficulties with Regard to the Nature of Time ; Zeno's Paradoxes

In the previous chapter we noticed that 'time' admits of no logically perfect definition. We shall now note that there are difficulties also with regard to the nature of time. There are philosophers who maintain that the concept of time involves several inconsistencies. Some of them have questioned the supposed infinity and continuity of time. The concept of space no less shares the same fate. There have been doubts with regard to the distinction of time into past, present and future, and also with regard to the concept of time-flow.

The doctrine of the unreality of time has had powerful exponents among the Advaitin and the Buddhist philosophers.

We now propose to discuss some special arguments against the reality of time.

Zeno's Paradoxes of Motion and the Denial of Time

It may be said that Parmenides' philosophy is the starting point of a strong negative attitude towards time. It was he who first introduced into western Philosophy the idealistic conception of an immutable timeless reality behind the passing show of sense. Zeno's paradoxes, Plato's metaphysics, Bradley's dialectic and McTaggart's paradox are the outcome of this fundamental conception.

Zeno, the most prominent of the Eleatic thinkers, invented a number of paradoxes which, he thought, demonstrated the impossibility of change, and established the Parmenidean conception of being as timeless. His arguments seem to assume the premises granted by his opponents, and then showing the absurd conclusions deduced from them. We cannot, however, be sure of Zeno's intention in formulating the paradoxes, nor of the original formulation. But the philosophical interest in them has been sustained **through** twenty-four centuries since his time, and it is a proof of their subtlety, ingenuity and greatness. We derive four of these arguments in Aristotle's<sup>1</sup> Physics, which shall be our primary source with regard to Zeno's arguments.

All these arguments presuppose the existence of many things. It appears that with these arguments Zeno sought to prove that there is not a plurality of things, or if you say there is, then there is no motion. Zeno used his great

logical power to advance his master's doctrine by showing that the ideas of plurality and change lead to logical antinomies. In particular, he criticised the concept of time in these four paradoxes.

The paradoxes may be brought under two groups according as it is assumed that time (and correspondingly space) is either discrete or continuous i.e., either composed of indivisible instants (indivisible points in the case of space) of short and finite duration, or else infinitely divisible.

The Arrow and the Stadium paradoxes are directed against the contention that time is composed of indivisible instants. The two paradoxes are independent arguments and are intended to prove that if time is composed of indivisible instants, motion cannot occur.

The Arrow Paradox :

In the Arrow Paradox Zeno wants to show that as in the process of flight the arrow will have to be at consecutive positions at consecutive instants, it will be at rest in each of these positions. But a collection of 'rests' does not surely amount to a movement; in otherwords, the flying arrow is at rest, and that is a palpable contradiction<sup>2</sup>.

The Arrow paradox of Zeno has raised profound debate concerning the possibility of motion.

Peirce<sup>3</sup> reformulated the argument in the form of the following syllogism:

Major Premise : No body in a place no larger than itself is moving.

Minor Premise : Everybody is a body in a place no larger than itself.

Conclusion : Therefore, no body is moving.

Peirce finds fault in the minor premise. He thinks that the minor premise is true in the sense that, during a very short time the space occupied by a body may not be larger than itself; and this can only give rise to the conclusion that during no time a body can move no distance.

But it is to be noted that this argument of Peirce is incomplete, for he ignores the conception of motion inherent in the major premise.

Bertrand Russell<sup>4</sup>, on the other hand, draws our attention to the major premise. He thinks that Zeno is assuming that when a body is moving it should be in a state of motion, which is qualitatively different from a state of rest. Now, the moving arrow, at each instant, is where it is; that means that

it is at rest. But a state of motion is essential to motion. If the arrow is at every instant at rest, there can be no motion. Russell analyses Zeno's argument in this manner.

Russell seems to have a misunderstanding with regard to the assumption inherent in the major premise. To deduce the absurd conclusion that motion is impossible, Zeno seems to be adopting the view that a moving body is not qualitatively different from a static one, and that motion can be recognized only by change of position. This is also Russell's own view. In a temporal instant, when a body does not change its position, there can be no motion. If there were any intrinsic change in a body due to motion, then the major premise formulated above would not stand.

The whole force of Zeno's argument, therefore, seems to be based on the conception that motion must be analysable into states of motion and not into states of rest, that motion cannot be compounded of immobilities.

We have now before us two alternative ways to escape from Zeno's conclusion that motion is impossible : either we have to assume that a moving body is different from a stationary one, at any instant, by some distinctive feature other than change of position, (2) or we can accept that motion can be compounded of immobile states.

Russell rejects the first alternative. This brings him very close to the second alternative 'that the arrow at every

moment of its flight is truly at rest'. But that does not mean that he accepts Zeno's conclusion that motion is not possible. He, on the other hand, maintains that in motion a body is at different positions at different instants, and that, since, at each instant the body is in a unique position, it is indistinguishable from a stationary one at that instant. Russell contends that motion can be explained only as a phenomenon necessarily referring to different instants. In the given syllogistic form 'is moving' is equivalent to 'is moving at a given instant', which, of course, is meaningless.

This argument of Russell resolves the Arrow paradox from the logical or semantical point of view. But the idea inherent in this argument is that motion is a relation and not a quality, and this idea is a necessary presupposition of the Law of Inertia. According to classical mechanics, a body in uniform motion is in all respects identical with itself when at rest, except as regards position.

Bergson has vehemently opposed this conception of motion of the classical physicists. He suggests that the intellect operates in a 'cinematographical' manner<sup>5</sup>. Just as in a motion picture movement is represented by the intellect as a series of static states. The arrow paradox falsely reduces the flight of the arrow to a sequence of static positions along the path of its flight. According to Bergson, the entire flight of the arrow is a single indivisible act or event.

From a sequence of immobile states the motion of the arrow cannot be generated<sup>6</sup>.

It should be pointed out that Bergson lays too much emphasis on intuition, when he says that reality is to be known only by intuition, and that reason analyses and falsifies reality. Russell's main contention, on the other hand, is that philosophers are usually ignorant of the mathematicians' analysis, and have adopted 'other and more heroic methods of dealing with the prima facie difficulties of continuous motion'<sup>7</sup>. According to Russell, objections against the discontinuous nature of time, presented by the mathematicians' analysis, can be overcome by means of a special hypothesis. From the continuous nature of sense-data we are led to infer a "compact"<sup>8</sup> series of infinite timeless units. Russell is not against the continuity of time as perceived; experienced time may represent itself in a continuous way, but this does not imply, as he says, that there is a corresponding continuity in the objects of experience.

Russell's theory does not seem to answer Bergson's charge against the spatialisation of time. It involves us, on the otherhand, into the difficulty of a dualism between perceptual time and physical time. For Bergson duration is not merely one instant replacing another. It is essentially a flux, a continuous whole of past, present and future. Russell's analysis does not give us convincing reasons for the experienced continuity of time.



If, against Russell's analysis, it is correct to say that Zeno intended to establish that motion cannot be compounded of immobile states, then an interesting point may be worthy of notice. Zeno seems to have anticipated the modern conception of motion. According to the special theory of relativity the relative spatial extension of a particular body in uniform motion gets shortened by a factor depending on its speed<sup>9</sup>. The absolute theory of space is rejected on this theory. With regard to Zeno's paradox this theory seems to have a special relevance. Relativity theory seems to imply that a moving body occupies a smaller place than itself when moving than when at rest. Then it should be admitted that motion is qualitatively different from rest, that is to say, motion cannot be compounded of immobile states.

#### The Stadium Paradox :

The Stadium paradox drives us to the paradoxical statement : double the time is equal to the half.

This paradox of motion is most obscure, since it is not clear what proposition it intends to refute. Let us analyse the argument :

The two diagrams given below represent two sets, B and C in relation to set A.

(i)				(ii)			
B	1	2	3	B	1	2	3
A	1	2	3	A	1	2	3
C	1	2	3	C	1	2	3

The set A, we are told, is stationary, while the sets B and C are moving in opposite directions to one another with equal velocity. Since the two moving sets take the same amount of time  $X$  to come face to face with the stationary set A, between themselves they will take half the time  $\frac{X}{2}$  to confront one another. That is to say the same distance is traversed by the same set of moving things in different times viz.  $X$  and  $\frac{X}{2}$ . This almost amounts to saying that a whole is equal to its half. And this shows, according to Zeno, that motion, as it involves contradiction, must be unreal.

It might be urged that the paradox proceeds from the change of the standard of comparison. In the context comparison is made between a stationary set with two moving sets. Aristotle protested against the fallacious assumption that given the same speed, a thing of some length will spend the same time, opposite a body of the same length, regardless of the fact that the body is still or moving<sup>10</sup>. Aristotle's criticism points out that Zeno had confusions about the relativity of motion : he ignored whether the body being passed was still or moving.

Zeno's point may, however, be interpreted in another way. It may be considered that Zeno was eliciting the inconsistency of absolute definition of motion. His point might be that if motion were treated as non-relative, paradoxical results would follow. To avoid the embarrassment motion has got to be treated as relative; but its relativity makes it less than real.

#### The Dichotomy and Achilles Paradoxes :

These two paradoxes of Zeno are based on the hypothesis of infinite divisibility of space and time. These are intimately related. According to the former, motion cannot begin at all. For before an object can traverse a distance, however small, it must first traverse half the distance; and before it can move through half, it must cover half a quarter, and so on ad regressum. So if the object is to traverse any distance, whatsoever, in a finite time, it must complete an infinite number of operations in that time, which is impossible. This paradox can be applied to time itself, or for that matter, to any clock, for it is equally difficult to understand how time can advance from a given initial instant.

By the Achilles argument Zeno claims to show that granted the possibility of motion, the slowest runner will never be overtaken by the swiftest runner. The pursuer must first reach

the point from which the pursued started. In the mean time, the pursued must have moved further, and must in that way always remain ahead. The distance must be decreasing in a given proportion ad infinitum because of the infinite divisibility of space, but it can never be overtaken by the swiftest runner.

Aristotle has tried to solve Zeno's paradox by saying that we must distinguish between infinite divisibility and infinite length. The spatial distance to be traversed is infinitely divisible, not infinitely long, and the time required to traverse is also infinitely divisible. Hence the time available is adequate to traverse the distance. Thus Aristotle in his first rejoinder alleged Zeno of illegitimately identifying infinity of parts with infinity of extent<sup>11</sup>.

In his second rejoinder Aristotle has denied that an infinite division actually exists in a period or line. And to the question whether one can traverse an infinity either in time or in space, Aristotle's point is that one cannot traverse an infinity of actually existing divisions, but one can of potentially existing ones. By an actually existing division Aristotle means one, that is actually marked. By infinity Aristotle intends an extendible finitude<sup>12</sup>. On this account, the number of actually marked out divisions can be increased. The number will always remain finite. So there is no need to traverse more.

But strangely enough, Aristotle makes concessions to the traversal of potentially existing divisions. His finitist account of infinity as merely an 'extendible finitude' is intended to avoid all collections that are more than finite. All such actual infinite collections, he thinks, will contain sub-collections which will also be actually infinite in the same sense. But, in Aristotle's opinion, this is impossible. This seems to be the reason at the back of his finitist account of infinity. Aristotle, however, does not apply this analysis of infinity to potential divisions.

Some thinkers<sup>13</sup> opine that this paradox of Zeno presents no difficulties to those who are adequately trained in mathematics. It has been urged that there is some mistake in the argument. It ignores the fact that the number series, for example,  $\frac{1}{2}, \frac{1}{4}, \frac{1}{8} + \dots$  has the finite sum of 1. So the proposed solution is that the infinite series of time-intervals involved has a finite sum; therefore, Achilles must catch the tortoise. It should be remarked that this reply does not differ much from Aristotle's first rejoinder that infinite divisibility does not imply infinite length.

It seems that this solution misses Zeno's point. On the assumption of continuity of space and time, which is at issue, Achilles must go through all the points in space and all the instants in time, in order to overtake the tortoise;

that is to say, he must perform an infinite sequence of acts. The question is : whether he can actually complete the sequence. In other words, if space and time are assumed to be infinitely divisible, it becomes difficult to explain how Achilles would ever draw level with the tortoise. In the Dichotomy paradox motion appears to be impossible because it cannot start.

There are now two ways before us to solve these two paradoxes :

- (i) either we are to abandon the concept of becoming or temporal transition. We can regard instants as similar to points in space.

or

- (ii) we may abandon the hypothesis of infinite divisibility of time and of the concept of point like instants.

Bergson resolved the paradoxes by saying that only space is infinitely divisible, motion and time come in 'indivisible units'<sup>14</sup>. Whitehead also adopted the same procedure. To quote Whitehead,

"There is no nature apart from transition, and there is no transition apart from temporal duration. That is why an instant of time conceived as a primary simple unit is nonsense"<sup>15</sup>.

Nāgārjuna and Zeno :

The foregoing analysis of Zeno's paradoxes suggests a comparison with Nāgārjuna's dialectic of motion. Nāgārjuna's kārikās in his Mūlamadhyamaka-Sāstra deal with the same problem with much the same logic. Zeno's paradoxes were constructed to refute the possibility of motion and consequently to deny the reality of time and change. Nāgārjuna's dialectic is an attempt to reveal the unintelligibility of the concepts of space, time and motion.

