

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 account¹, 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 time².

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"³.

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.

Shoemaker⁴ 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.

Leibniz⁵ 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'⁶. 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 Bergson⁷ pointed out that the present moment is not a creatio ex nihilo, it is the passage from the past moment to the present one. Whitehead⁸ 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 asatkāryavāda⁹ of the Nyaya-system and satkāryavāda¹⁰ of the Sāṅkhyas, we are placed between the horns of a dilemma. "There is", as Bradley observes, "no escape from this fundamental dilemma"¹¹.

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-existence¹².

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 ..."¹³.

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"¹⁴. 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"¹⁵.

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, vivartavāda¹⁶, 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,¹⁷ led to the speculation regarding time. In the Buddhist theory of Instantaneous Being¹⁸ 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 Śāntaraksita¹⁹ in the dictum that the momentary thing represents its own annihilation, that every momentary

thing is annihilated as soon as it appears. With Śāntaraksita, Kamalasila²⁰ 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 reality²¹. 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 future²².

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 becoming²³.

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 nirvāṇa.

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"²⁵. 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.

Alexander²⁵, 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 Whitehead²⁶ 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"²⁷.

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.²⁸

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"²⁹.

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 principles³⁰.

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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