It seems that Zeno sought to defend his master, Parmenides, by mocking the mockers, by demonstrating the contentions of his opponents to have contradictory implications. The technique has the appearance of reductio ad absurdum. Nāgārjuna's technique was to adopt, for the sake of argument, the assumptions of his opponents, and to show them to imply absurd consequences. This also is closely similar to reductio ad absurdum.

The Greek philosopher appears to be a monist. He was eager to establish the unreality of motion, for he followed Parmenides in denying plurality. His opponents were possibly the atomists.

In Nāgārjuna's argument, we can recognize at many points the Sāṅkhya and the Vaiśeṣika thinkers as the opponents. At

places he argues against the atomists. Philosophically he tried to prove the latent absurdity of all views. Nāgārjuna was not a monist. And practically he denied that he was asserting anything. He looks like an absolute sceptic<sup>16</sup>.

However, both Zeno and Nāgārjuna claimed to show the logical inconsistencies in our conception of motion and time.

#### Nāgārjuna's Dialectic of Motion :

In every case of motion, Nāgārjuna says, there must be three factors - the space traversed, the moving body and the motion. A space or locus of past motion is not characterised by motion, similarly a space or locus not yet traversed is not to be characterised by motion either. Then what part of space is to be the locus of the present movement<sup>17</sup>? Here Nāgārjuna seems to be contemplating a time continuum that can be exhaustibly divided into past and future, leaving no room for the invisible present in which movement can be said to be occurring.

The question now is : why do not we observe the locus of the present movement ? Here Zeno's argument comes to our minds, and Candrakīrti's comment seems to suggest the same. He explains the invisibility of the locus for present movement by attacking the claim that the space occupied by a walking foot, for example, constitutes the locus of present movement.



The argument runs in the following manner: For any particle of matter within the foot, if the particle is at the top of the toe, the space occupied by the whole foot is to be characterised as 'traversed' ('gata'); if the particle is at the back of the heel, the space occupied by the foot is 'not traversed' ('agata'); if the particle is in the middle of the foot, the space is divisible into two sections. But since each particle can in turn be subdivided, it is not possible to discover a part of the foot which occupies a path of present motion<sup>18</sup>. So it may be said that the problem of infinite divisibility is implied in Nāgārjuna's argument, though it is not explicitly stated.

Nāgārjuna then examines the claim that there is movement in the ground of the present motion, hence the place where activity is, is the locus of present motion. Nāgārjuna raises the question: how can movement occur as a characteristic of the 'ground of present movement', for the phrase 'the ground of the present movement' becomes meaningful only with reference to movement occurring at present. Candrakīrti interprets Nāgārjuna as saying that the attribution of movement to the ground on which it occurs, entails the absurdity of two movements. The ground is one thing, and the movement another. The first movement is possessed by the ground by definition as 'the ground of present movement'. The ground should possess this as an apriori property. But the movement that is

actually taking place is contingent. So it characterises the ground from outside as a second movement.

But there can be no movement without a mover. Every movement requires a subject; this subject must be either a mover or a non-mover. The subject of a movement cannot be a non-mover. How can it be a mover? The problem of the double movement entailed by the previous analysis of locus and movement reappears in this case also. 'The mover moves' absurdly entails two movers and two movings.

Nāgārjuna's argument in some respects appear to be Zenoian. It may be interpreted as contemplating a time-continuum divisible into past and future exhaustibly, leaving no room for the durationless present in which motion could occur.

In Nāgārjuna's argument the concept of the beginning of movement involves a vicious circle. He seeks to establish that the distinctions of space and time are dependent on the arising of motion; motion, on the other-hand, is inexplicable without these temporal and spatial distinctions. Before the movement begins, these divisions of space and time cannot be identified. But the beginning of movement must take place in one of these divisions of both time and space, and can be identified only in relation to them. Thus the relation of the movement with the divisions of space and time is circular.

On this view, any attempt to identify a first instant of motion must fail. For between any instant during the period

of non-movement and any instant during the period of motion there is an infinite number of instants, so no one of them can be identified as the instant of the beginning of movement.

However, an analysis of all the verses of the kārikās reveals a deep preoccupation with the metaphysical problem of how substance can be related to attribute, or an entity to a property, and so forth. Nāgārjuna's arguments are based on metaphysical assumptions to show the unintelligibility of substance-attribute relations, whereas Zeno sought, on mathematical assumptions, to show the impossibility of giving a coherent account of space, time and motion.

The assumption underlying kārikā 1 is that an atom is infinitely divisible. This assumption, however, is not self-evident. That it is not self-evident is proved by the fact that the Nyāya-Vaiśeṣika thinkers do not share this view. According to them, an atom is rather the ultimate indivisible particle. If it were not so then the quantity of the atoms of a mustard-oil seed and that of a mountain would be equal, which is absurd. So this assumption is unwarranted.

Nāgārjuna's argument is also based on the assumption of the equivalence of analytical and empirical statements. In a statement, for example, 'The runner runs', the property of 'running' is clearly a constituent element of the concept of 'runner'. That is why it is an analytical statement. In the

statement "Devadatta runs", the property of 'running' is attached from outside, since we can distinguish between the person Devadatta and the property of 'running'. The distinction between these two types of statements is very important; but Nāgārjuna seems to ignore that. We may, however, imagine that Nagarjuna merely sought to expose the absurdity of some views, by accepting their premises for the sake of argument, and drawing out contradictory consequences.

With the same kind of logic he sought to prove the unreality of rest also. Zeno **denied** motion, but accepted the reality of the static and the immutable. Nagarjuna's arguments may be said to be more comprehensive, for he shows the unreality of rest also. His dialectic of motion reminds us of Bradley's dialectic. In Bradley's opinion the very notion of a relation is philosophically unintelligible and inconsistent, and this inconsistency alone is sufficient to condemn the concepts of space, time, motion and change as they all involve relations.

## REFERENCES

1. Aristotle, Physics, op.cit. 6,2; 233<sub>a</sub> 21-31; 6.9:8.8, 263a<sup>4</sup>-b<sup>9</sup>.
2. This point of view is strikingly similar to an ancient Indian view stated and refuted by Patāñjali in his Mahābhāṣya on Panini 3.2.123 ;

na vartate cakram isurna pātyate

na syandante saritāḥ sāgarāya;

;the wheel does not move, the arrow is not thrown, the rivers do not flow to the sea; the whole world is motionless. It has been argued that as there is no motion in the world, there is no time either. Motion that is finished is past, motion that is yet to occur is in the future. Between them no intermediate stage is visible. So there is no stage of present motion, that is to say, motion is impossible.

3. C.S.Peirce, Collected Papers, Vol.5, Cambridge, 1934, p.334.

4. B.Russell, History of Western Philosophy, London, 1946, p.833.
5. H.Bergson, Creative Evolution. London, 1954, pp.322-23.
6. H.Bergson, Time and Free Will, Tr. F.L.Pogson, London, 1959, p.112-12.
7. B.Russell, Our Knowledge of the External World, London, 1952, p.143.
8. Ibid, p.138.
9. This is known as 'Fitzgerald-Lorentz Contraction'.  
Dutch physicists Hendrick Lorentz and G.F.Fitzgerald explained, on the basis of the famous Michelson-Morley experiment, that objects contract and clocks slow down when they move through ether at a very high speed.
10. Aristotle, Physics, op.cit, 6.9.240a 1-4.
11. Ibid, 8.8. 253a<sup>4</sup>-b<sup>9</sup>.
12. Ibid, 3.5-7
13. Peirce, op.cit.
14. Bergson, Creative Evolution, op.cit.
15. A.N.Whitehead, Modes of Thought, Cambridge, 1938, p.207.
16. Bhaswati, B.Chakrabarti, Absolute Scepticism, Eastern and Western, Calcutta 1967.
17. Nagarjuna, Mūlamādhyamakāśāstra, Kārikā 1 :  
gatam na ganyate tavat agatam naive ganyate;  
gatāgatavinirmuktam ganyamānam na ganyate.
18. Candrakīrti, Mūlamādhyamakāśāstra of Nāgārjuna with the commentary Prasannapadā, Dwarbhanga, 1960.

## CHAPTER 5

### Kant's Antinomy with regard to Time

The Parmenidean conception of reality as timeless reappears in Kant's Philosophy. Kant distinguishes between timeless 'things-in-themselves' and time as the subjective form of 'things-of-appearance'. In Kant's philosophy<sup>1</sup> we recognise a revival of Parmenides' conception of time as an illusion, though Kant characterises time as 'subjective' rather than as 'illusory'. Things-of-appearance or phenomena, Kant says, result partly owing to the operation of the human mind. The human mind superimposes certain forms on the manifold of sensation. These forms are space and time. Space and time determine the way we see things. But they have no significance for things apart from their relation to a human observer. Space and time are mere subjective conditions of all our experiences. Thus only empirical reality has been granted to them, but their absolute reality has been denied.

For Parmenides, Being is timeless and immutable, while for Kant time is merely the subjective form in which we experience Being. The word 'form' may suggest the idea of certain sorts of relations. But it should be remembered that Kant is not a relationist like Leibniz, for he believes that the forms could exist without any objects or events to fill them. Nor does Kant accept the Newtonian conception of absolute space and time. For they have no independent real existence outside the context of perception. Kant does not, of course, accept the Lockean view that we obtain the concepts of space and time by abstraction from our perception of things and events standing in spatial and temporal relations respectively. For he maintains that perception presupposes space and time. Kant says that we can never represent to ourselves the absence of space and time, but we can think of space as devoid of objects and time as empty of events. Space and time, according to Kant, are pure intuitions. This way of thinking signifies the rejection of a purely relational view of space and time.

In the Analytic section of his Critique Kant finds a very close relationship between time and causality. In his opinion, the mere sequence of perceptions does not establish a time order of physical events. We discover temporal order by examining causal order. But, for Kant, causal order is as subjective as time is. Causality is one of the categories



of the understanding by which we order our experience. In the section on Schematism of categories in the Analytic, Kant shows that causality is not a property of things-in-themselves. Summarily, in Kant's philosophy, time and causality do not belong to reality.

#### Kant's Antinomy about Time :

In the four antinomies of the Dialectic section of his Critique, Kant seeks to show that the cosmological problems with regard to space, time and matter, are inherently antinomous. The first antinomy is about time. It should, however, be noted that Kant is primarily concerned with the question of the finitude of the universe in time, not of pure time. He feels that there are equally compelling reasons for believing the thesis that the universe has had a beginning, and the anti-thesis that it is existing forever. His argument for the thesis is that, if the universe did not have a beginning, there would be an infinite period of time before any event, which is absurd. The argument for the anti-thesis is that, if the universe had a beginning, there would be an infinite period of time before it, so why should the universe begin at any one specific time ?

It is to be pointed out that both the thesis and the antithesis are based on the underlying assumption that time

is unlimited, that time continues forever, whether or not the universe existed forever, that different times are parts or delimitations of a single unlimited time. Kant seeks to establish that this conception of time is inapplicable to the universe itself, for it is a part of our cognitive apparatus for perceiving the world. Time, Kant says, is essential for our experience of things in the world, but we get into trouble if we apply it to anything which transcends experience.

Patañjali's view appears to be very close to Kant's idea of time as an apriori form of apperception. Infinite time, Vyāsa comments, is a nonentity, because it is only a construction of the understanding (buddhinirmāna)<sup>2</sup>. The phenomenal changes are intuited by our empirical consciousness as constituting a series of antecedent and consequent events. This is conceived by the understanding as order in time. The time-series, then, is a schema of the understanding for representing the course of evolution. Hence, to our empirical consciousness the time-series appears to have an objective reality and to form a continuum<sup>3</sup>.

It may, however, be observed in this connection that Patañjali's view seems to be closer to Buddhist Kṣaṇikavāda, according to which, kṣaṇa, the shorter-most indivisible time-particle, is the only entity in the universe which is a non-construction. Thus for the Buddhist and for Patañjali

ksana, which may also be called the mathematical point-instant, is a reality and substantial time a fiction. For the realist, on the other hand, the mathematical point-instant is a fiction and substantial time a reality<sup>4</sup>.

The problem of the relation of time and the universe has had a long history<sup>5</sup>. It can be traced as far back as to Philoponus of Alexandria in the sixth century A.D. Kant's version of the first antinomy may, therefore, be said to be an echo of the ancient arguments for a beginning of the universe and the arguments of the opponents favouring the other side of the debate.

Philoponus accepted Aristotle's views on the concept of infinity to turn them against their author. As Aristotle says, "... infinity exists through one thing always being taken after another, what is taken being always finite, but ever other and other"<sup>6</sup>. Infinity, in his opinion, is connected with a process; its being is always in a process of coming to be or passing away. Aristotle defines infinity in terms of finitude; it is an extendible finitude. It does not mean all-embracing. It is, on the contrary, what has always something outside it.

Aristotle's finitist account of infinity has two implications<sup>7</sup> - (a) that infinity is potential and never actual; (b) that it can never be traversed. But these two

restrictions on infinity spells a trouble for Aristotle. In Aristotle's opinion there is no beginning for time, motion and the universe. But then there has already been an infinity of by-gone days. This would be an actual infinity. Moreover, there would have been the infinite set of past days that have been traversed. Hence it is to be admitted that in a beginning-less universe the infinity of past days would be both actual and traversed. With this argument Philoponus defended the Christian belief for a beginning of the world.

But the question might arise : what exactly is the difficulty with regard to an actual and traversed infinity ?

The supposed difficulty is that if an infinity of days had to pass before the arrival of today, then today would never arrive.

The objection against an actual and traversed infinity of past days seems to be connected with the notion of counting. If the universe had no beginning, then the count of days before today should have been infinite. But to count an infinity seems to be an impossible task.

It might be contended that the objection overlooks the difference between counting and traversing. Counting requires a starting number, viz, 1. But an infinite number of past days in a beginningless universe involves no starting day. In other words, those who postulate a beginningless universe do

not envisage a first day. So a beginningless universe need not be subjected to counting for the lapse of an infinity of past days.

St Thomas Aquinas<sup>8</sup>, influenced by Aristotle as well as by Christian theology, maintained that it was not possible to prove demonstratively that the world was not existent for ever; the theory of creation, he said, could be held by faith alone. He also argued that it was logically possible for the universe to have been created by God out of nothing and to have existed from all eternity. In this way St Thomas Aquinas sought to compromise between his Christian belief in a God-created world and Aristotle's view of a beginningless world.

St. Bonaventure<sup>9</sup>, a contemporary of Aquinas, was among those medieval philosophers who rejected the view above. Against the idea of a beginningless universe, he maintained that the infinite could not be traversed. In an eternal universe an infinite number of celestial revolutions must have taken place; hence the present day could not have been reached.

Kant's thesis against the possibility of an infinity of past events seems to be based on a similar sort of reasoning. This conception of infinity, Russell<sup>10</sup> pointed out, is objectionably psychologistic; for infinity has been taken for

endlessness. In the modern mathematical theory of infinity, classes or sets, which are infinite in number, are given all at once by the defining property of their members, so that there is no question of completion by successive synthesis. But Kant's argument cannot be so easily disposed of. For it does not conflict with the mathematical concepts of infinite sets and sequences; it rejects the possibility of an infinite sequence of actual events.

It might be urged that Kant's argument would apply equally to the infinite sequence of future events. The situation between past and future events seems to be symmetrical, the present being an event somewhere in a sequence of events that has neither a beginning nor an end. An infinite sequence of past events is an open set with no first member, and an infinite sequence of future events is an open set with no last member.

But it might be pointed out that there are significant ontological differences between the past and future infinite sequences of events. An infinite sequence of past events seems to have left, in principle, an infinite number of traces, whereas no such possibility can be attached with the concept of an infinite sequence of future events. The events in a past sequence have actually occurred. Hence an infinite sequence of past events must be actually infinite. An infinite sequence of future events, on the other hand, has not yet

occurred. Hence it can only be potentially infinite.

It seems possible to associate an infinite sequence of past events with the sequence of negative integers ending with  $-1$ , just as a potentially infinite sequence of future events can be enumerated as  $1, 2, 3 \dots$  and so on indefinitely. This seems to repudiate Kant's objection to the possibility of an infinite sequence past events.

But this is the reverse of the way in which actual events occurred. For we can enumerate the events in such a sequence by counting them backwards i.e., by beginning with  $-1$  instead of ending with it. If it yields a potentially infinite sequence, that does not represent the way in which actual events occurred. Moreover, if the number of future events, that occur in sequence following the present, can never become actually infinite, because at each stage the number will remain finite, then how is it possible that the corresponding sequence of past events that have reached the present be actually infinite? It is to be admitted then, that Kant's thesis with regard to the beginning of the world is not refutable so easily.

Kant's antithesis argument seems to be a causal one. It is argued that time or the series of events cannot have a beginning. All the events that we perceive or remember are or have been preceded by other events. So it is difficult

for us to conceive a first event. A first event being the first, could not have a prior cause, and hence could not occur. Kant says that this applies also to a thing which is supposed to be self-caused. 'Self-caused' means 'uncaused'; so a self-caused thing also cannot occur. Kant seems to suggest that it is non-sense to say that once premundane time ceased to be and the world began. As regards this question, Kant is nearer the Leibnizian point of view. In Leibniz's relational theory, time is a construct out of temporal relations among events. He denies the existence of absolute space and absolute time. So it makes no sense to say that there was a premundane empty time before the creation of the world. It is equally nonsense, Kant says, to suppose that the world might have begun or created earlier. Following Leibniz, Kant says that a beginning of the world involves the prior existence of an empty time. But we do not have any experience of a time as entirely empty of content, just as we do not have any experience of the completely void or empty space. As there is no empirical evidence for its existence, Kant argues, premundane time could not exist.

Someone might argue that it is possible to show the evidence of the existence of empty space. One can put an object in a given place, thus establishing the existence of the occupied space and then remove the object to show the empty space. But a period of time cannot in this way be



filled in and then emptied; for periods of time do not last through time as regions of space do.

Shoemaker<sup>11</sup> has argued to show that we could have evidence for the existence of empty time. But it should be pointed out that these are evidences only for the existence of intramundane space and time. (Shoemaker's argument will be discussed in Chapter 8).

But that does not put us to the side of the anthesis of Kants' argument. From the impossibility of pre-mundane time the impossibility of a first moment and a first event does not follow. There does not seem to be any conceptual difficulty in allowing that there was a first time or moment. It could then be said that the first event occurred at the first moment. Time, according to Kant, does not undergo any change<sup>12</sup>. For it is that in which succession or coexistence can be represented. That is why Kant rejects the possibility of a first time. But from the assertion that time should not be regarded as an occurrence or happening, it does not necessarily follow that there could not be a first time.

Kant denies the possibility of a first event in the following manner. From the relational theory of space and time he derives the premise: 'Empty time is a non-entity. From this he draws the conclusion: 'There cannot be a first event or a beginning of the world'. The conclusion does not follow from the premise without the underlying assumption

that 'the beginning of anything whatsoever must be preceded by an empty time in which the thing is not existent'. The beginning of the world must therefore be preceded by an empty premundane time. But premundane time is a non-entity. So the beginning of the world is impossible. But Kant does not justify his assumption. So it can be said that his antithesis argument rests on the illegitimate conclusion that there cannot be a first event or a beginning of the world.

But from his premise, 'There cannot be a premundane time' Kant could have inferred that 'The first event occurred at the first time'. It should be added that according to the General theory of Relativity of Einstein just as one cannot talk about events in the universe without the notions of space and time, so it is equally meaningless to talk about space and time outside the limit of the universe. This new understanding of space and time has revolutionized our view of the universe. This universe is now conceived as dynamic and expanding, that seems to have begun at a finite time with the Big-bang singularity and might end at a finite time with the Big-crunch singularity<sup>13</sup>.

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"Time present and time past  
Are both perhaps present in time future,  
And time future contained in time past.  
If all time is eternally present  
All time is unredeemable.  
What might have been is an abstraction  
Remaining a perpetual possibility  
Only in a world of speculation".

— T.S.Eliot

## CHAPTER 6

### The Unreality of Time : McTaggart's Paradox

McTaggart's argument<sup>1</sup> against the reality of time is quite different from the other arguments that we have discussed so far. His argument turns on the features peculiar to time, that is, on the distinction of time into past, present and future, whereas the other arguments focus on the difficulties of continuity and infinity.

McTaggart's analysis of the concept of time involves both a positive and a negative thesis. In the positive thesis he shows that we conceive of time in two fundamentally different ways<sup>2</sup> :

First, we conceive of time in a dynamic or tensed way in which events are determined as being past, present and future. But these events get continually changed in respect

of these tensed determinations. Thus what is present now becomes gradually past, while that which was future becomes present. In the process of temporal becoming past events become more and more past and future events less and less future. The event 'death of Queen Anne' was at some time in the far future, gradually it became present, and then it became past. This is to be called as the dynamic conception of time.

But we conceive of time in a static or tenseless way in which the temporal relations of precedence and succession between events are expressed in timelessly true or false statements. The statement 'The battle of Hastings occurred before the battle of Waterloo' is a **permanent truth, for the** relation 'earlier-later' is a fixed relation that can never change.

These two kinds of temporal facts have been named by McTaggart as the 'A-series' and 'B-series' of events respectively. The pastness, presentness and futurity are referred to as A-determinations and the temporal relation of precedence and succession as B-relation.

For McTaggart both the A-series and B-series of temporal facts are essential for the reality of time. As he says, "...we never observe events in the time except as forming both these orders"<sup>3</sup>. To deny the B-series is to conceive

of a time which admits of no distinction between earlier and later time - this is a conceptual absurdity. But the B-series is not sufficient for our conception of time, because with events of the B-series there is no change. For example, if P is earlier than Q, it is earlier forever. The relation of earlier and later is permanent. In McTaggart's opinion, time essentially involves change and all change occurs only in connection with the events of the A-series. So, McTaggart concludes, without the A-series there would not be any time at all<sup>4</sup>. The B series is not sufficient to constitute time for which change is so essential.

McTaggart then wants to show that the B-series logically presupposes the A-series. The temporal relation earlier than (or later than) can be defined in terms of the A-determinations of the events. If P is past, Q is present, then it is established that P is earlier than Q. McTaggart says that events having no A-determinations could not have B-relations between them.

According to McTaggart, the A-series is more fundamental. The B-series is a time series only because its member-events form an A-series of past, present and future events. If we remove the A-series from the nature of time, we are left with a non-temporal B-series, which may be termed as the C-series. The A series, McTaggart says, cannot be derived from any other series, but the B series can be derived from a union of the



A series with a C-series. The C-series here stands for a series whose generating relation is non-temporal, such as the series of integers. Let us illustrate this point : if we correlate a present event in the A-series with one of the integers such as 0, and then correlate the past and future events in the series with the negative and positive integers respectively, a B-series will be formed owing to the generating relation of earlier (or later) than between them. An event X is earlier than an event Y, if the integer with which X is correlated, is less than the one with which Y is correlated. McTaggart's analysis seeks to show that the B-series can be formed out of an A-series with a C-series; so the A-series is more fundamental<sup>5</sup>.

Having thus established the necessity of the A-series for time, McTaggart attempts to demonstrate the contradictory, and therefore, unreal nature of this series, thereby establishing the unreality of time itself. It has been pointed out by McTaggart that A-determinations are changing relations or properties of events. An event of any one of these determinations will also have the other two. But the temporal predicates, past, present and future, are incompatible and yet to every event all of them apply. Some one might reply, however, that a particular event may have all the three determinations only successively. For example, an event M has been future, will be past and is now present. But, in McTaggart's opinion, this is not at all a solution; for explaining away the alleged contradiction in the A-series we

have postulated a second-order time-series. The event has all these determinations successively at moments of time in the second-order time-series. For we are meaning that, M was future at a moment of past time, will be past at a moment of future time and is present at a moment of present time respectively. This involves either a vicious circle or a vicious infinite regress. For the second-order time-series is itself a time-series, its members which are moments of time, must also form an A-series, that is to say, must have mutually incompatible temporal determinations. In this way, in order to get rid of contradictions by reference to higher and higher orders of time series, at every step we are left with a contradictory A-series. As Gale puts it : "The curse of contradiction" pursues us down this infinite regress, like a sort of baton that each A-series passes on to the next"<sup>6</sup>.

McTaggart is a follower of the Hegelian idealistic tradition. On the idealistic principle the real is rational and it cannot involve any contradiction. Hence reality cannot be characterised by the contradictory A-series, and since the B-series presupposes the A-series it will not do either. Time and change, McTaggart asserts, require the A-series. The unreality of the A-series, therefore, implies the unreality of time and change.

This, in short, is McTaggart's celebrated paradox of time. Subsequent philosophers of the twentieth century, in their

attempts to find a solution, felt that like the great Zenoian paradoxes McTaggart's paradox of time too admits of no simple solution.

Static and Flowing Time in the Philosophy of Iamblichus :

Iamblichus<sup>7</sup>, a neo-Platonist from Syria in the 4th century A.D., distinguished between a static and a flowing time. He relates the idea of time with the idea of a changing 'now'. It is the flowing time, he says, that is divisible into past, present and future. This conception seems very close to the modern one. The static time is elevated above the sensible world. It does not admit of the divisions into past, present and future. The idea of flow or passage does not apply to the static time. Hence it is immune to the paradox of time. Iamblichus' conception is far away from the detailed and intricate argument of McTaggart and much more Platonic. However, in McTaggart's distinction between the static and dynamic aspects of time we can hear a faint echo of Iamblichus' view.

G.E. Moore's Refutation of McTaggart's Theory of Time :

Moore<sup>8</sup> has attempted to repudiate McTaggart's theory of time by an appeal to commonsense facts. If time is unreal,

Moore contends, nothing is past, present and future, nothing is earlier or later than anything else; this amounts to saying that there are no temporal facts. But is it not true that someone is writing at the present moment on this paper? So when McTaggart says that there are no present, past and future facts, his argument entails a false statement; hence, by the rule of modus tollens his arguments can be proved to be false.

It may be remarked that Moore's argument begs the question. The reality of temporal facts is the very question at issue. Hence Moore's attempt fails to locate and hit the core of McTaggart's argument.

McTaggart's paradox of time leads us to admit, against our commonsense belief, that time is unreal. While discussing Zeno's paradoxes of motion, we found that Zeno had constructed his paradoxes with the metaphysical aim to show that reality has a timeless existence. He did know that arrows do fly and a fast runner does overtake a slow runner. Yet he wanted to show that change and becoming are illusory. Had he not been predisposed to the metaphysical aim, he would have realized that there was something wrong in his logic. Similarly, we feel that something has gone wrong in McTaggart's argument for the unreality of time. So we propose to submit it to a closer scrutiny, and to trace the underlying assumptions, if any, that led him to his cherished conclusion that time was no dimension of reality.

McTaggart's Paradox : A Critical Review :

McTaggart's arguments appears to be based on the assumption that an event continues to be; that it never ceases to be an event. The event 'the death of Queen Anne' was always, and will always be. It changes in one respect only : it was at one time future, then at one time it became present, then it became past, and gradually will become more and more past. But the event will never cease to be.

Hence, McTaggart argues, every event must have three incompatible determinations - past, present and future. He seems to be correct in asserting that the attribution of pastness, presentness and futurity to the same event leads to a contradiction, unless they are attributed successively.

What really happens when we attribute them successively ? On the first level, it is specified that each event is past, present and future not simultaneously, but at different moments of time. On the second level, it is specified that each moment has these attributes at different higher level moments of time. It follows that none of the attributions leads to a contradiction. But McTaggart claims that since there is an infinite number of higher and higher levels of predication, the first level of predication never escapes contradiction.

McTaggart's inference should be invalid. For his premise is : The attribution of pastness, presentness and futurity to the terms of any series leads to a contradiction unless it is specified that they have them successively. From this McTaggart draws the conclusion **that,** the attribution of pastness, presentness and futurity to the terms of any series leads to a contradiction which is subsequently resolved by specifying that they have them successively.

But the conclusion does not follow from the premise. For the specific form of the argument is as follows :

p, unless q.

∴ p.q.

But logically 'p, unless q' does not entail 'p and q'.  
 p, unless q  $\equiv \sim p \vee q$ ; hence  $\not\vdash (\sim p \vee q) \supset (p \cdot q)$  : this statement is contingent and not a logically necessary statement. So  $\sim p \vee q$  does not entail p.q. It might be urged, on the other hand, that the infinite regress of temporal predication, as shown in McTaggart's analysis, is a regress of analysandum and analysans; not of contradictions and resolutions. So the charge of viciousness does not stand.

McTaggart further assumes that there is a hierarchy of levels of moments, that in order for a moment to be present, it must occupy a higher level of present moment. So he indirectly admits that presentness inheres in the first-level

moment only when it is at a second-level moment, which is also present. But it would be more parsimonious to say that presentness inheres in the first level moment at present. This would mean that presentness inheres not only in the moment but also in its inherence in the moment. In this way one could avoid the infinite regress of inherence of presentness in higher and still higher levels of moments.

McTaggart has also assumed that events occupy moments. This is not a self-evident assumption, nor is it logically necessary. There is no contradiction in the idea that presentness inheres in an event. So it is possible to do away with different levels of moments along with the first level of moments itself.

There is still another assumption in McTaggart's argument, that the temporal predicates are predicated by a tenseless copula. But the present tense sentence 'E is present' conveys the information that E is now present, rather than E was or will be present. But if this presentness is predicated tenselessly, for example, 'E is (tenselessly) present', the detensed sentence does not convey the full information that our ordinary language bears. For it does not indicate whether E was present, or is now present, or will be present. But in ordinary discourse, in the tensed sentence 'E is present', 'E' stands for an event, 'present' stands for the property of 'presentness', and the present-tense copula

'is' stands for the present inherence of the property of 'presentness' in the event. So it might be asserted that tensed sentences do not imply any regress. A regress ensues only if these sentences are analysed in terms of tenseless predication of pastness, presentness and futurity.

In McTaggart's thesis we find a third series, the C-series<sup>9</sup>, which we misperceive as a temporal series. It comprises an ordered series of events with the basic relations of 'inclusive of' and 'included in'. These two basic relations of this series are transitive and asymmetrical. They can come before or after other members in the series, as numbers in the number series. It should be pointed out that the C-series does not play a material part in McTaggart's actual argument. But it has an important bearing on his idealistic conception of reality. McTaggart is not a monist in Bradley's sense. Reality, according to him, consists of a timeless C series of ordered events. But McTaggart's account does not explain how we get involved in the illusory conception of the temporal A-series in place of the non-temporal C-series.

Finally, McTaggart's argument is based on the fundamental assumption that the occurrence of an event is itself an event. But events happen, and do not exist or undergo any kind of change. If time itself is conceived as a process in time then the infinite regress of the McTaggartian type seems to be unavoidable.



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## CHAPTER 7

### The Tenseless Theory of Time

We have noticed in the previous chapter that McTaggart's main contention has been that the A-Series of temporal facts involves contradiction. A large number of twentieth century philosophers have tried to show that the reality of time does not require the A-series. They do not of course deny the reality of time; but they refuse to accept the dynamic aspect of time. They maintain that events are not really past, present or future. So the question of an event being changed from pastness to presentness, or from presentness to futurity does not arise. According to these thinkers, events are ordered in permanent B-relations of simultaneity, precedence and succession. These relations between events are describable in a tenseless language. This view is known as the tenseless theory or B-theory of time. The tenseless theory alone, these thinkers hold, can save time from the McTaggartian charge of a vicious infinite regress.

The B-theorists have advanced two different kinds of arguments to show that the temporal determination of events as past, present and future are subjective. The first kind of arguments is a priori, since it is based on a conceptual analysis of the ordinary concepts of temporal determinations. The B-theorists claim that the very meaning of present (or past or future) is such that an essential reference is made to a subject.

In the empirical kind of arguments, on the other hand, the B-theorists seek support from the discoveries of modern science of their claim about the mind-dependency of temporal determinations. Russell, Smart, Quine, Grunbaum with many other thinkers have argued for this theory, while Broad, Reichenbach, Prior, Gale, Schlesinger have offered arguments to repudiate this view.

#### Linguistic Approach of the B-theorists

Bertrand Russell was the chief upholder of the tenseless theory of time. Since 1903 when his The Principles of Mathematics<sup>1</sup> was first published, the issue turned mainly on the translatability of contingent tensed statements into tenseless statements about permanent relations between events. The B-theorists have tried to prove that tensed A-expressions are translatable into tenseless expressions of B-relations

between events. An event is not past, present or future intrinsically; it is merely earlier than, simultaneous with or later than some other chosen event. As Nelson Goodman puts it :

"The past, present and future name no times. Rather the 'is past at', 'is present at', and the 'is future at' are tenseless two-place predicates that may respectively be translated by the tenseless predicates 'is earlier than', 'is at' and 'is later than'."<sup>2</sup>

The chosen event, the B-theorists say, is either a linguistic event or a mental event. A-expressions are reducible to B-expressions either by (A) Linguistic Reduction or by (B) Psychological Reduction. It is said that A-determinations involve a reference to a subject either as a language-user or as a perceiver. So if there were no language-users or perceivers in the world, there would still be a B-series of time, but there would not be any A-series.

(A) Linguistic Reduction : Token Reflexive Analysis :

According to the B-theorists, to say that an event occurred or will occur, simply means that it occupies a time earlier later than my statement about it. That is to say, an A-statement asserting a particular A-determination is

situational; it signifies the speaker's temporal relation to the event reported by his statement. The B-theorists as linguist philosophers accept Hans Reichenbach's<sup>3</sup> token-reflexive analysis of statements. By 'token' Reichenbach means an individual sign. A token-reflexive word or sentence is one every token of which refers to itself. Hence the statement 'M is past (present or future)' can be analysed into the statement 'M is earlier than (simultaneous with, later than) this token'. Here 'this token' refers to the occurrence of the entire sentence within which it occurs.

The most sophisticated token-reflexive analysis of A-statements has been developed by J.J.C. Smart<sup>4</sup>. The statement 'The boat was upstream, is level, will be downstream', can be analysed, Smart says, in the following manner: the occasions on which the boat is upstream are earlier than this utterance, the occasion on which it is level is simultaneous with this utterance, and the occasions on which it is downstream are later than this utterance. Smart claims to have devised a tenseless language in which there are no tensed copulas. In such a language the words 'earlier than', 'later than' and 'simultaneous with' are used in combination with a non-temporal copula and the expression 'this utterance'.

It should be noted that 'this utterance' in the above analysis has not been used in its ordinary tensed sense,

where 'this' would mean 'the person, thing or idea present'<sup>5</sup>. Smart has used it in a tenseless way, that is directly self-referential.

The Token-reflexive analysis, Smart contends, reveals the latent anthropocentricity or linguocentricity of A-expressions; that is to say, these expressions refer to a token produced by some person or language-user and are without cosmic significance. As in this analysis all tensed verbs and copulas have been eliminated, the detensed statement describes a B-relation between an event and the occurrence of the sentence-token.

But it may be urged that when a statement, for example, 'M is past' is rendered as 'M is earlier than this token', the latter does not fulfil the requirement of an ideal tenseless language. In such an ideal language the sentences occurring in it must be freely repeatable. While the B-theorists seek to create an ideal language by eliminating tensed verbs and copulas, there is every room to doubt whether they have succeeded in doing so. For both 'M is Past' and 'M is earlier than this token' are subject to the same temporal conditions for making true statements; that is to say, they are to be used later than the occurrence of the event M. But to achieve free repeatability an A-statement must be reduced to a genuine B-statement expressing a permanent B-relation between two events.

It may also be urged that when a statement, for example, 'This chair is now red' is rendered as 'The chair's being red is (tenselessly) simultaneous with this token', the two sentences do not mean the same thing. The latter statement entails that there exists a token, but the former does not. Statements having different entailment relations cannot have the same meaning. This is evident from the fact that the sentence 'The chair is now red even though no token occurs' is not self-contradictory. It is contingently false. Our ordinary conception of A-determinations do not contain any reference to a language-user or a linguistic token. There is no contradiction in conceiving of the world devoid of language-users and linguistic tokens. In such a world a chair may exist being red without any linguistic-token corresponding to it. Most of the physical events, as Moore<sup>6</sup> says, are percipient-independent. This entails that most of the physical events are utterer-independent. So the chair may be red now, though nobody perceives it now and no sentence - token occurs. This shows that the statement 'The chair is now red, though no token occurs' is only contingently false. But a statement like 'The chair's being red is (tenselessly) simultaneous with this token, even though no token occurs,' is utterly self-contradictory.

Date-Sentence Analysis of Tensed Sentences :

Some B-theorists<sup>8</sup> translate A-statements into B-statements by ascribing tenselessly a date to the event reported by the original statement. 'It is now raining' can thus be rendered, for example, as "Rain is at December 20, 1992". It has been claimed that this kind of rendering expresses a timeless B-relation between the event and the date. These thinkers believe that language can be detensed in this way without loss of meaning, and that A-determinations are not intrinsic to events. In modern mathematical logic we find such tenseless ascriptions of date. For example, 'There is a sea-battle, which is at December 20, 1992'. Here the 'is' of the existential quantifier, and the 'is' of the characterising copula are tenseless. Quine<sup>9</sup> claims that this tenseless mode of existential quantification provides the most suitable kind of description of Minkowskian<sup>10</sup> four-dimensional space-time as employed in the theory of relativity. On this theory the whole history of physical phenomena is laid out as a changless whole devoid of any distinction between past, present and future.

Richard Gale<sup>11</sup> has an argument against the date-sentence theory. He says that a date-sentence does not indicate whether the described event is past, present or future; so this kind of analysis fails to analyse tensed sentences. But this argument of Gale begs the question, for it assumes that



tensed sentences refer to events with A-determinations. But the detensers precisely deny this very assumption.

Against the detensers it may, however, be urged that a tensed sentence like 'The boat is level now' is true, if, and only if, it is uttered simultaneously with the event referred to. But a tenseless date-sentence like 'The boat is level, on July 20, 1992' has temporally unrestricted truth-conditions; if this sentence is once true, it is true on every occasion of its utterance. Since the above two kinds of sentences have different truth conditions, it follows that the date-sentence is not the proper analysans of the tensed sentence.

(3) Psychological Reduction : Ego Centric Particular Analysis :

Russell<sup>12</sup> argues that A-determinations involve a B-relation to a perceiver or utterer. So an A-statement such as 'The chair is now (was or will be) red' can be rendered as 'The chair's being red is (tenselessly) simultaneous with (earlier or later than) this', in which 'this' is a logically proper name for a sense-datum experienced by the speaker at the time he makes this utterance.

But it is to be noted that a sense-datum is a mental event which, in principle, cannot be experienced by anyone other than the person who is reporting it. So it can be said

that A-determinations contain a reference to a mental event. This kind of analysis of A-determinations can be called ego-centric particular analysis. It seeks to establish that A-determinations are psychological, and that the temporal determinations of an event is analysable in terms of B-relations consisting of expectation, perception and memory of a percipient.

But it may be urged that this kind of analysis renders communication impossible. The 'this' here is a sense-datum private to the speaker. Only the speaker can know the referent of 'this'. So it seems impossible for the hearer to know the event which is simultaneous with the chair being red.

From the discussion above, it appears that both the (A) token-reflexive and (B) ego-centric particular analyses distort the meaning of our ordinary temporal expressions. Ordinary language involves a realistic attitude towards A-determinations, which is not satisfied with these sorts of analysis.

A-theorists agree with McTaggart as regards his positive thesis that time involves the A-series of temporal facts and that the A-series is more fundamental. But they refuse to accept his negative thesis, that this series involves a vicious infinite regress. They have also questioned the validity of the reduction of A-statements into B-statements.

They have distinguished the time-words of the A-series and B-series by three prominent features :

(i) the words of the A-Series imply a time-flow --- events flowing from the future through the present to the past<sup>13</sup>. No such flow is associated with the time-words of the B-Series in which events are changelessly connected with one another. Bergson<sup>14</sup>, perhaps, in anticipation of this kind of conception, denied that there can really be any static temporal series at all. He said that if we try to conceive time as a static geometrical line, we are really thinking of space;

(ii) the most prominent feature of the time-words of the A-Series is that they are indispensable in our expressions of emotions and actions. If one utters with a sigh of relief, 'Thank goodness , it's over'<sup>15</sup>, then the utterance expresses the fact that someone is pleased that on such and such date something is over. It does not merely mean that the unpleasant thing is earlier than the utterance on such and such date. B-statements fall short of expressing these mental attitudes;

(iii) the third feature has proved to be the most controversial one. It has been claimed by the B-theorists that the words 'past', 'present', 'future' and 'now' are all defineable, in terms of 'this utterance' or 'this token'. But the A-theorists contend that these kinds of rendering do

not fulfil all the requirements of an ideal language<sup>16</sup>.

Mellor's thesis : Recently Hugh Mellor has upheld McTaggart's idea that the A-series involves contradiction. He has further admitted that it is not ultimately possible to reduce the notions of past, present and future to simply those earlier and later relations. In Mellor's opinion tense is indispensable for the expression of any phenomenon which is backward or forward looking. By 'tense' Mellor does not mean merely the grammatical one; tense involves anything that can be expressed by tensed utterances. As he puts it, "what I call tense need not be marked by modifying verbs"<sup>17</sup>. By 'tense' Mellor means, "the present, and temporal distances from it, past and future"<sup>18</sup>. By 'tensed' statements he means those that say how near or far from the present, past or future something is.

Mellor does not think that tense is subjective. Past, present and future tensed statements, he says, are objectively true or false independently of our consciousness. Mellor's thesis is based on the contemporary philosophical theory that meaning has to do with truth conditions. He maintains that the truth conditions for tensed utterances can be stated in tenseless terms. As he says, "their tenseless truth conditions leave tensed facts no scope for determining their truth values. So in reality there are no such facts"<sup>19</sup>.

Mellor's thesis is against tensed facts; though tensed utterances are indispensable, there are no such facts; the necessary and sufficient truth conditions required for such expressions, Mellor says, are tenseless facts : 'e is past' is true, if, and only if the expression using the token 'e is past' is after e. For determining the truth of the tensed sentence-token 'e is past' no reference to tensed facts is required. That role is performed by tenseless facts. So the hypothesis of tensed facts is redundant.

Mellor contends that, if for determining the truth of any tensed statement, reference to tensed facts were required, then that would involve an infinite regress. To say, for example, " 'e is past' is true, if and only if e is now past", does not end the matter there. For it will then need further clarification : that, what has been said is true, if e is past now, and again that will be true, if e is past now now, and so on indefinitely. Thus Mellor wants to show that any attempt to state the truth conditions in a tensed way, but also conclusively, is bound to lead to an infinite regress. But if we want to stop at any stage and give a definite answer, that will produce a contradiction. For if the sentence is true at some present time, it must be false at some other time.

But Mellor's argument seems to be misleading. A parallel argument might be formulated to point out the

mistake implicit in the argument. It might be said that something is a triangle, if it is trilateral. So someone might urge that this is the truth condition for the statement that something is a triangle, that this is all that is required for the truth of the statement. So it might appear that there is no scope for any reference to any other fact such as the objectivity of triangles. But if somebody claims that it is an objective fact about something that it is a triangle, or about an event that it is past, then in order to rule them out as facts, something more is necessary than merely to state the sufficient and necessary truth conditions for such statements.

With regard to Mellor's contention that any attempt to state the truth conditions conclusively leads to an infinite regress, it might be said that this involves a failure to see tensed utterances for what they are. When someone says that 'e is past,' there is no indefiniteness in the utterance. There may, of course, be indefiniteness in some special cases, when we come across a tensed sentence written down without our knowing the circumstances in which it was written. But when the circumstances of a tensed utterance are taken into account, there remains no indefiniteness as to its meaning.

Similarly, it may also be said that McTaggart fails to see the obvious properties of token-reflexive expressions. We do not find any difficulty in understanding

token-reflexive expressions. There would of course be real trouble if these expressions would require, as Mellor's thesis suggests, further token-reflexives in their statement. For this would bring us to the beginning of an infinite regress.

Michael Dummett<sup>20</sup> has opined that the objection that McTaggart was blind to the properties of token-reflexives misses the point and involves a grave misunderstanding. He thinks that McTaggart was quite aware of the peculiarity of temporal token-reflexives. That is why he did not produce similar paradoxes with regard to 'here' and 'there', 'I' and 'you'. It is to be admitted that there is an asymmetry between time and space. One can change one's position in space, but the same is not possible with regard to time. This asymmetry of time and space gives temporal token-reflexives a greater importance in our conception of time than spatial token-reflexives have in our conception of space. Token-reflexive expressions enter essentially into the statement of the pastness, presentness or futurity of events. Dummett says that the spatial token-reflexive expressions are not essential to the description of objects in space.

But this part of McTaggart's argument, according to Dummett, demonstrates the reality of time, not its unreality. For it shows that time cannot be reduced to anything else. He alleges McTaggart of taking for granted that there must be a complete description of reality. Since we cannot

describe temporality without using token-reflexive expressions, there can be no such complete description. From this McTaggart concludes that time must be unreal. But this conclusion, Dummett thinks, is self-refuting. As he puts it,

"Clearly even if the world is really static, our apprehension of it changes. It does not help to say that we are even mistaken about what we think we see, because the fact would remain that we still make different such mistakes at different times"<sup>21</sup>.

#### The Empirical Arguments of the B-theorists

B-theorists have advanced empirical arguments also in favour of their thesis that temporal becoming is subjective. These arguments are based on the findings of modern science, especially on the theory of relativity. Before we discuss them let us try to understand the concept of 'becoming' or 'temporal passage'<sup>22</sup>.

In his famous novel The Magic Mountain, Thomas Mann writes, "Time has no divisions to mark its passage, there is never a thunderstorm or blare of trumpets to announce the beginning of a new month or year. Even when a new century begins, it is only we mortals who ring bells and fire off pistols"<sup>23</sup>.



The Passage of Time :

The notion of temporal passage, however, is deeply embedded in our commonsense conception of time. The expression 'the river of time' signifies this notion of passage. Temporal passage is conceived in two opposite ways :

(i) either, we think of ourselves as moving from the past, through the present into the future;

or,

(ii) events are conceived as coming towards us from the future; they touch us in the present and then recede behind us into the past. This very fact has been articulated by McTaggart as the dynamic aspect of time. The notion of temporal becoming is another way of thinking about the matter. As Grunbaum puts it :

"It is this occurring or coming into being of previously future events and their subsequent belonging to the past which is called becoming"<sup>24</sup>.

Grunbaum admits that becoming is a prominent feature of our temporal awareness. But the question is : Is it also a feature of reality independently of our awareness of it ? Much controversy has centred on this issue.

As a reaction to McTaggart's analysis of time, a large number of twentieth-century philosophers hold that the

transient view characterises time, by misleading metaphors such as 'flying', 'passing' or 'the river of time'. But according to these thinkers, events cannot literally move; they exist tenselessly. The tensed characterisations such as past, present and future are not genuine properties of events. This view leads them to conclude that temporal passage is a myth<sup>25</sup>. There is no such thing as the moving now; time does not move at all.

#### Events and the Time-flow :

It has been already mentioned (in Chapter 2) that the problem of reconciling the notion of temporal passage with the idea of unrepeatability of existence of particular events was first recognized by St. Augustine<sup>26</sup>. In his opinion the past and the future can be recalled or anticipated respectively. So they must exist in some sense. But wherever past and future times may exist, Augustine says, they cannot exist there as 'past' or as 'future'. For by definition the past is that which is no longer and the future is that which is not yet. So, Augustine concludes, if the past and the future are to exist at all, they must exist there as 'present'.

The same kind of puzzlement has been expressed by Moore<sup>27</sup> also. He says that when an event is present, that is a characteristic which the event cannot possess when it

is absent. But an event cannot possess any characteristic when it is not present; so how can an event possess the characteristics of pastness or futurity when by definition it is not present ?

Now, Augustine and Moore were not B-theorists in any sense of the term. On this point, however, B-theorists agree with them. C.D. Broad<sup>28</sup>, as a B-theorist, pointed out that it is misleading to analyse a tensed statement such as 'It has rained' as that there is a 'rainy event' which momentarily possessed the quality of presentness, and then lost it and acquired pastness. Broad means that when an event X is not present, it occupies a moment either before or after my statement about it. Thus Broad claims that an event does not undergo any changes, but it must continue to be. The Battle of Hastings preceded the Battle of Waterloo, hence it must eternally continue to precede the later event; for both events must be eternally at their respective moments. Broad, as a B-theorist, did not recognise any ontological distinction between events. All events, according to him, are equally real and determinate. The past and the future exist no less than the present. But past and future are not essential characteristics of events. With Russell, Broad admitted that past, present and future are analysable into external relations of statements of minds and their objects.

Thus in this theory events are conceived as constituting a linear series along which the subject or consciousness travels. This conception has been described by him in the following manner :

"Along this, and in a fixed direction we imagine the characteristic of presentness as moving somewhat like a spot of light from a policeman's bull's eye traversing the fronts of the houses in a street. What is illuminated is the present, what has been illuminated is the past, and what has not yet been illuminated is the future"<sup>29</sup>.

This theory has in the above way been described and rejected by Broad himself in his later accounts as the 'police-man's bull's eye theory'. He admits that this kind of thinking commits oneself to an infinite regress of time-series. If presentness or the now moves, it must move along the static series of moments which is to be regarded as the first-order time-series. The acquisition and the immediately subsequent loss of presentness or nowness of an event, would then have to be regarded as an event of the second-order time-series. That is to say, we would have to postulate a second time-scale with respect to which the movement of presentness along the first-order time-series is to be measured. Broad thinks that only in this way the notion of temporal passage can be explained<sup>30</sup>.

But this would lead us to postulate an infinite number of higher and still higher dimensions of time. Moreover, it seems to be an ontological wastage that in order to save a particular view of time, one should have to postulate different orders of time.

The notion of temporal passage, however, received vigorous attacks from Smart<sup>31</sup>. Smart alleges that we hypostatise time as we think of it as a liquid on which events float. Smart says that events cannot change; it is only things that can change or become something else. A traffic light, for example, can change its colour from red to green. But it makes no sense to speak of a change to that change. Events only happen. Broad also said that events do not change; but he said that they become; by this he meant that events come into existence. But Smart does not agree with him, for he thinks that events do not come into being; they just occur.

Smart distinguishes events from processes. 'Running a race' or 'fighting a battle' are processes, but 'winning a race' or 'victory' are events that neither do nor do not change. A person's birth, death or marriage are events, but his life is a process. Smart seeks to establish that the concept of change does not apply to events.

But Schlesinger<sup>32</sup> does not agree with Smart in holding that attributing changes to events is to commit a category

mistake. With Smart he admits that an event obviously cannot change colours like a traffic light. But, according to Schesinger, that is no reason to think that it cannot change with respect to a property that it does have at present. It may be said that every event is related in a specific way to the 'now', and is capable of undergoing changes in that relationship. Schesinger does not find any inconsistency in this conception.

However, Smart<sup>33</sup> contends that the notion of time-flow prevents us seeing the world as it is. Our common thinking with regard to events, things and the so-called time-flow is the source of all perplexities with regard to time. As it has been suggested by Smart, we should replace these notions by the Minkowskian idea of a four-dimensional space-time which exists tenselessly. Temporal facts are facts of before and after and of simultaneity. On this view time is very much like space consisting only of unchanging relations among objects and events. These objects and events exist in the tenseless sense of 'exist'. The concepts of past, present and future have significance relative only to human thought. They do not apply to the universe as such.

Smart draws an analogy between 'past', 'present' and 'future' and colour concepts. Each of them is intersubjective as dependent on individual forms of consciousness for their application. They all contain a hidden anthropocentricity.

The concepts of earlier, later and simultaneity on the other hand, Smart says, are non-anthropocentric.

Similar arguments have been constructed by Merleau-Ponty<sup>34</sup> to show that time is subjective. Time, he says, is a function of individual human consciousness; even the notion of an event has no place in the objective world.

M. Ponty anticipates the obvious objections to this claim for the subjectivity of temporal concepts, that events surely took place before there were any conscious beings in this world. It is as well imaginable that events will be taking place even after conscious beings have ceased to exist.

As a phenomenologist M. Ponty claims that the meaning of a concept is to be understood in perceptual terms only. So any claim for the existence or occurrence of events before the existence of conscious beings is to be justified by the verification that can be made of them by conscious beings now. Thus M. Ponty's verificationist theory of meaning gives rise to his thesis that temporal concepts are subjective.

It might significantly be asked, if time is a purely subjective notion, how do we attain a common understanding of time and its passage? The notions of past, present, future are intersubjective notions — we have a common conception of them. M. Ponty says that it is because of the lived present, that we all share, that the intrinsic subjectivity

of consciousness is transcended. The lived present provides a common ground for our individual pasts and futures which are tied to our individual consciousness. But there would be no such temporal concepts without this individual consciousness.

This view of M. Ponty is very close to Smart's view that past, present and future are anthropocentric notions. But this does not conclusively prove that temporal concepts are non-objective.

Let us consider the case of colour concepts. There are some philosophers who maintain that colour is a subjective phenomenon, for the perception of colour of things depend on our sensibility. But colour concepts are intersubjective too. So it appears that when we see a particular colour of a thing, the reason is not entirely within us; there must be some objective basis also. Physics explains that the wave-length of the light reflected from an object is in part responsible for our perceiving a particular colour. In the same way, it can be said that there must be something about time itself for which events are taken as past, present and future. It is obvious that if there were no conscious beings with temporal consciousness, there would be no ascriptions of pastness, presentness and futurity to events. But there would still remain the possibility of such ascriptions by possible conscious beings.



The upshot of the discussion above is that the thesis of the non-objectivity of temporal concepts has been supported by a large number of philosophers. They have offered various arguments in support of their thesis. They have tried to show the inherent inconsistencies the idea of a temporal passage. Some of them appeal to the findings of modern science and to the theory of relativity, to establish the subjectivity of temporal concepts. We shall now consider these empirical arguments.

#### The Ontological Status of Past, Present and Future

Adolf Grunbaum<sup>35</sup> develops his thesis of the mind-dependency of temporal concepts and temporal becoming against his rival thesis that temporal becoming is mind-independent. The central point in the problem of time, according to Grunbaum, is the status of the present; for the past and the future are characterised by him as being before and after the present. So the issue of the mind-dependency of becoming, Grunbaum thinks, turns on the so-called transient 'now'. The 'now' or the present is ordinarily conceived as an attribute of events directly apprehended in perceptual awareness. Grunbaum refers to some relevant scientific facts that must be taken into account in order to determine the status of the present. As commonsense view is scientifically untutored, Grunbaum says,

both of the following physical events are characterised by it as 'occurring now' or 'belonging to the present' : two events are observed at the same time  $t$ ; one of them is a stellar explosion that occurred several million years before  $t$ , but which is seen on earth at  $t$ ; the other event is a flash of lighting, that occurred in a fraction of a second before  $t$ , and observed at  $t$ . Grunbaum thus seeks to establish that presentness of an event, or the simultaneity of two events is only apparent and not real; that is to say, it is not for any physical attribute of an event that we qualify it as belonging to the present. Grunbaum admits that present day commonsense beliefs have begun to allow for the finitude of the speed of light. But he reminds us that commonsense view mistakenly associates absolute simultaneity with the 'now'. But as a matter fact, Grunbaum contends, when a particular human being, say  $M$ , experiences an event at time  $t$ ,  $M$  is conceptually aware of experiencing at that time either the event or any other event simultaneous with it in  $M$ 's reference frame. Thus Grunbaum appeals to the theory of relativity to justify his claim that the nowness of an event is mind-dependent.

But it might be pointed out that the scientific fact referred to here does not lend support to Grubaum's thesis. It is to be admitted that commonsense sometimes mistakenly ascribes presentness to the visual effects now of an event

which in actual reality occurred several millions of years before it. But that does not prove that presentness has no objective basis. The presentness of the actual event can of course be calculated in accordance with the data of the finitude of the velocity of light. So if a human being is experiencing at present a stellar event 10 light years away, it can validly be inferred that the event occurred or was present ten years ago. The relativity theory only suggests that the nowness of a physical event is to be construed relativistically. The special theory of relativity denounces absolute simultaneity of distant events. But that does not entail that physical events lack nowness even in a relativistic sense. So Grunbaum's thesis that nowness is merely a conceptual awareness of one's own experiences, that nowness is mind-dependent, does not seem to have a solid foundation.

Smart, Weyl<sup>36</sup> and Grunbaum and their followers have admitted that temporal becoming is intrinsic to mental events. But mental events are correlated with and causally dependent upon events in the brain. Hence it seems that mental events would come to be and cease to be in our personal experience, while physical events would neither come into existence, nor cease to exist, but would just remain for ever in fixed relationships. Such a view results in peculiar consequences: Let it be supposed that someone decides to drop a stone into a pond; the decision, on this theory, suddenly comes into

being, while the splash on the water caused by stone-throwing would just be. This appears to be an unintelligible situation.

In support of his thesis Grunbaum claims that if nowness were a real feature of reality then physical sciences would make allowance for such notions of presentness in the theories of physics. Against this contention it might be urged that in some branches of science the distinctions between past, present and future are vital. For example, a meteorologist who is engaged in forecasting the weather is concerned about the future, whereas a palaeontologist studying the fossil records on rocks is concerned about the past. Milic Capek has also shown ample use of the notion of present and of its correlatives past and future in the physical theories. So Grubaum's claim seems to be unjustified. It might be added that his theory of the mind-dependency of the notion of presentness, or for that matter of temporal becoming, is a philosophical interpretation of the theory of relativity, which does not provide a complete account of time and temporal consciousness.

It is, of course, true that modern physics, or to be more specific, quantum mechanics has introduced the idea of 'imaginary time'; the Newtonian idea of an absolute time has been abandoned. Time is now a personal concept relative to the observer. In such a conception there is no important difference between forward and backward directions of time,

that is, between the future and the past. This conception, however, recognizes three arrows of time<sup>37</sup> : the thermodynamic arrow — (i) the direction in which entropy or disorder increases;

(ii) the psychological arrow — the direction in which we feel that time passes from the past to the future, so that we remember the past and not the future;

(iii) the cosmological arrow — the direction in which the universe is conceived as expanding.

It has been explained that the psychological arrow of time is determined by the thermodynamic arrow; they point to the same direction. We remember things in the order in which disorder increases. The intact cup is a state of order, while the broken pieces of the same cup represent a disordered state. And we remember the intact cup breaking into pieces, not the pieces gathering themselves together to form the unbroken cup. These two arrows of time coincide with the cosmological arrow of time. That is to say, all the three arrows of time point to the same direction. So this new conception of physics seems to recognise that there is some distinction between the past and the future, and that the past, present and future are not mere subjective phenomena.

An Indian View About the Status of the Present

Grunbaum has asserted that the central point in the problem of time is the status of the present. He has developed the theory of the subjectivity of temporal determinations on the thesis of the non-existence of the present time.

There is an ancient Indian view mentioned and repudiated by the Nyāya thinkers. The view runs as follows : there is no present time, since the present is not identifiable. When a fruit, for example, loosened from a stalk, is falling on the ground, the path through which it has fallen is connected with past time; the path below, which it has yet to fall, is connected with future time. As there is no third part of the path to be connected with the present, there is no present time.

According to some Indian scholars<sup>38</sup> this is a realistic theory that repudiates the existence of the present, but accepts the reality of the past and the future.

But it should be pointed out that the view under consideration is quite similar to that held by Nāgārjuna; the argument is also similar. It appears that the existence of the past and the future have been accepted for the sake of the argument. The aim of the argument seems to deny all the

divisions of time through the denial of the present.

In Nyāya-Sūtra<sup>39</sup> we find a criticism of this view. The Nyāya thinkers realised the importance of conceiving the present as a duration and not as an instant. They have insisted that time should not be understood with reference of space. The Nyāya is a realistic and pluralistic system. Among other objects it recognises absolute time. But the discussion here is about relative or empirical time. Empirical time arises from the association of absolute time with action. In the given case, the action of the falling of the fruit indicates present time<sup>40</sup>. The Nyāya thinkers realised the necessity of conceiving the present as a duration and not as an instant of zero duration. As we have seen, Augustine was also puzzled with regard to the existence of the present for the same reason. If the now or present is taken as an instant of zero duration, time eludes us. Whitehead has conceived the present as a duration. The duration of the present Whitehead says, need not necessarily be same in all cases<sup>41</sup>.

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In Bhartrhari's Vākyapadiya there is a beautiful kārikā as noted below :

Tṛṇaparnālatādīni yathā sroto'nukarṣati. /  
pravartayati kālo' pi mātrā mātrāvatām tathā//kārikā 41 //

:just as the river drives away grass, leaves, creepers etc. so ever-active time too takes away beings, and causes changes in their qualities.

It should be pointed out that, to Bhartrhari Time or Kāla is the power or Śakti of Brahman. It is eternal and unchangeable, yet it is the cause of all changes or motions or orders of the world. The coming into existence and passing out of existence of all things is caused by time alone.

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## CHAPTER 8

### Time, Change, Causality and the World - Process

#### Time and Change :

McTaggart has said that time requires change, and change is to be found only in the A-series. So the A-series is essential for time. There are philosophers who say that time cannot exist without change. Aristotle did not distinguish clearly enough between the dynamic and the static aspects of time. His account<sup>1</sup>, however, presupposes the flow of time from the future, through the present, to the past. McTaggart's charge of contradiction, involved in the conception of a flowing time, have been discussed thoroughly (in Chapter 6). There are some thinkers who have sought to avoid the contradiction by expressing the flowing attributes of past, present and future in a static language. Against them it has been urged that such expressions do not fulfil the requirements of an ideal language (in Chapter 7). Some thinkers have

discredited the notion of temporal flow, especially the notion of presentness, on the basis of the theory of relativity. It has been pointed out (in Chapter 7) that this theory does not give a complete account of time. It may also be pointed out that the Relativity theory relativises the flowing and non-flowing conceptions alike.

It could be said that in some sense the notions of past, present and future are egocentric. To say that some event is past, is to say that it occurred before 'this time', where 'this' essentially refers to an utterer or perceiver. But it does not mean that if there were no conscious beings in the world, there would have been no past, present and future. We could imagine a situation in which there would be no beings with temporal consciousness, but where some events would already be over when some other events are occurring or yet to occur.

Plato admitted that time came into being with celestial motion, for without such motion there would be no days, nights, moments or years. He said that the planets are the bodies which had helped to produce time<sup>2</sup>.

Aristotle too said that time requires change. To quote him :

"But time is not without change, for when we do not ourselves change at all in our thoughts, or fail to recognise that we are changing, we do not think that time has elapsed ... if the now was not a different one, but was one and the same, there would have been no time, so also when it is not recognized as being different, the interval is not believed to be time"<sup>3</sup>.

One might argue that here Aristotle has illegitimately drawn an ontological conclusion from an epistemological premise - that we notice time only when we notice change; therefore, time does not exist without change.

In answer to the argument it might be pointed out that to draw this conclusion from the given premise, two additional premises are required :-

- (i) that changeless time would in principle remain undetectable. This is very close to what Aristotle has actually said;
- (ii) the other premise is verificationist, that it is meaningless to postulate undetectable times. For such undetectable times could not meaningfully be called long or short. Then they could not at all meaningfully be called periods of time.

Shoemaker<sup>4</sup> challenges the premise (i) that without change time could not be detected. He argues that in some

cases changeless periods of time could be detected. The circumstances postulated by Shoemaker are highly complicated. To understand his argument let us imagine a simpler situation in which somebody watches through a narrow window on a windless day. Every thing within this narrow field of vision may seem to be absolutely changeless. In the same way, everybody could report that he has seen everything, even clocks frozen for a while. He might have noticed no changes even within himself. This seems to be a case of a time without changes being detected.

Two objections might be raised against this argument :

- (i) if this changeless period of time is to be experienced as having any duration, the thoughts of the observer will have to change. Even if it be granted that the psychological state of the observer does not change, the propositions by means of which he expresses his mental state will have to change with reference to the 'now', which will keep shifting during the period.
- (ii) it might also be stated that no one can observe that his mind has just become frozen, for such a thought is self-refuting.

Shoemaker's argument postulates unusual circumstances such that there might be some pockets of freeze suggesting the existence of time without change. But none of these

periods of time would be detectable if there were no changes.

As regards the second premise (ii) we might refer to Leibniz's argument that it makes no sense to postulate empty time prior to the existence of the world.

Leibniz<sup>5</sup> criticised Newton's absolutist view that time exists independently of change. According to him, the question, why did God not create the world earlier, makes sense only if the absolutist's point of view were true. For then there would exist a time prior to the creation of the world, and the question of shifting the entire history of the world back to an earlier period of that premundane time would make any sense. But that, in turn, would amount to saying that the Newtonians make God act without sufficient reason. With such arguments as these, Leibniz renders time simply as a relation between events. This view of Leibniz entails that the existence of time requires the existence of change.

Aristotle realised that it is very hard to define time without making some reference to change. In his definition of time he says that time is countable in change in respect of before and after. He also says that if time exists beginninglessly, so does also change. Aristotle's thesis thus appears to suggest that time and change are mutually dependent.



Determinism, Indeterminism and Temporal Passage :

The concept of temporal becoming suggests significant ontological differences between the past and the future. The future signifies a realm of possibilities, while the past signifies a realm of actualities. The future is as yet undetermined; the present is the moment of becoming when the events become determined; and the past is determined. This implies that the past history of any system does not provide enough information as to its future possibilities. But in the deterministic conception of the B-theorists the future is as determined as the past is. It remains unknown due to the limitation of our knowledge. All events are in permanent relations with one another. Thus in this conception, the distinction between the past, present and future is merged into an all-embracing timeless 'now' in which the passage of nature as well as of time is suspended.

Indeterminism, on the other hand, corroborates the unsophisticated commonsense view of temporal passage. The transitional nature of time and the emergence of novelty is closely connected with indeterminism. So any theory about the nature and status of time depends ultimately on the choice between the two rival interpretations of the world-process, that is, between determinism and indeterminism. The emergence of novelty is incompatible with the preexistence of the future. In a dynamic world the future means

potentiality. Modern process philosophers from James to Whitehead have insisted on this fact. Aristotle too insisted that the law of excluded middle is inapplicable to future situations. To recognise the realm of possibilities is to recognise the dynamic or creative aspect of the universe. This is, in Whitehead's expression, 'the creative advance of nature'<sup>6</sup>. And Bergson insisted on the temporal incompleteness of the universe. In a deterministic theory the world is a logically fixed pattern having no room for the passage of time. Indeterminism, on the otherhand, explains the passage of time as the transformation of possibilities into actual events.

In the opinion of the nineteenth century determinists, Laplace and his followers, the affirmation of real novelty is equivalent to the recognition of a miraculous creatio ex nihilo. But Bergson<sup>7</sup> pointed out that the present moment is not a creatio ex nihilo, it is the passage from the past moment to the present one. Whitehead<sup>8</sup> expresses it as the becoming of continuity instead of a rigid timeless implication of the deterministic principle. The individuality of the present moment, that is, its presentness can only be explained by this double feature of novelty and its dynamic cohesion with the anterior phases. In this manner, Whitehead says, the future emerges not ex nihilo, but from a particular present state. Predictability of some of its features can be explained only in this way.

It might thus be said that the full explanation of a present event goes beyond itself. The present event seems to be intelligible with reference to its relation to the past. This shows that the concept of causality is closely connected with the concept of time.

### Time and Causality :

Causality involves succession. But it is not a bare succession of discrete phenomena. The essence of causality consists in the denial of the emergence of the wholly new effect. In other words, the principle of causality asserts the existence of the effect in the cause prior to its origination.

In naive realism of the Nyāya system, however, the effect is non-existent before it is actually produced. It is a new product altogether different from the cause. The effect merely succeeds the cause in time. Our experience does not reveal any causal link or objective necessity underlying the succession of phenomena. Causal relation has thus been reduced to a mere contingent relation in this conception, for which a palm tree could be expected to grow from an acorn.

The empirical outlook of the Nyāya-thinkers reminds us of David Hume. Hume sought to reduce causal order to temporal order. In his view, causality is nothing but the

invariable succession of one event after another. But it might be argued that invariable succession between two events is neither a sufficient nor a necessary condition for establishing a causal connection between two events.

In the Sāṅkhya parināma-vāda the effect is regarded as potentially present in the cause. Parināma is a process of becoming. The effect is a parināma of the cause - it is the cause transmuted. So the effect is not altogether different from the cause. In the process of becoming the cause, through successive transformations, emerges as the effect. In other words, the effect is the cause at a later stage, or conversely, the cause is an earlier stage of the effect. Only a combination of different factors is necessary to bring about the effect. Thus in parināma-vāda causality has been explained in terms of the process of time.

But with these two opposed theories - the asatkāryavāda<sup>9</sup> of the Nyaya-system and satkāryavāda<sup>10</sup> of the Sāṅkhyas, we are placed between the horns of a dilemma. "There is", as Bradley observes, "no escape from this fundamental dilemma"<sup>11</sup>.

Either the effect is different from or  
identical with the cause.

If the former, the existence of the effect remains unintelligible; but if the latter, effectuation becomes a

meaningless process.

According to Bradley, the effect cannot be a development of the cause if it is different from it, and if identical with it, causation does not exist and its assertion becomes a farce. Bradley rejects the idea of potential existence as a solution to the problem of time. For he thinks that it is a compromise between existence and non-existence, a makeshift, a restatement of the problem of time. If time is the principle of change, it must admit of the distinction of past, present and future. But if these distinctions are maintained, time converts itself into a paradox : the present alone exists while the past is no longer and the future is not yet. And yet there is a sense in which the past and the future are still there. Bradley appears to be perplexed by the Augustinian puzzle that time loses its meaning without the past, present and future, but their modes of being cannot be made intelligible. The same problem arises with regard to causation : if the potential already exists, there is no special significance in its becoming actual; if it is non-existent, causality would mean a leap from existence to non-existence<sup>12</sup>.

To solve this paradox European absolutists have substituted the concepts of ground and consequent for cause and effect. The temporal relation has thus been replaced by the logical relation. They have alleged that science

arbitrarily assumes for its practical purpose that each event can be understood by a backward reference to an event arbitrarily singled out and called the cause. Causation in science means a series of events which are the earlier and later stages of a continuous process. But the Principle of Causality, the absolutist contends, is a limited application in the field of science of the Principle of Ground and Consequent. According to this principle "the whole of existence is a single coherent system in which every part is determined by the nature of the whole ..."<sup>13</sup>.

This attempt to convert the temporal relation of cause and effect into a logical relation seeks to retain the static aspect of time by denying its dynamic aspect.

In Bradley's analysis all phases of our experience have been reduced to contradictions. And ultimately he refers all of them to the Absolute in the hope that the contradictions will be resolved. But this is, as James remarks, "making a luxury of intellectual defeat"<sup>14</sup>. Time, Bradley says, is an appearance, yet when referred to the Absolute "its temporal nature does not there wholly cease to exist, but is thoroughly transmuted". It appears that for Bradley, time with all its features is possessed by the Absolute which is timeless. He then goes on to say further that the Absolute possesses time as an isolated aspect, "an aspect which in ceasing to be isolated, loses its special character"<sup>15</sup>.

This analysis seems quite unintelligible. Is the special character of time merged or lost in the Absolute? There is an ambiguity in Bradley's analysis with regard to this question. It appears that Bradley's solution of the problem of time is hardly effective. His absolutism seems to be infructuous in showing a way out of the riddles of time. Bradley holds that thought generates contradictions. And he finds it comfortable to think that contradictions could be overcome by shifting the reference from the finite to the infinite. Hence, it might be said that Bradley's attempt to solve the paradoxes of experience defeats its own purpose.

The Advaita thinkers were cautious to reiterate that the static immutable Brahman or Absolute as the Ground cannot logically entail change and transience as its consequence. According to their theory of causation, the Ground alone is real and the consequence illusory. The process of effectuation is also illusory.

The Advaita theory of causation, vivartavāda<sup>16</sup>, identifies the finite with the infinite through the negation of its finitude. The individual exists only for the sake of the Absolute. His individuality is an illusion and his existence ontologically meaningless. The temporal world is a barren rehearsal of the Absolute. The world with its immense varieties of changing colours and sounds, pleasures and pains,

beauty and ugliness, is nothing but a show without a significance. For the Vedāntic absolutists, idealists as they are, time is an appearance, unrelated to reality.

Temporalists, on the other hand, maintain that reality is essentially temporal. The idea of a static timeless reality is due to the erroneous habit of the intellect. For a consistent temporalist reality is a process. In the Indian philosophical tradition Buddhism is a temporalist philosophy. In the Buddhist empirical outlook change is an essential feature of the universe. For no Buddhist school time is a substantive reality.

Causality is the central philosophy of early Buddhism. The recognition that everything in this world is causally produced, and hence conditioned and impermanent,<sup>17</sup> led to the speculation regarding time. In the Buddhist theory of Instantaneous Being<sup>18</sup> the reality of a substantial space and substantial time is denied; the point-instant of efficiency is not only asserted, but it is claimed to be the only reality. For the Buddhist time and space are nothing, since we can observe only events and things, which on this thesis are nothing but the point-instants.

The theory of Instantaneous Being is expressed by Śāntaraksita<sup>19</sup> in the dictum that the momentary thing represents its own annihilation, that every momentary



thing is annihilated as soon as it appears. With Śāntaraksita, Kamalaśīla<sup>20</sup> says that all things, that are objects of some purposive actions are instantaneous. It has also been emphasised that the capacity of being an object of a purposive action is the essential feature of reality<sup>21</sup>. But such a thing becomes efficient only in the last moment. For example, when a seed is transformed into a sprout, this occurs in the last moment of the seed; that is to say, an object can produce something when it has reached the last moment of its existence.

Thus, according to the Buddhists, the world is a process of discrete instantaneous moments, and causality is the interdependence of the moments following one another, and it is that which evokes the illusion of stability or duration.

We are familiar with such a conception of universal flux in the philosophy of Heraclitus in early Greek thought. In Bergson we find a modern version of the same theory. For Bergson existence means constant change. But it is also to be noted that the ultimate aim of Bergson is to establish a real duration and a real time, for he is a realist. He compares our intellect with a cinematograph which reconstitutes a movement out of momentary static snapshots. He says that motion cannot be compounded of immobilities. An instantaneous moment is, according to Bergson, an artificial construction of thought. For the Buddhist, on the other

hand, duration is a construction, while instantaneous moments are only real. The theory of constant change is also found in other Indian system of thought. The Sāṃkhyas assumed eternal matter alone as ultimately real which itself is constantly changing. The Yoga system maintains that the world is the process of constantly changing qualities of a permanent substance. The Buddhists of course deny the reality of an eternal matter or enduring substance.

The radical stand point of the Buddhists seems to have arisen as a protest against the monism of the Upaniṣads and of the Sāṃkhyas, which led them to assert the exclusive reality of the minutest elements of existence. As it is well known, the Mādhyamikas did not accept this theory of the reality of the supposed point-instants of existence, for they declared everyseparate object and every notion to be dialectical, relative and illusory. The theory of absolute change received attacks from the school of Sarvāstivādins, who contend that the theory implies that only the present exists, for the past exists no more, the future also does not exist. The Sarvāstivādins object that the present has its roots in the past and its consequences in the future<sup>22</sup>.

It is to be pointed out that the theory of the Sarvāstivādins, that everything exists, has its source in early upaniṣadic conception. In early Buddhist texts this

is referred to as the theory of self-causation. It refers to the belief in a self considered to be essence of everything. Thus 'everything exists' means that the essence of everything exists. This again led to the view that the effect preexists in the cause, the future in the present. Such a strictly determined causal principle would mean that we can, by examining the present, predict with absolute certainty what will happen in the future, for the future is hidden in the present. This ultimately amounts to saying that temporality is an illusion.

But the Buddha's theory of causality, of Dependent Origination, does not seem to be a form of strict determinism of this sort: — When this exists, that comes to be — the very use of 'when' here is sufficient to show that the future cannot be predicated with absolute certainty. On the basis of inductive reasoning the Buddha inferred the future validity of the causal principle. He also made the prediction that a person who has eliminated craving and thus attained enlightenment will not be reborn. Time is conceived as the mediator between the past, present and future. Since that which is born, death is a matter of time. For this reason time assumes the position of Māra, the personification of death. Though ordinary human beings are under the spell of time, yet one who has attained enlightenment is able to overcome time. This does not mean that he attains a state

of permanent existence. It means that he is able to put an end to continued becoming. Thus immortality in early Buddhism becomes a synonym of no-rebirth. He who has overcome the process of becoming also overcomes time, for there is no time apart from the process of becoming<sup>23</sup>.

It might be observed in this context that, though Buddhism is a temporalist philosophy, the ultimate goal of the Buddha's philosophy is indistinguishable from that of the Indian absolutists. For all the systems of Indian philosophy, realist or idealist, absolutist or temporalist, except for the Cārvāka materialists, the ultimate goal of knowledge is liberation or moksa or nirvāna.

#### Time and Reality :

The attitude of some contemporary philosophers stands in marked contrast to that of the absolute idealists and Buddhist temporalists. For they have taken time seriously and made it integral to reality. In Bergson's temporalist philosophy duration becomes the very stuff of reality. La Duree, Bergson says, is "the continuous progress of the past which gnaws into the future and which swells as it advances"<sup>25</sup>. According to Bergson, reality is creative through and through; its essence consists in multitudinous novel expressions. For him time has become so important that

he identifies it with reality. Among modern philosophers he is perhaps the first philosopher to realise the great importance of process being integral to reality.

Alexander<sup>25</sup>, the neorealist, tries to unify physical time with Bergson's vital time, by welding the two into one conception of space-time, in contrast to Bergson who conceives of time alone as reality. Alexander conceives of space-time as the first principle of reality. He puts forward a view of evolution in which from space-time emerges matter, from matter life, from life emerges consciousness and from consciousness emerges value. This has been explained by Alexander by what is called an emergent principle. But it appears that Alexander's view of evolution comes as a sort of logical stunt to escape the impasse created by his initial assumption of the primordial character of space and time. His theory does not explain how a new property arises at every stage of evolution. His idea of reality as a pyramid having space-time at the base and Deity at the apex does not serve the end, if space-time is devoid of the element of creativity.

Both Bergson and Alexander conceive of time or space-time as ultimate and actual. But according to Whitehead, although space and time are integral to reality, still reality is not identified with time as in Bergson or with space-time as in Alexander. Space and time are said to be abstract

potentialities that derive their existence solely from actual occasions. For Whitehead<sup>26</sup> Nature is a process which can also be termed as the passage of nature. The passage of nature is such a fundamental fact that in our experience of it we come into contact with the ultimate metaphysical character of the universe. The passage of nature, Whitehead says, is exhibited equally in spatial transition as well as in temporal transition. Whitehead makes a clear distinction between the passage of nature and serial time, since serial time exhibits only some of the properties of this passage. To refer to Whitehead, "Time is known to me as an abstraction from the passage of events. The fundamental fact which renders this abstraction possible is the passing of nature, its development, its creative advance"<sup>27</sup>.

We are told that space and time are abstractions from the passage of nature with its extensive character. The creative advance involves the notion of becoming; but becoming is not to be understood in terms of a uniquely serial advance, as in the classical notion of time. In Whitehead's conception the temporal process of the universe is not one single linear succession but a group of linear and serial processes, and each of these linear series constitutes a space-time system.<sup>28</sup>

The notion of duration is of decisive importance in Whitehead's philosophy of time. In his words, "a duration is

a cross-section of the universe; it is the immediate present condition of the world at some epoch"<sup>29</sup>.

The passage of nature is to be understood in terms of the flow of durations. The concept of duration forms the basis for Whiteheads' conception of simultaneity, by which he means the whole course of nature contemporary with the specious present of any percipient. It is limited in time but unlimited in space.

The present writer does not think herself competent enough to enter into a detailed discussion of Whitehead's theory of time. However, in order to understand the distinguishing features of Whitehead's conception, it may be compared with that of Newton and Einstein on the one hand, and Bergson and Alexander on the other. According to the Absolute theory of Newton, both space and time are independent systems of entities : time is the ordered system of durationless instants and space is a system of extensionless points. For Newton a point is something devoid of structure, but it is said to be everlasting and unchanging. In the same way an instant is devoid of any content. Space and time are not only unrelated to each other, but also unrelated to and independent of the changes that occur in this world. It is obvious that such a view cannot account for the passage or process of nature. Though in the conception of Bergson and Alexander space and time are integral to reality, Bergson invests time

with the status of ultimate reality and Alexander makes space and time the very stuff of the universe.

For Whitehead, however, though space and time are fundamental and integral to reality, in themselves they have the status of potentials. Time and space enter as constituent relations between occasions and events. There is space and there is time because there are actual entities and events. Apart from them there is neither space nor time. Actual occasions, Whitehead says, furnish the only reasons for the existence of space and time. Such a conception does not elevate space and time to status of ultimate principles<sup>30</sup>.

In rejecting the absolute theory of space and time, which entails the rejection of the notions of 'absolute notion' and 'absolute position' in 'absolute space', Whitehead reconstructs a new philosophy of time by conceiving space and time as a relation between events. Whitehead seems to have an unambiguous and definite meaning of space — that space is independent of matter with its contingent properties. In this respect he is in agreement with Kant and Newton. But in holding a relational theory of space and time he is in agreement with Einstein as against Newton. In other words his philosophy of time reconciles the relational theory of space and time supported by Einstein's theory of Relativity with the logical and factual considerations brought forward by Newton and Kant. The only possible relations of Whitehead's relational theory of space and time are events.



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## CHAPTER 9

### Conclusion

In the foregoing discussion it has been found that in the strict deterministic interpretation of reality there is no scope for becoming. It is needless to reiterate the persistence of the Eleatic tradition, in philosophy and science, that renders temporal becoming into a mere illusion.

The problem of time is the most fundamental problem, since it is the problem of experience itself. Change, movement and succession are the chief features of our experience. An analysis of the contents of our experience, the experience of change and its implicate time, can only reveal to us the ultimate truth. In the philosophy of Bradley and Whitehead we find an identification of reality with experience. Bradley<sup>1</sup> lays down a fundamental truth when he says, "experience is the same as reality ... to be real is to be indissolubly one with sentience". Like Whitehead Bradley

also attempted a far-reaching and thoroughgoing criticism of metaphysical first principles. But Bradley's metaphysic was vitiated by his failure to appreciate the bearing of scientific first principles on cosmology. This is clearly revealed in his treatment of space, time, causality and other objects of experience as appearances. As an idealist Bradley hardly realised the importance of cosmology for speculative metaphysics. Again, Bradley and Whitehead agree in their general conception of reality as a concrete whole. But Bradley's reality is self-subsistent, a whole which is not the result of a process of development, and is, therefore, static in nature. Whitehead, on the contrary, in rejecting the substance-attribute category as a fundamental mode of explanation, conceives of reality as a concrete whole in the process of development. It seems that Bradley's idealism has caught hold of a fundamental truth in its conception of reality as a concrete whole. But the self-subsistent and self-consistent Absolute of Hegel and of his followers like Bradley and Bosanquet, is practically the same as the substance of Spinoza - static and devoid of process.

In the temporalist philosophy of Bergson, James and Whitehead there is the reinstatement of becoming; reality is conceived as dynamic and incomplete. The world process is the everlasting coming of concrete novelties into being, the creative advance in nature, in which potentiality is

transformed into actuality. The classical concept of causality is being replaced by the concept of dynamic causation which is compatible with the emergence of novelties in the genuinely growing world.

Temporal becoming, which may also be expressed as the flow of time, is not only an irreducible feature of everything we experience, but of our consciousness as well. As William Barret<sup>2</sup> expresses, following Husserl and Heidegger<sup>3</sup>, that reality is what reveals itself in our everyday experience of the world. Barret attacks Grunbaums thesis of the mind-dependency of temporal becoming. Specifically, he attacks Weyl<sup>4</sup> for claiming that reality ought to be understood in terms of the abstract theoretical concepts of science.

The physicist's concepts of 'the direction of time' or 'time's arrow', of course, suggest the idea of a time flow. Even Newton, an absolutist with regard to space and time, used the word 'flow' in his definition of 'time', that time flows in an even tenor. W. James used the same concept to describe our private psychological time. As he puts it, "... the specious present, the intuited duration, stands permanent, like the rainbow on the waterfall, with its own quality unchanged by the events that stream through it"<sup>5</sup>.

We have here two opposite descriptions with regard to time-flow. So the question arises - does time flow forward

from the past to the future, or backward from the future to the past ?

The two descriptions above seem equally plausible. If we adopt a passive attitude, the future seems to come to us; when, on the other hand, we adopt an active attitude, we have the feeling of moving towards the future. Both these expressions, however, metaphysically express the irreversibility of temporal becoming. A reversal of time direction would imply the process of unbecoming. Aristotle<sup>6</sup> maintained that even God cannot make undone things that have been done.

However, if the irreversibility of the process of becoming is understood in terms of spatial imagery then that generates paradoxical conclusions. But these paradoxes do not make any difference to our ordinary conception of time and becoming. The time which the scientist studies is an abstraction from lived duration. To the physicist the logical relation of before and after is more important than the past, present and future divisions of time. In the relativistic interpretation, to an observer speeding away faster than light, the time-order of events on the earth would be reversed, for during his journey he would catch up successively the waves of light which had left the earth before him. But this is only a theoretical possibility. As Cleugh puts it, "Einstein's assertion that simultaneity is relative has no derogatory effect at all - except as the result of confusion - upon the

certainty of the plain man that his judgements of simultaneity are true"<sup>7</sup>.

It may be pointed out that the scientists are mainly occupied with the development of theories that describe what the universe is, while the philosophers are concerned with why is it "so." Modern physics describes the universe in terms of two basic theories - the General theory of relativity and quantum mechanics. According to the former space and time become meaningful only with reference to the actual events of the world. In this conception the idea of an eternal unchanging universe has been replaced by the notion of a dynamic expanding universe.

If the universe is expanding there must have been a time in which the world was very small. Quantum mechanics is in search of the evidences by means of which the hypothesis of an expanding universe can be justified. The scientist hopes that this study will ultimately lead him to a complete unified theory that will explain all the phenomena of the universe. If his aim is fulfilled, the unified theory will perhaps reveal the truth behind the mystery of the universe and solve all the paradoxes of time and the allied concepts. The philosopher may then find answers to their queries of why the universe is so. The 'what' of the scientist and the 'why' of the philosopher will then meet at the same point. Unless and until that point is reached the nature of time

will perhaps remain a mystery to philosopher, poet and scientist.

In the words of Whitehead "... it is impossible to mediate on time and the mystery of the creative passage of nature without an overwhelming emotion at the limitations of human knowledge"<sup>8</sup>.

Time has, and will perhaps remain a riddle to us. Our emotional life is deeply infected with an awareness of time. In mythology, Greek or Hindu, there is an apotheosis of time. "Time's chariot" not only hurries ever near, as John Donne thought, but as Tagore said, it carries us on it. We are all children of time.

The problem of the relation of time and eternity has haunted the mind of man, and thrown unforgettable images. Tagore, for example, has spoken,

"Kālīre rahe vakṣe dhari śubhra mahākāl  
Bāndhena tāre kālo kaluṣ jāl".

: Eternity holds time, but remains unaffected by it. Shelley on the other hand says,

"Time like a dome of many coloured glass stains the white radiance of eternity".

McTaggart said that the last enemy to be overcome before we achieve eternity, is time.<sup>9</sup> In Plato's Timaeus we find the unforgettable expression "Time is the moving image of



eternity". The Advaita philosophers held that reality is timeless. Timeless does not mean endless duration; it means eternity and completeness. The problem of time thus brings one to the problem of the relation between time and eternity. Eternalists maintain that time embraces contradictions because it involves change and transiency. In their attempts to solve these contradictions time has been transformed into timelessness.

It is to be admitted that time is one of the most difficult philosophical subjects to treat satisfactorily. But it is also the richest of philosophical subjects. It has occupied the minds of philosophers and scientists of all ages. We cannot avoid mediating on time for we are embedded in time. Temporality is a dimension of human existence. A non-temporal existence appears unintelligible to our commonsense view. The idea of an eternal being with a kind of consciousness of things, to use Spinoza's expression, sub specie eternitatis, may have profound philosophical implications, but it is doubtful whether it makes any sense in relation to ourselves.

According to Kant time and space belong to a percipient being as forms of intuition. While to McTaggart, as our consciousness moves from more confused to clearer awareness of objects, it realises that time represents a non-temporal series which appeared as temporal.

Unlike Kant and McTaggart there are philosophers as well as scientists who believe that our awareness of duration, of temporality, of the distinctions between past, present and future are based on some objective factor. The faculty by means of which we are aware of time, appears to be the most important of the faculties that distinguishes us as human beings from other living creatures. Against those who contend that time dissolves into unreality under the weight of analysis, it might be pointed out that perhaps the fault lies with their analyses. Temporal characteristics seem to be undoubtedly present in the objects that we experience. But an object cannot exist with incompatible characteristics. So it might be said that the criticisms that have always been directed against temporal characteristics or for that matter, against time, should have been against the descriptions that have been made of them, or the conclusions that have been drawn from them, or the constructions that are based on them. There are some paradoxes of time constructed on the basis of the supposed infinity and continuity of time. We are not directly aware of the infinity and continuity, in the mathematical sense, of time. Any criticism that refers to the infinity and continuity of time, if successful, does not necessarily imply that time is unreal. For these criticisms are really directed against these constructions or descriptions of the temporal characteristics of the objects of our experience. The only justifiable conclusion would be that

some particular ways of describing the temporal characteristics are unsatisfactory, so we should look for some better ones.

Those who claim that events are only simultaneous with, or before or after one another, and thus seek to save time's reality at the cost of its dynamic aspect, seem to have an impoverished conception of time. Time's transience is a fundamental postulate of experience. Heidegger and his follower Barret have described it as the ontological presupposition for there to be a world or consciousness at all. Temporal becoming, they would say, is not an object to know or discover among other things in the world. It is basic and irreducible, and hence it cannot be understood in terms of anything else without being involved into circularity. The flow of time is neither 'psychological' nor 'physical', for to understand the meaning of physical time or psychological time a reference is to be made to the basic flow of time. We do encounter time as passage in our experiences, we are within the flow of time in the sense that we cannot get out of it, we cannot escape it. Even when we make the best use of our time, the moment of departure gradually approaches. Then time flows away from us into the no-longer. As Shakespeare has expressed it inimitably :

"Like as the waves make towards the pebbled shore  
So do our minutes hasten to their end".

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